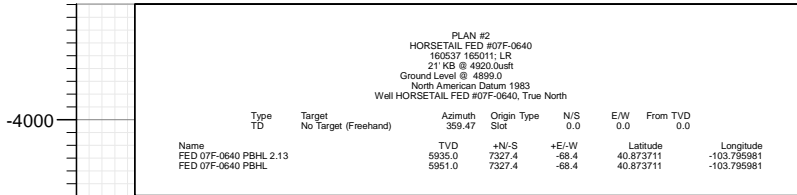




SECTION DETAILS

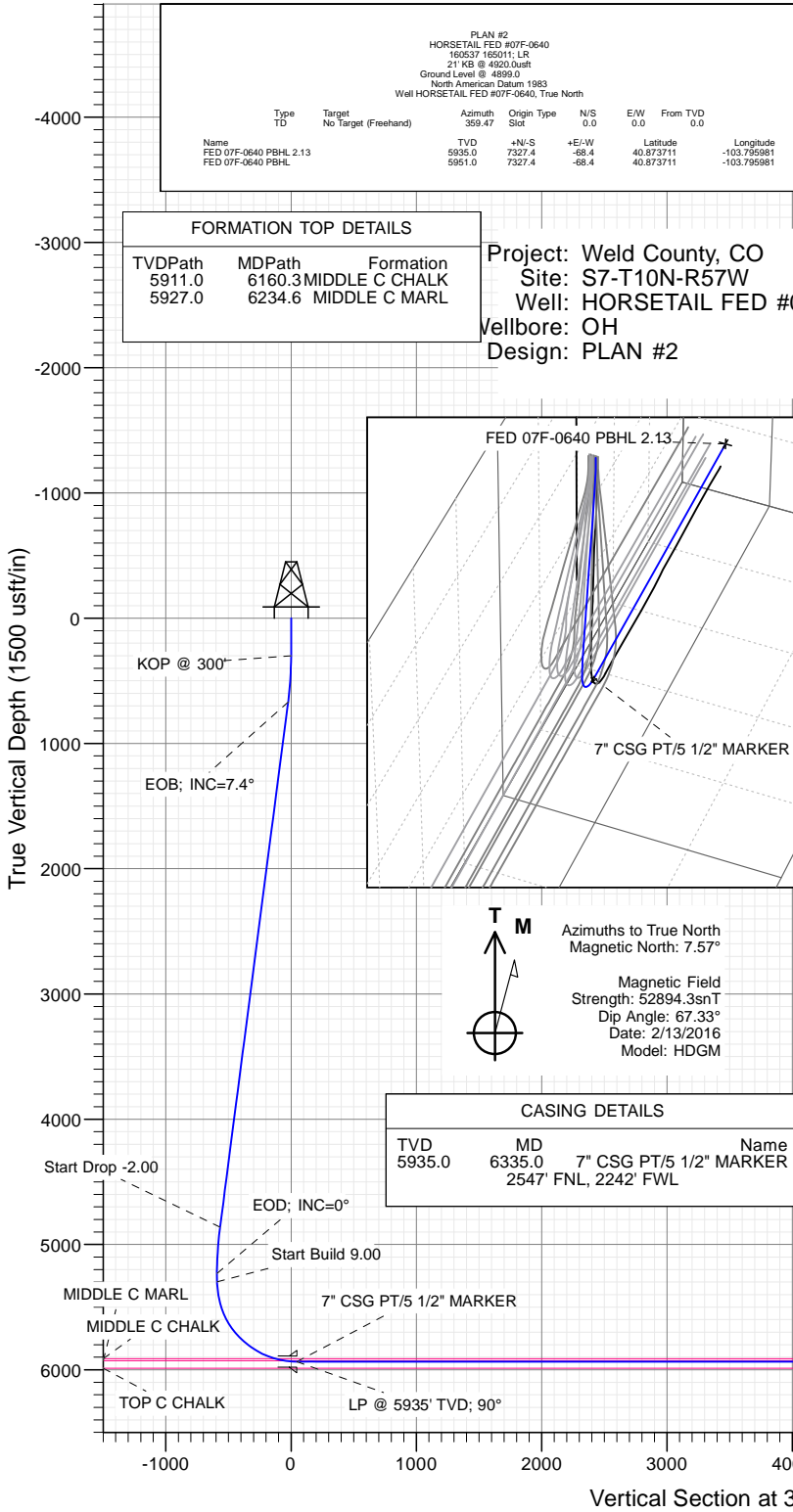
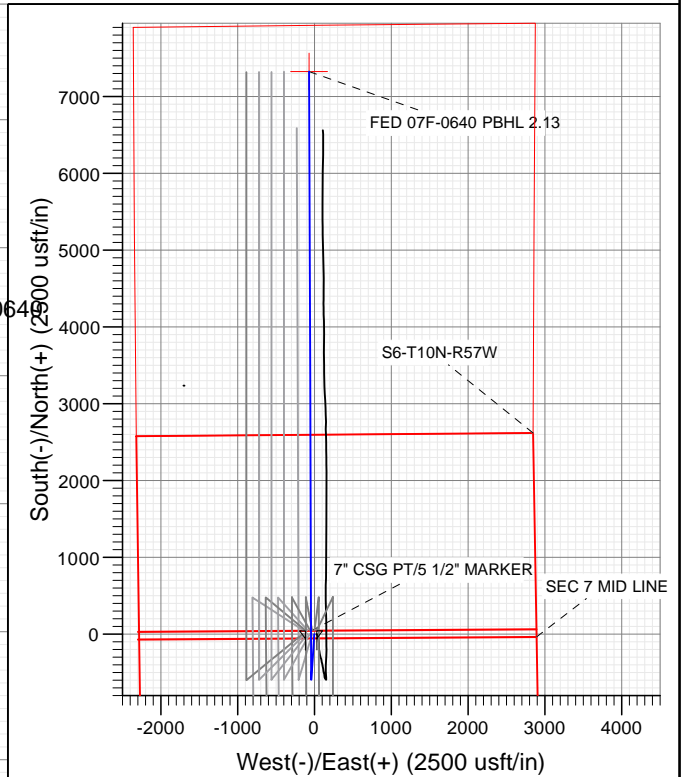
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	300.0	0.00	0.00	300.0	0.0	0.0	0.00	0.00	0.0	
3	670.1	7.40	183.87	669.1	-23.8	-1.6	2.00	183.87	-23.8	
4	4897.2	7.40	183.87	4860.9	-567.2	-38.4	0.00	0.00	-566.8	
5	5267.3	0.00	0.00	5230.0	-591.0	-40.0	2.00	180.00	-590.6	
6	5335.7	0.00	0.00	5298.4	-591.0	-40.0	0.00	0.00	-590.6	
7	6335.7	90.00	359.79	5935.0	45.6	-42.3	9.00	359.79	46.0	
8	13617.5	90.00	359.79	5935.0	7327.4	-68.4	0.00	0.00	7327.7	FED 07F-0640 PBHL 2.13



FORMATION TOP DETAILS

TVDPath	MDPath	Formation
5911.0	6160.3	MIDDLE C CHALK
5927.0	6234.6	MIDDLE C MARL

Project: Weld County, CO
Site: S7-T10N-R57W
Well: HORSETAIL FED #07F-0640
Wellbore: OH
Design: PLAN #2

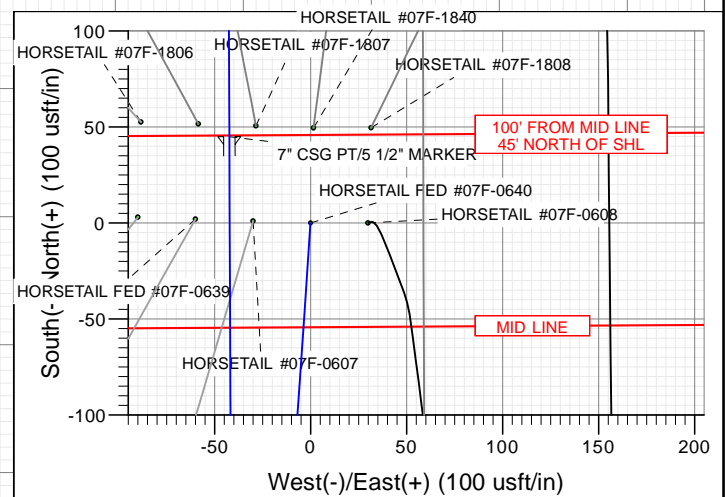


Azimuths to True North
Magnetic North: 7.57°

Magnetic Field
Strength: 52894.3snT
Dip Angle: 67.33°
Date: 2/13/2016
Model: HDGM

CASING DETAILS

TVD	MD	Name
5935.0	6335.0	7" CSG PT/5 1/2" MARKER
	2547' FNL, 2242' FWL	



WELL DETAILS: HORSETAIL FED #07F-0640

+N/-S	+E/-W	Northing	Ground Level:	Latitude	Longitude
0.0	0.0	1558345.98	Easting 3471450.81	40.853600	-103.795733

CATHEDRAL



Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Company:	Whiting Petroleum Corporation	TVD Reference:	21' KB @ 4920.0usft
Project:	Weld County, CO	MD Reference:	21' KB @ 4920.0usft
Site:	S7-T10N-R57W	North Reference:	True
Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #2		

Project	Weld County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site		S7-T10N-R57W			
Site Position:		Northing:	1,558,398.55 usft	Latitude:	40.853828
From:	Lat/Long	Easting:	3,469,859.44 usft	Longitude:	-103.801481
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	1.10 °

Well	HORSETAIL FED #07F-0640					
Well Position	+N/-S	0.0 usft	Northing:	1,558,345.98 usft	Latitude:	40.853600
	+E/-W	0.0 usft	Easting:	3,471,450.81 usft	Longitude:	-103.795733
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	4,899.0 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	HDGM	2/13/2016	7.57	67.33	52,894

Design	PLAN #2			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0.0	0.0	0.0	359.47

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
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.00	0.00	0.00	0.00	
670.1	7.40	183.87	669.1	-23.8	-1.6	2.00	2.00	0.00	183.87	
4,897.2	7.40	183.87	4,860.9	-567.2	-38.4	0.00	0.00	0.00	0.00	
5,267.3	0.00	0.00	5,230.0	-591.0	-40.0	2.00	-2.00	0.00	180.00	
5,335.7	0.00	0.00	5,298.4	-591.0	-40.0	0.00	0.00	0.00	0.00	
6,335.7	90.00	359.79	5,935.0	45.6	-42.3	9.00	9.00	0.00	359.79	
13,617.5	90.00	359.79	5,935.0	7,327.4	-68.4	0.00	0.00	0.00	0.00	FED 07F-0640 PBHL

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Company:	Whiting Petroleum Corporation	TVD Reference:	21' KB @ 4920.0usft
Project:	Weld County, CO	MD Reference:	21' KB @ 4920.0usft
Site:	S7-T10N-R57W	North Reference:	True
Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #2		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	KOP @ 300'
400.0	2.00	183.87	400.0	-1.7	-0.1	-1.7	2.00	2.00	
500.0	4.00	183.87	499.8	-7.0	-0.5	-7.0	2.00	2.00	
600.0	6.00	183.87	599.5	-15.7	-1.1	-15.6	2.00	2.00	
670.1	7.40	183.87	669.1	-23.8	-1.6	-23.8	2.00	2.00	EOB; INC=7.4°
700.0	7.40	183.87	698.7	-27.7	-1.9	-27.6	0.00	0.00	
800.0	7.40	183.87	797.9	-40.5	-2.7	-40.5	0.00	0.00	
900.0	7.40	183.87	897.1	-53.4	-3.6	-53.3	0.00	0.00	
1,000.0	7.40	183.87	996.2	-66.2	-4.5	-66.2	0.00	0.00	
1,100.0	7.40	183.87	1,095.4	-79.1	-5.4	-79.0	0.00	0.00	
1,200.0	7.40	183.87	1,194.6	-91.9	-6.2	-91.9	0.00	0.00	
1,300.0	7.40	183.87	1,293.7	-104.8	-7.1	-104.7	0.00	0.00	
1,400.0	7.40	183.87	1,392.9	-117.6	-8.0	-117.6	0.00	0.00	
1,500.0	7.40	183.87	1,492.1	-130.5	-8.8	-130.4	0.00	0.00	
1,600.0	7.40	183.87	1,591.2	-143.4	-9.7	-143.3	0.00	0.00	
1,700.0	7.40	183.87	1,690.4	-156.2	-10.6	-156.1	0.00	0.00	
1,800.0	7.40	183.87	1,789.6	-169.1	-11.4	-168.9	0.00	0.00	
1,900.0	7.40	183.87	1,888.7	-181.9	-12.3	-181.8	0.00	0.00	
2,000.0	7.40	183.87	1,987.9	-194.8	-13.2	-194.6	0.00	0.00	
2,100.0	7.40	183.87	2,087.1	-207.6	-14.1	-207.5	0.00	0.00	
2,200.0	7.40	183.87	2,186.2	-220.5	-14.9	-220.3	0.00	0.00	
2,300.0	7.40	183.87	2,285.4	-233.3	-15.8	-233.2	0.00	0.00	
2,400.0	7.40	183.87	2,384.6	-246.2	-16.7	-246.0	0.00	0.00	
2,500.0	7.40	183.87	2,483.7	-259.0	-17.5	-258.9	0.00	0.00	
2,600.0	7.40	183.87	2,582.9	-271.9	-18.4	-271.7	0.00	0.00	
2,700.0	7.40	183.87	2,682.1	-284.7	-19.3	-284.6	0.00	0.00	
2,800.0	7.40	183.87	2,781.2	-297.6	-20.1	-297.4	0.00	0.00	
2,900.0	7.40	183.87	2,880.4	-310.5	-21.0	-310.2	0.00	0.00	
3,000.0	7.40	183.87	2,979.6	-323.3	-21.9	-323.1	0.00	0.00	
3,100.0	7.40	183.87	3,078.7	-336.2	-22.8	-335.9	0.00	0.00	
3,200.0	7.40	183.87	3,177.9	-349.0	-23.6	-348.8	0.00	0.00	
3,300.0	7.40	183.87	3,277.1	-361.9	-24.5	-361.6	0.00	0.00	
3,400.0	7.40	183.87	3,376.2	-374.7	-25.4	-374.5	0.00	0.00	
3,500.0	7.40	183.87	3,475.4	-387.6	-26.2	-387.3	0.00	0.00	
3,600.0	7.40	183.87	3,574.6	-400.4	-27.1	-400.2	0.00	0.00	
3,700.0	7.40	183.87	3,673.7	-413.3	-28.0	-413.0	0.00	0.00	
3,800.0	7.40	183.87	3,772.9	-426.1	-28.8	-425.9	0.00	0.00	
3,900.0	7.40	183.87	3,872.1	-439.0	-29.7	-438.7	0.00	0.00	
4,000.0	7.40	183.87	3,971.2	-451.9	-30.6	-451.5	0.00	0.00	
4,100.0	7.40	183.87	4,070.4	-464.7	-31.5	-464.4	0.00	0.00	
4,200.0	7.40	183.87	4,169.6	-477.6	-32.3	-477.2	0.00	0.00	
4,300.0	7.40	183.87	4,268.7	-490.4	-33.2	-490.1	0.00	0.00	
4,400.0	7.40	183.87	4,367.9	-503.3	-34.1	-502.9	0.00	0.00	
4,500.0	7.40	183.87	4,467.1	-516.1	-34.9	-515.8	0.00	0.00	
4,600.0	7.40	183.87	4,566.2	-529.0	-35.8	-528.6	0.00	0.00	
4,700.0	7.40	183.87	4,665.4	-541.8	-36.7	-541.5	0.00	0.00	
4,800.0	7.40	183.87	4,764.6	-554.7	-37.5	-554.3	0.00	0.00	
4,897.2	7.40	183.87	4,860.9	-567.2	-38.4	-566.8	0.00	0.00	Start Drop -2.00
4,900.0	7.35	183.87	4,863.7	-567.5	-38.4	-567.2	2.00	-2.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Company:	Whiting Petroleum Corporation	TVD Reference:	21' KB @ 4920.0usft
Project:	Weld County, CO	MD Reference:	21' KB @ 4920.0usft
Site:	S7-T10N-R57W	North Reference:	True
Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #2		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
5,000.0	5.35	183.87	4,963.1	-578.6	-39.2	-578.2	2.00	-2.00	
5,100.0	3.35	183.87	5,062.8	-586.1	-39.7	-585.7	2.00	-2.00	
5,200.0	1.35	183.87	5,162.7	-590.2	-39.9	-589.8	2.00	-2.00	
5,267.3	0.00	0.00	5,230.0	-591.0	-40.0	-590.6	2.00	-2.00	EOD; INC=0°
5,300.0	0.00	0.00	5,262.7	-591.0	-40.0	-590.6	0.00	0.00	
5,335.7	0.00	0.00	5,298.4	-591.0	-40.0	-590.6	0.00	0.00	Start Build 9.00
5,400.0	5.79	359.79	5,362.6	-587.8	-40.0	-587.4	9.00	9.00	
5,500.0	14.79	359.79	5,460.9	-569.9	-40.1	-569.5	9.00	9.00	
5,600.0	23.79	359.79	5,555.2	-536.9	-40.2	-536.5	9.00	9.00	
5,700.0	32.79	359.79	5,643.1	-489.6	-40.4	-489.2	9.00	9.00	
5,800.0	41.79	359.79	5,722.6	-429.0	-40.6	-428.6	9.00	9.00	
5,900.0	50.79	359.79	5,791.7	-356.8	-40.8	-356.4	9.00	9.00	
6,000.0	59.79	359.79	5,848.5	-274.7	-41.1	-274.3	9.00	9.00	
6,100.0	68.79	359.79	5,891.9	-184.7	-41.5	-184.3	9.00	9.00	
6,160.3	74.22	359.79	5,911.0	-127.5	-41.7	-127.1	9.00	9.00	MIDDLE C CHALK
6,200.0	77.79	359.79	5,920.6	-89.0	-41.8	-88.6	9.00	9.00	
6,234.6	80.91	359.79	5,927.0	-55.0	-41.9	-54.6	9.00	9.00	MIDDLE C MARL
6,300.0	86.79	359.79	5,934.0	10.0	-42.2	10.4	9.00	9.00	
6,335.0	89.94	359.79	5,935.0	44.9	-42.3	45.3	9.00	9.00	7" CSG PT/5 1/2" MARKER
6,335.7	90.00	359.79	5,935.0	45.6	-42.3	46.0	9.00	9.00	LP @ 5935' TVD; 90°
6,400.0	90.00	359.79	5,935.0	109.9	-42.5	110.3	0.00	0.00	
6,500.0	90.00	359.79	5,935.0	209.9	-42.9	210.3	0.00	0.00	
6,600.0	90.00	359.79	5,935.0	309.9	-43.2	310.3	0.00	0.00	
6,700.0	90.00	359.79	5,935.0	409.9	-43.6	410.3	0.00	0.00	
6,800.0	90.00	359.79	5,935.0	509.9	-43.9	510.3	0.00	0.00	
6,900.0	90.00	359.79	5,935.0	609.9	-44.3	610.3	0.00	0.00	
7,000.0	90.00	359.79	5,935.0	709.9	-44.7	710.3	0.00	0.00	
7,100.0	90.00	359.79	5,935.0	809.9	-45.0	810.3	0.00	0.00	
7,200.0	90.00	359.79	5,935.0	909.9	-45.4	910.3	0.00	0.00	
7,300.0	90.00	359.79	5,935.0	1,009.9	-45.7	1,010.3	0.00	0.00	
7,400.0	90.00	359.79	5,935.0	1,109.9	-46.1	1,110.3	0.00	0.00	
7,500.0	90.00	359.79	5,935.0	1,209.9	-46.5	1,210.3	0.00	0.00	
7,600.0	90.00	359.79	5,935.0	1,309.9	-46.8	1,310.3	0.00	0.00	
7,700.0	90.00	359.79	5,935.0	1,409.9	-47.2	1,410.3	0.00	0.00	
7,800.0	90.00	359.79	5,935.0	1,509.9	-47.5	1,510.3	0.00	0.00	
7,900.0	90.00	359.79	5,935.0	1,609.9	-47.9	1,610.3	0.00	0.00	
8,000.0	90.00	359.79	5,935.0	1,709.9	-48.2	1,710.3	0.00	0.00	
8,100.0	90.00	359.79	5,935.0	1,809.9	-48.6	1,810.3	0.00	0.00	
8,200.0	90.00	359.79	5,935.0	1,909.9	-49.0	1,910.3	0.00	0.00	
8,300.0	90.00	359.79	5,935.0	2,009.9	-49.3	2,010.3	0.00	0.00	
8,400.0	90.00	359.79	5,935.0	2,109.9	-49.7	2,110.3	0.00	0.00	
8,500.0	90.00	359.79	5,935.0	2,209.9	-50.0	2,210.3	0.00	0.00	
8,600.0	90.00	359.79	5,935.0	2,309.9	-50.4	2,310.3	0.00	0.00	
8,700.0	90.00	359.79	5,935.0	2,409.9	-50.8	2,410.3	0.00	0.00	
8,800.0	90.00	359.79	5,935.0	2,509.9	-51.1	2,510.3	0.00	0.00	
8,900.0	90.00	359.79	5,935.0	2,609.9	-51.5	2,610.3	0.00	0.00	
9,000.0	90.00	359.79	5,935.0	2,709.9	-51.8	2,710.3	0.00	0.00	
9,100.0	90.00	359.79	5,935.0	2,809.9	-52.2	2,810.3	0.00	0.00	
9,200.0	90.00	359.79	5,935.0	2,909.9	-52.5	2,910.3	0.00	0.00	
9,300.0	90.00	359.79	5,935.0	3,009.9	-52.9	3,010.3	0.00	0.00	
9,400.0	90.00	359.79	5,935.0	3,109.9	-53.3	3,110.3	0.00	0.00	
9,500.0	90.00	359.79	5,935.0	3,209.9	-53.6	3,210.3	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Company:	Whiting Petroleum Corporation	TVD Reference:	21' KB @ 4920.0usft
Project:	Weld County, CO	MD Reference:	21' KB @ 4920.0usft
Site:	S7-T10N-R57W	North Reference:	True
Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #2		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
9,600.0	90.00	359.79	5,935.0	3,309.9	-54.0	3,310.3	0.00	0.00	
9,700.0	90.00	359.79	5,935.0	3,409.9	-54.3	3,410.3	0.00	0.00	
9,800.0	90.00	359.79	5,935.0	3,509.9	-54.7	3,510.3	0.00	0.00	
9,900.0	90.00	359.79	5,935.0	3,609.9	-55.1	3,610.3	0.00	0.00	
10,000.0	90.00	359.79	5,935.0	3,709.9	-55.4	3,710.3	0.00	0.00	
10,100.0	90.00	359.79	5,935.0	3,809.9	-55.8	3,810.3	0.00	0.00	
10,200.0	90.00	359.79	5,935.0	3,909.9	-56.1	3,910.3	0.00	0.00	
10,300.0	90.00	359.79	5,935.0	4,009.9	-56.5	4,010.3	0.00	0.00	
10,400.0	90.00	359.79	5,935.0	4,109.9	-56.8	4,110.3	0.00	0.00	
10,500.0	90.00	359.79	5,935.0	4,209.9	-57.2	4,210.3	0.00	0.00	
10,600.0	90.00	359.79	5,935.0	4,309.9	-57.6	4,310.3	0.00	0.00	
10,700.0	90.00	359.79	5,935.0	4,409.9	-57.9	4,410.3	0.00	0.00	
10,800.0	90.00	359.79	5,935.0	4,509.9	-58.3	4,510.3	0.00	0.00	
10,900.0	90.00	359.79	5,935.0	4,609.9	-58.6	4,610.3	0.00	0.00	
11,000.0	90.00	359.79	5,935.0	4,709.9	-59.0	4,710.3	0.00	0.00	
11,100.0	90.00	359.79	5,935.0	4,809.9	-59.4	4,810.3	0.00	0.00	
11,200.0	90.00	359.79	5,935.0	4,909.9	-59.7	4,910.3	0.00	0.00	
11,300.0	90.00	359.79	5,935.0	5,009.9	-60.1	5,010.3	0.00	0.00	
11,400.0	90.00	359.79	5,935.0	5,109.9	-60.4	5,110.3	0.00	0.00	
11,500.0	90.00	359.79	5,935.0	5,209.9	-60.8	5,210.3	0.00	0.00	
11,600.0	90.00	359.79	5,935.0	5,309.9	-61.1	5,310.3	0.00	0.00	
11,700.0	90.00	359.79	5,935.0	5,409.9	-61.5	5,410.3	0.00	0.00	
11,800.0	90.00	359.79	5,935.0	5,509.9	-61.9	5,510.3	0.00	0.00	
11,900.0	90.00	359.79	5,935.0	5,609.9	-62.2	5,610.2	0.00	0.00	
12,000.0	90.00	359.79	5,935.0	5,709.9	-62.6	5,710.2	0.00	0.00	
12,100.0	90.00	359.79	5,935.0	5,809.9	-62.9	5,810.2	0.00	0.00	
12,200.0	90.00	359.79	5,935.0	5,909.9	-63.3	5,910.2	0.00	0.00	
12,300.0	90.00	359.79	5,935.0	6,009.9	-63.7	6,010.2	0.00	0.00	
12,400.0	90.00	359.79	5,935.0	6,109.9	-64.0	6,110.2	0.00	0.00	
12,500.0	90.00	359.79	5,935.0	6,209.9	-64.4	6,210.2	0.00	0.00	
12,600.0	90.00	359.79	5,935.0	6,309.9	-64.7	6,310.2	0.00	0.00	
12,700.0	90.00	359.79	5,935.0	6,409.9	-65.1	6,410.2	0.00	0.00	
12,800.0	90.00	359.79	5,935.0	6,509.9	-65.4	6,510.2	0.00	0.00	
12,900.0	90.00	359.79	5,935.0	6,609.9	-65.8	6,610.2	0.00	0.00	
13,000.0	90.00	359.79	5,935.0	6,709.9	-66.2	6,710.2	0.00	0.00	
13,100.0	90.00	359.79	5,935.0	6,809.9	-66.5	6,810.2	0.00	0.00	
13,200.0	90.00	359.79	5,935.0	6,909.9	-66.9	6,910.2	0.00	0.00	
13,300.0	90.00	359.79	5,935.0	7,009.9	-67.2	7,010.2	0.00	0.00	
13,400.0	90.00	359.79	5,935.0	7,109.9	-67.6	7,110.2	0.00	0.00	
13,500.0	90.00	359.79	5,935.0	7,209.9	-68.0	7,210.2	0.00	0.00	
13,600.0	90.00	359.79	5,935.0	7,309.9	-68.3	7,310.2	0.00	0.00	
13,617.5	90.00	359.79	5,935.0	7,327.4	-68.4	7,327.7	0.00	0.00	TD at 13617.5

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Company:	Whiting Petroleum Corporation	TVD Reference:	21' KB @ 4920.0usft
Project:	Weld County, CO	MD Reference:	21' KB @ 4920.0usft
Site:	S7-T10N-R57W	North Reference:	True
Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #2		

Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
FED 07F-0640 PBHL 2.1'	0.00	0.00	5,935.0	7,327.4	-68.4	1,565,670.74	3,471,241.63	40.873711	-103.795981
- plan hits target center									
- Point									
FED 07F-0640 PBHL	0.00	0.00	5,951.0	7,327.4	-68.4	1,565,670.74	3,471,241.63	40.873711	-103.795981
- plan misses target center by 16.0usft at 13617.5usft MD (5935.0 TVD, 7327.4 N, -68.4 E)									
- Point									

Casing Points				
Measured Depth	Vertical Depth	Name	Casing Diameter	Hole Diameter
(usft)	(usft)		(")	(")
6,335.0	5,935.0	7" CSG PT/5 1/2" MARKER	0	0

Formations					
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction
(usft)	(usft)			(°)	(°)
6,160.3	5,911.0	MIDDLE C CHALK		0.00	
6,234.6	5,927.0	MIDDLE C MARL		0.00	

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(usft)	(usft)	+N/-S (usft)	+E/-W (usft)	
300.0	300.0	0.0	0.0	KOP @ 300'
670.1	669.1	-23.8	-1.6	EOB; INC=7.4°
4,897.2	4,860.9	-567.2	-38.4	Start Drop -2.00
5,267.3	5,230.0	-591.0	-40.0	EOD; INC=0°
5,335.7	5,298.4	-591.0	-40.0	Start Build 9.00
6,335.7	5,935.0	45.6	-42.3	LP @ 5935' TVD; 90°
13,617.5	5,935.0	7,327.4	-68.4	TD at 13617.5

Whiting Petroleum Corporation

Weld County, CO

S7-T10N-R57W

HORSETAIL FED #07F-0640

OH

PLAN #2

Anticollision Report

13 February, 2016

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Project:	Weld County, CO	TVD Reference:	21' KB @ 4920.0usft
Reference Site:	S7-T10N-R57W	MD Reference:	21' KB @ 4920.0usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.79 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Reference	PLAN #2		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0usft	Error Model:	Systematic Ellipse
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,500.0usft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program	Date	2/13/2016		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	13,617.5	PLAN #2 (OH)	MWD+HDGM	OWSG MWD + HDGM

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
S7-T10N-R57W						
Beffie - EXISTING - NO SURVEYS						Out of range
HORSETAIL #07F-0607 - OH - PLAN #1	300.0	300.0	30.0	28.3	17.462	CC
HORSETAIL #07F-0607 - OH - PLAN #1	400.0	399.7	30.4	28.0	12.635	ES
HORSETAIL #07F-0607 - OH - PLAN #1	12,880.1	12,695.9	250.0	80.3	1.474	Level 3, SF
HORSETAIL #07F-0608 - OH - SURVEYS	0.0	0.0	30.0			
HORSETAIL #07F-0608 - OH - SURVEYS	12,851.1	12,702.0	202.4	-2.1	0.990	Level 1, ES, SF
HORSETAIL #07F-1805 - OH - PLAN #1	300.0	300.0	158.8	157.1	92.479	CC, ES
HORSETAIL #07F-1805 - OH - PLAN #1	5,825.5	6,436.9	757.7	712.2	16.649	SF
HORSETAIL #07F-1806 - OH - PLAN #1	300.0	300.0	102.9	101.1	59.903	CC, ES
HORSETAIL #07F-1806 - OH - PLAN #1	5,956.3	6,385.6	427.1	382.2	9.505	SF
HORSETAIL #07F-1807 - OH - PLAN #1	300.0	300.0	58.1	56.3	33.810	CC
HORSETAIL #07F-1807 - OH - PLAN #1	5,830.7	6,381.7	67.8	22.9	1.510	ES, SF
HORSETAIL #07F-1808 - OH - PLAN #1	300.0	300.0	58.8	57.1	34.233	CC, ES
HORSETAIL #07F-1808 - OH - PLAN #1	5,958.5	6,373.4	282.4	237.7	6.320	SF
HORSETAIL #07F-1838 - OH - PLAN #1	300.0	300.0	129.5	127.8	75.447	CC, ES
HORSETAIL #07F-1838 - OH - PLAN #1	6,400.0	6,106.5	589.3	544.1	13.045	SF
HORSETAIL #07F-1839 - OH - PLAN #1	300.0	300.0	78.0	76.2	45.398	CC, ES
HORSETAIL #07F-1839 - OH - PLAN #1	6,458.1	6,073.2	247.9	202.8	5.491	SF
HORSETAIL #07F-1840 - OH - PLAN #1	300.0	300.0	49.6	47.9	28.900	CC, ES
HORSETAIL #07F-1840 - OH - PLAN #1	6,284.9	6,183.8	100.9	56.4	2.265	SF
HORSETAIL FED #07F-0605 - OH - PLAN #1	300.0	300.0	150.0	148.2	87.337	CC, ES
HORSETAIL FED #07F-0605 - OH - PLAN #1	13,617.5	13,493.2	840.0	597.4	3.463	SF
HORSETAIL FED #07F-0606 - OH - PLAN #1	300.0	300.0	90.0	88.2	52.391	CC, ES
HORSETAIL FED #07F-0606 - OH - PLAN #1	13,617.5	13,535.0	502.4	259.0	2.064	SF
HORSETAIL FED #07F-0638 - OH - PLAN #1	300.0	300.0	120.0	118.2	69.858	CC, ES
HORSETAIL FED #07F-0638 - OH - PLAN #1	13,617.5	13,671.2	654.0	407.1	2.649	SF
HORSETAIL FED #07F-0639 - OH - PLAN #1	300.0	300.0	60.0	58.3	34.929	CC, ES
HORSETAIL FED #07F-0639 - OH - PLAN #1	13,617.5	13,716.3	339.2	98.4	1.408	Level 3, SF

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Project:	Weld County, CO	TVD Reference:	21' KB @ 4920.0usft
Reference Site:	S7-T10N-R57W	MD Reference:	21' KB @ 4920.0usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.79 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design S7-T10N-R57W - HORSETAIL #07F-0607 - OH - PLAN #1													Offset Site Error:	0.0 usft
Survey Program: O-MWD+HDGM													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Total Uncertainty Axis	Separation Factor	Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)						
0.0	0.0	0.0	0.0	0.0	0.0	-88.04	1.0	-30.0	30.0					
100.0	100.0	100.0	100.0	0.2	0.2	-88.04	1.0	-30.0	30.0	29.7	0.28	105.876		
200.0	200.0	200.0	200.0	0.7	0.7	-88.04	1.0	-30.0	30.0	29.0	1.00	29.979		
300.0	300.0	300.0	300.0	1.2	1.2	-88.04	1.0	-30.0	30.0	28.3	1.72	17.462 CC		
400.0	400.0	399.7	399.7	1.7	1.7	-88.19	-0.6	-30.5	30.4	28.0	2.40	12.635 ES		
500.0	499.8	499.5	499.3	2.2	2.2	88.48	-5.6	-31.9	31.5	28.4	3.08	10.207		
600.0	599.5	599.2	598.6	2.6	2.6	88.92	-14.0	-34.4	33.4	29.6	3.80	8.785		
700.0	698.7	698.9	697.6	3.2	3.2	89.23	-25.6	-37.8	36.0	31.4	4.54	7.919		
800.0	797.9	798.8	796.5	3.7	3.7	87.88	-39.2	-41.8	39.1	33.7	5.31	7.352		
900.0	897.1	898.7	895.4	4.2	4.3	86.72	-52.7	-45.7	42.2	36.1	6.10	6.916		
1,000.0	996.2	998.7	994.4	4.8	4.8	85.71	-66.3	-49.7	45.3	38.4	6.89	6.573		
1,100.0	1,095.4	1,098.6	1,093.3	5.4	5.4	84.84	-79.9	-53.7	48.4	40.7	7.69	6.298		
1,200.0	1,194.6	1,198.6	1,192.3	5.9	6.0	84.07	-93.5	-57.7	51.6	43.1	8.49	6.073		
1,300.0	1,293.7	1,298.5	1,291.2	6.5	6.5	83.39	-107.1	-61.7	54.7	45.4	9.30	5.886		
1,400.0	1,392.9	1,398.5	1,390.1	7.0	7.1	82.78	-120.7	-65.7	57.9	47.8	10.10	5.728		
1,500.0	1,492.1	1,498.4	1,489.1	7.6	7.7	82.24	-134.3	-69.7	61.0	50.1	10.91	5.593		
1,600.0	1,591.2	1,598.4	1,588.0	8.2	8.3	81.75	-147.9	-73.7	64.2	52.5	11.72	5.477		
1,700.0	1,690.4	1,698.3	1,687.0	8.7	8.8	81.31	-161.5	-77.7	67.4	54.8	12.53	5.376		
1,800.0	1,789.6	1,798.3	1,785.9	9.3	9.4	80.91	-175.1	-81.6	70.6	57.2	13.35	5.287		
1,900.0	1,888.7	1,898.2	1,884.8	9.9	10.0	80.54	-188.7	-85.6	73.7	59.6	14.16	5.208		
2,000.0	1,987.9	1,998.2	1,983.8	10.4	10.6	80.20	-202.3	-89.6	76.9	61.9	14.97	5.138		
2,100.0	2,087.1	2,098.1	2,082.7	11.0	11.2	79.89	-215.9	-93.6	80.1	64.3	15.78	5.075		
2,200.0	2,186.2	2,198.1	2,181.7	11.6	11.7	79.60	-229.5	-97.6	83.3	66.7	16.60	5.018		
2,300.0	2,285.4	2,298.0	2,280.6	12.1	12.3	79.33	-243.1	-101.6	86.5	69.1	17.41	4.967		
2,400.0	2,384.6	2,398.0	2,379.5	12.7	12.9	79.09	-256.7	-105.6	89.7	71.4	18.23	4.920		
2,500.0	2,483.7	2,497.9	2,478.5	13.3	13.5	78.86	-270.3	-109.6	92.9	73.8	19.04	4.877		
2,600.0	2,582.9	2,597.9	2,577.4	13.9	14.1	78.64	-283.9	-113.6	96.1	76.2	19.85	4.838		
2,700.0	2,682.1	2,697.8	2,676.3	14.4	14.6	78.44	-297.4	-117.5	99.3	78.6	20.67	4.802		
2,800.0	2,781.2	2,797.8	2,775.3	15.0	15.2	78.25	-311.0	-121.5	102.4	81.0	21.48	4.769		
2,900.0	2,880.4	2,897.7	2,874.2	15.6	15.8	78.07	-324.6	-125.5	105.6	83.4	22.30	4.738		
3,000.0	2,979.6	2,997.7	2,973.2	16.1	16.4	77.91	-338.2	-129.5	108.8	85.7	23.11	4.710		
3,100.0	3,078.7	3,097.6	3,072.1	16.7	17.0	77.75	-351.8	-133.5	112.0	88.1	23.93	4.683		
3,200.0	3,177.9	3,197.6	3,171.0	17.3	17.6	77.60	-365.4	-137.5	115.2	90.5	24.74	4.658		
3,300.0	3,277.1	3,297.5	3,270.0	17.8	18.1	77.46	-379.0	-141.5	118.4	92.9	25.55	4.635		
3,400.0	3,376.2	3,397.5	3,368.9	18.4	18.7	77.33	-392.6	-145.5	121.6	95.3	26.37	4.613		
3,500.0	3,475.4	3,497.4	3,467.9	19.0	19.3	77.20	-406.2	-149.5	124.8	97.7	27.18	4.593		
3,600.0	3,574.6	3,597.4	3,566.8	19.6	19.9	77.08	-419.8	-153.4	128.1	100.1	28.00	4.573		
3,700.0	3,673.7	3,697.3	3,665.7	20.1	20.5	76.97	-433.4	-157.4	131.3	102.4	28.81	4.555		
3,800.0	3,772.9	3,797.2	3,764.7	20.7	21.1	76.86	-447.0	-161.4	134.5	104.8	29.63	4.538		
3,900.0	3,872.1	3,897.2	3,863.6	21.3	21.7	76.76	-460.6	-165.4	137.7	107.2	30.44	4.522		
4,000.0	3,971.2	3,997.1	3,962.6	21.8	22.2	76.66	-474.2	-169.4	140.9	109.6	31.26	4.507		
4,100.0	4,070.4	4,097.1	4,061.5	22.4	22.8	76.56	-487.8	-173.4	144.1	112.0	32.07	4.492		
4,200.0	4,169.6	4,197.0	4,160.4	23.0	23.4	76.47	-501.4	-177.4	147.3	114.4	32.89	4.478		
4,300.0	4,268.7	4,297.0	4,259.4	23.6	24.0	76.39	-515.0	-181.4	150.5	116.8	33.70	4.465		
4,400.0	4,367.9	4,396.9	4,358.3	24.1	24.6	76.30	-528.5	-185.4	153.7	119.2	34.52	4.452		
4,500.0	4,467.1	4,496.9	4,457.3	24.7	25.2	76.22	-542.1	-189.3	156.9	121.6	35.33	4.441		
4,600.0	4,566.2	4,596.8	4,556.2	25.3	25.7	76.15	-555.7	-193.3	160.1	124.0	36.15	4.429		
4,700.0	4,665.4	4,697.8	4,656.1	25.8	26.3	76.15	-569.2	-197.3	163.2	126.2	36.97	4.414		
4,800.0	4,764.6	4,800.3	4,758.0	26.4	26.9	77.08	-580.1	-200.5	165.0	127.2	37.82	4.364		
4,900.0	4,863.7	4,902.5	4,860.0	27.0	27.4	79.13	-587.5	-202.6	165.5	126.8	38.67	4.279		
5,000.0	4,963.1	5,004.5	4,961.8	27.5	27.9	81.69	-591.3	-203.8	165.1	125.6	39.49	4.181		
5,100.0	5,062.8	5,105.5	5,062.8	28.1	28.3	84.10	-592.0	-204.0	164.4	124.2	40.23	4.087		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Project:	Weld County, CO	TVD Reference:	21' KB @ 4920.0usft
Reference Site:	S7-T10N-R57W	MD Reference:	21' KB @ 4920.0usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.79 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design S7-T10N-R57W - HORSETAIL #07F-0607 - OH - PLAN #1												Offset Site Error:	0.0 usft
Survey Program: O-MWD+HDGM												Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,162.7	5,205.3	5,162.6	28.6	28.7	86.32	-589.7	-204.0	164.0	123.1	40.91	4.010	
5,208.5	5,171.3	5,213.8	5,171.1	28.6	28.7	86.66	-588.9	-204.0	164.0	123.1	40.96	4.004	
5,300.0	5,262.7	5,302.5	5,258.5	29.0	29.0	-84.09	-574.0	-204.0	165.0	123.4	41.52	3.973	
5,400.0	5,362.6	5,394.2	5,345.7	29.4	29.3	-75.07	-546.1	-204.1	170.2	128.4	41.75	4.076	
5,500.0	5,460.9	5,482.3	5,424.9	29.7	29.5	-66.91	-507.7	-204.3	179.2	137.9	41.27	4.342	
5,600.0	5,555.2	5,567.8	5,496.0	29.9	29.6	-60.05	-460.4	-204.4	190.6	150.5	40.12	4.751	
5,700.0	5,643.1	5,650.0	5,557.8	30.2	29.7	-54.54	-406.2	-204.6	203.0	164.6	38.39	5.287	
5,800.0	5,722.6	5,732.5	5,612.3	30.4	29.9	-50.10	-344.4	-204.8	215.2	178.7	36.51	5.894	
5,900.0	5,791.7	5,812.4	5,657.1	30.6	30.1	-46.72	-278.2	-205.0	226.4	191.9	34.54	6.554	
6,000.0	5,848.5	5,891.3	5,692.8	30.8	30.3	-44.20	-207.9	-205.3	235.9	203.1	32.80	7.193	
6,100.0	5,891.9	5,969.3	5,719.2	31.1	30.5	-42.43	-134.6	-205.5	243.4	211.8	31.53	7.718	
6,200.0	5,920.6	6,050.0	5,737.0	31.5	30.8	-41.29	-56.0	-205.8	248.4	217.4	31.00	8.011	
6,300.0	5,934.0	6,123.9	5,744.4	32.0	31.2	-40.81	17.5	-206.0	250.7	219.5	31.16	8.046	
6,400.0	5,935.0	6,215.8	5,745.0	32.6	31.8	-40.77	109.4	-206.3	250.9	218.9	31.99	7.842	
6,500.0	5,935.0	6,315.8	5,745.0	33.4	32.5	-40.76	209.4	-206.7	250.9	217.9	32.98	7.607	
6,600.0	5,935.0	6,415.8	5,745.0	34.2	33.3	-40.76	309.4	-207.0	250.8	216.7	34.10	7.356	
6,700.0	5,935.0	6,515.8	5,745.0	35.2	34.3	-40.76	409.4	-207.3	250.8	215.5	35.35	7.095	
6,800.0	5,935.0	6,615.8	5,745.0	36.3	35.4	-40.75	509.4	-207.7	250.8	214.1	36.72	6.831	
6,900.0	5,935.0	6,715.8	5,745.0	37.5	36.6	-40.75	609.4	-208.0	250.8	212.6	38.19	6.568	
7,000.0	5,935.0	6,815.8	5,745.0	38.8	37.9	-40.75	709.4	-208.4	250.8	211.0	39.74	6.310	
7,100.0	5,935.0	6,915.8	5,745.0	40.2	39.3	-40.74	809.4	-208.7	250.8	209.4	41.38	6.060	
7,200.0	5,935.0	7,015.8	5,745.0	41.6	40.8	-40.74	909.4	-209.0	250.8	207.7	43.09	5.820	
7,300.0	5,935.0	7,115.8	5,745.0	43.1	42.3	-40.74	1,009.4	-209.4	250.7	205.9	44.86	5.589	
7,400.0	5,935.0	7,215.8	5,745.0	44.7	43.9	-40.73	1,109.4	-209.7	250.7	204.0	46.69	5.370	
7,500.0	5,935.0	7,315.8	5,745.0	46.3	45.5	-40.73	1,209.4	-210.0	250.7	202.2	48.56	5.163	
7,600.0	5,935.0	7,415.8	5,745.0	48.0	47.2	-40.72	1,309.4	-210.4	250.7	200.2	50.48	4.966	
7,700.0	5,935.0	7,515.8	5,745.0	49.7	48.9	-40.72	1,409.4	-210.7	250.7	198.3	52.44	4.780	
7,800.0	5,935.0	7,615.8	5,745.0	51.4	50.7	-40.72	1,509.4	-211.0	250.7	196.2	54.44	4.605	
7,900.0	5,935.0	7,715.8	5,745.0	53.2	52.5	-40.71	1,609.4	-211.4	250.7	194.2	56.46	4.440	
8,000.0	5,935.0	7,815.8	5,745.0	55.1	54.3	-40.71	1,709.4	-211.7	250.7	192.1	58.51	4.284	
8,100.0	5,935.0	7,915.8	5,745.0	56.9	56.2	-40.71	1,809.4	-212.1	250.6	190.0	60.59	4.137	
8,200.0	5,935.0	8,015.8	5,745.0	58.8	58.1	-40.70	1,909.4	-212.4	250.6	187.9	62.69	3.998	
8,300.0	5,935.0	8,115.8	5,745.0	60.7	60.0	-40.70	2,009.4	-212.7	250.6	185.8	64.81	3.867	
8,400.0	5,935.0	8,215.8	5,745.0	62.6	61.9	-40.69	2,109.4	-213.1	250.6	183.6	66.95	3.743	
8,500.0	5,935.0	8,315.8	5,745.0	64.5	63.9	-40.69	2,209.4	-213.4	250.6	181.5	69.10	3.626	
8,600.0	5,935.0	8,415.8	5,745.0	66.5	65.8	-40.69	2,309.4	-213.7	250.6	179.3	71.27	3.516	
8,700.0	5,935.0	8,515.8	5,745.0	68.5	67.8	-40.68	2,409.4	-214.1	250.6	177.1	73.45	3.411	
8,800.0	5,935.0	8,615.8	5,745.0	70.5	69.8	-40.68	2,509.4	-214.4	250.5	174.9	75.65	3.312	
8,900.0	5,935.0	8,715.8	5,745.0	72.5	71.8	-40.68	2,609.4	-214.8	250.5	172.7	77.85	3.218	
9,000.0	5,935.0	8,815.8	5,745.0	74.5	73.9	-40.67	2,709.4	-215.1	250.5	170.4	80.07	3.129	
9,100.0	5,935.0	8,915.8	5,745.0	76.5	75.9	-40.67	2,809.4	-215.4	250.5	168.2	82.30	3.044	
9,200.0	5,935.0	9,015.8	5,745.0	78.5	77.9	-40.67	2,909.4	-215.8	250.5	165.9	84.53	2.963	
9,300.0	5,935.0	9,115.8	5,745.0	80.6	80.0	-40.66	3,009.4	-216.1	250.5	163.7	86.78	2.886	
9,400.0	5,935.0	9,215.8	5,745.0	82.7	82.1	-40.66	3,109.4	-216.4	250.5	161.4	89.03	2.813	
9,500.0	5,935.0	9,315.8	5,745.0	84.7	84.1	-40.65	3,209.4	-216.8	250.4	159.2	91.29	2.743	
9,600.0	5,935.0	9,415.8	5,745.0	86.8	86.2	-40.65	3,309.4	-217.1	250.4	156.9	93.55	2.677	
9,700.0	5,935.0	9,515.8	5,745.0	88.9	88.3	-40.65	3,409.4	-217.5	250.4	154.6	95.82	2.613	
9,800.0	5,935.0	9,615.8	5,745.0	91.0	90.4	-40.64	3,509.4	-217.8	250.4	152.3	98.10	2.553	
9,900.0	5,935.0	9,715.8	5,745.0	93.1	92.5	-40.64	3,609.4	-218.1	250.4	150.0	100.38	2.494	
10,000.0	5,935.0	9,815.8	5,745.0	95.2	94.6	-40.64	3,709.4	-218.5	250.4	147.7	102.67	2.439	
10,100.0	5,935.0	9,915.8	5,745.0	97.3	96.7	-40.63	3,809.4	-218.8	250.4	145.4	104.96	2.385	
10,200.0	5,935.0	10,015.8	5,745.0	99.4	98.8	-40.63	3,909.4	-219.1	250.3	143.1	107.25	2.334	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Project:	Weld County, CO	TVD Reference:	21' KB @ 4920.0usft
Reference Site:	S7-T10N-R57W	MD Reference:	21' KB @ 4920.0usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.79 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design S7-T10N-R57W - HORSETAIL #07F-0607 - OH - PLAN #1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD+HDGM												Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Total Uncertainty Axis	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Between Centres (usft)	Between Ellipses (usft)					
10,300.0	5,935.0	10,115.8	5,745.0	101.5	101.0	-40.62	4,009.4	-219.5	250.3	140.8	109.55	2.285	
10,400.0	5,935.0	10,215.8	5,745.0	103.6	103.1	-40.62	4,109.4	-219.8	250.3	138.5	111.85	2.238	
10,500.0	5,935.0	10,315.8	5,745.0	105.7	105.2	-40.62	4,209.4	-220.1	250.3	136.1	114.16	2.193	
10,600.0	5,935.0	10,415.8	5,745.0	107.9	107.3	-40.61	4,309.4	-220.5	250.3	133.8	116.46	2.149	
10,700.0	5,935.0	10,515.8	5,745.0	110.0	109.5	-40.61	4,409.4	-220.8	250.3	131.5	118.78	2.107	
10,800.0	5,935.0	10,615.8	5,745.0	112.1	111.6	-40.61	4,509.4	-221.2	250.3	129.2	121.09	2.067	
10,900.0	5,935.0	10,715.8	5,745.0	114.3	113.8	-40.60	4,609.4	-221.5	250.2	126.8	123.41	2.028	
11,000.0	5,935.0	10,815.8	5,745.0	116.4	115.9	-40.60	4,709.4	-221.8	250.2	124.5	125.73	1.990	
11,100.0	5,935.0	10,915.8	5,745.0	118.6	118.1	-40.59	4,809.4	-222.2	250.2	122.2	128.05	1.954	
11,200.0	5,935.0	11,015.8	5,745.0	120.7	120.2	-40.59	4,909.4	-222.5	250.2	119.8	130.37	1.919	
11,300.0	5,935.0	11,115.8	5,745.0	122.9	122.4	-40.59	5,009.4	-222.8	250.2	117.5	132.70	1.885	
11,400.0	5,935.0	11,215.8	5,745.0	125.0	124.5	-40.58	5,109.4	-223.2	250.2	115.2	135.02	1.853	
11,500.0	5,935.0	11,315.8	5,745.0	127.2	126.7	-40.58	5,209.4	-223.5	250.2	112.8	137.35	1.821	
11,600.0	5,935.0	11,415.8	5,745.0	129.3	128.9	-40.58	5,309.4	-223.9	250.2	110.5	139.68	1.791	
11,700.0	5,935.0	11,515.8	5,745.0	131.5	131.0	-40.57	5,409.4	-224.2	250.1	108.1	142.02	1.761	
11,800.0	5,935.0	11,615.8	5,745.0	133.7	133.2	-40.57	5,509.4	-224.5	250.1	105.8	144.35	1.733	
11,900.0	5,935.0	11,715.8	5,745.0	135.8	135.4	-40.57	5,609.4	-224.9	250.1	103.4	146.69	1.705	
12,000.0	5,935.0	11,815.8	5,745.0	138.0	137.5	-40.56	5,709.4	-225.2	250.1	101.1	149.02	1.678	
12,100.0	5,935.0	11,915.8	5,745.0	140.2	139.7	-40.56	5,809.4	-225.5	250.1	98.7	151.36	1.652	
12,200.0	5,935.0	12,015.8	5,745.0	142.3	141.9	-40.55	5,909.4	-225.9	250.1	96.4	153.70	1.627	
12,300.0	5,935.0	12,115.8	5,745.0	144.5	144.0	-40.55	6,009.4	-226.2	250.1	94.0	156.04	1.602	
12,400.0	5,935.0	12,215.8	5,745.0	146.7	146.2	-40.55	6,109.4	-226.6	250.0	91.7	158.39	1.579	
12,500.0	5,935.0	12,315.8	5,745.0	148.9	148.4	-40.54	6,209.4	-226.9	250.0	89.3	160.73	1.556	
12,600.0	5,935.0	12,415.8	5,745.0	151.0	150.6	-40.54	6,309.4	-227.2	250.0	86.9	163.07	1.533	
12,700.0	5,935.0	12,515.8	5,745.0	153.2	152.8	-40.54	6,409.4	-227.6	250.0	84.6	165.42	1.511	
12,800.0	5,935.0	12,615.8	5,745.0	155.4	154.9	-40.53	6,509.4	-227.9	250.0	82.2	167.76	1.490	Level 3
12,880.1	5,935.0	12,695.9	5,745.0	157.1	156.7	-40.53	6,589.5	-228.2	250.0	80.3	169.64	1.474	Level 3, SF
12,900.0	5,935.0	12,696.0	5,745.0	157.6	156.7	-40.53	6,589.6	-228.2	250.7	81.1	169.68	1.478	Level 3
13,000.0	5,935.0	12,696.0	5,745.0	159.7	156.7	-40.53	6,589.6	-228.2	277.2	120.1	157.06	1.765	
13,100.0	5,935.0	12,696.0	5,745.0	161.9	156.7	-40.53	6,589.6	-228.2	332.8	197.7	135.07	2.464	
13,200.0	5,935.0	12,696.0	5,745.0	164.1	156.7	-40.53	6,589.6	-228.2	405.8	290.6	115.25	3.521	
13,300.0	5,935.0	12,696.0	5,745.0	166.3	156.7	-40.53	6,589.6	-228.2	488.5	388.3	100.22	4.874	
13,400.0	5,935.0	12,696.0	5,745.0	168.5	156.7	-40.53	6,589.6	-228.2	576.7	487.5	89.23	6.463	
13,500.0	5,935.0	12,696.0	5,745.0	170.7	156.7	-40.53	6,589.6	-228.2	668.2	587.1	81.17	8.233	
13,600.0	5,935.0	12,696.0	5,745.0	172.9	156.7	-40.53	6,589.6	-228.2	761.9	686.7	75.15	10.137	
13,617.5	5,935.0	12,696.0	5,745.0	173.3	156.7	-40.53	6,589.6	-228.2	778.5	704.2	74.26	10.482	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Project:	Weld County, CO	TVD Reference:	21' KB @ 4920.0usft
Reference Site:	S7-T10N-R57W	MD Reference:	21' KB @ 4920.0usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.79 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design S7-T10N-R57W - HORSETAIL #07F-0608 - OH - SURVEYS													Offset Site Error: 0.0 usft	
Survey Program: 149-MWD+HDGM													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	89.97	0.0	30.0	30.0					
100.0	100.0	99.8	99.8	0.2	0.2	89.77	0.1	30.3	30.3	30.0	0.30	100.959		
200.0	200.0	199.6	199.6	0.7	0.6	89.21	0.4	31.2	31.2	30.3	0.92	34.037		
300.0	300.0	299.3	299.3	1.2	1.1	89.51	0.3	32.9	32.9	31.3	1.64	20.109		
400.0	400.0	398.6	398.4	1.7	1.6	-90.45	-3.8	35.9	36.1	33.7	2.36	15.304		
500.0	499.8	498.2	497.5	2.2	2.1	-84.48	-13.5	40.1	41.2	38.1	3.07	13.401		
600.0	599.5	598.1	596.8	2.6	2.6	-83.01	-24.1	44.1	46.0	42.2	3.79	12.127		
700.0	698.7	698.0	696.0	3.2	3.2	-85.76	-34.5	48.1	50.5	45.9	4.53	11.135		
800.0	797.9	798.7	796.0	3.7	3.7	-87.86	-46.0	51.3	54.4	49.1	5.29	10.269		
900.0	897.1	899.0	895.5	4.2	4.3	-88.55	-58.5	53.1	57.0	50.9	6.08	9.382		
1,000.0	996.2	998.9	994.7	4.8	4.8	-89.17	-70.9	54.8	59.5	52.6	6.87	8.658		
1,100.0	1,095.4	1,098.9	1,093.8	5.4	5.4	-89.93	-83.1	56.5	62.0	54.3	7.66	8.085		
1,200.0	1,194.6	1,199.1	1,193.3	5.9	5.9	-90.60	-95.4	57.9	64.2	55.8	8.47	7.589		
1,300.0	1,293.7	1,299.1	1,292.5	6.5	6.5	-91.03	-107.9	59.2	66.4	57.1	9.27	7.161		
1,400.0	1,392.9	1,399.2	1,391.7	7.0	7.1	-91.23	-120.6	60.5	68.5	58.4	10.08	6.797		
1,500.0	1,492.1	1,499.4	1,491.0	7.6	7.6	-90.76	-134.2	61.4	70.3	59.4	10.89	6.457		
1,600.0	1,591.2	1,599.5	1,590.3	8.2	8.2	-90.24	-147.8	62.1	71.9	60.2	11.70	6.144		
1,700.0	1,690.4	1,699.9	1,689.6	8.7	8.8	-89.31	-161.9	62.3	73.1	60.6	12.52	5.837		
1,800.0	1,789.6	1,800.3	1,789.1	9.3	9.3	-89.15	-175.1	62.1	73.8	60.5	13.33	5.535		
1,900.0	1,888.7	1,900.1	1,888.1	9.9	9.9	-88.92	-188.3	61.7	74.3	60.2	14.15	5.252		
2,000.0	1,987.9	1,999.4	1,986.3	10.4	10.5	-87.89	-202.4	61.5	75.1	60.2	14.96	5.021		
2,100.0	2,087.1	2,097.5	2,083.1	11.0	11.1	-85.47	-218.6	63.4	78.3	62.6	15.77	4.966		
2,200.0	2,186.2	2,197.4	2,181.6	11.6	11.7	-83.42	-234.9	66.2	82.5	65.9	16.59	4.971		
2,300.0	2,285.4	2,297.4	2,280.3	12.1	12.3	-82.22	-250.2	68.9	86.5	69.1	17.41	4.970		
2,400.0	2,384.6	2,396.9	2,378.8	12.7	12.9	-81.45	-265.1	72.0	90.8	72.6	18.22	4.985		
2,500.0	2,483.7	2,496.8	2,477.6	13.3	13.4	-81.35	-279.0	75.6	95.4	76.4	19.04	5.013		
2,600.0	2,582.9	2,596.7	2,576.6	13.9	14.0	-81.79	-292.1	79.3	99.9	80.1	19.86	5.033		
2,700.0	2,682.1	2,696.2	2,675.1	14.4	14.6	-82.25	-305.0	83.1	104.6	83.9	20.67	5.060		
2,800.0	2,781.2	2,796.3	2,774.0	15.0	15.2	-81.58	-320.1	86.8	109.5	88.0	21.49	5.097		
2,900.0	2,880.4	2,896.5	2,873.1	15.6	15.8	-81.19	-334.7	90.3	114.1	91.8	22.31	5.116		
3,000.0	2,979.6	2,996.9	2,972.5	16.1	16.4	-81.26	-348.4	93.6	118.4	95.3	23.13	5.118		
3,100.0	3,078.7	3,094.9	3,069.4	16.7	17.0	-80.79	-362.9	97.0	123.1	99.2	23.93	5.143		
3,200.0	3,177.9	3,196.0	3,169.0	17.3	17.6	-79.64	-379.6	100.7	128.3	103.5	24.76	5.182		
3,300.0	3,277.1	3,296.8	3,268.7	17.8	18.2	-79.37	-394.2	103.9	132.6	107.0	25.58	5.184		
3,400.0	3,376.2	3,397.3	3,368.4	18.4	18.7	-79.84	-406.9	106.8	136.3	109.8	26.41	5.160		
3,500.0	3,475.4	3,496.0	3,465.9	19.0	19.3	-79.46	-421.5	109.6	140.4	113.1	27.21	5.158		
3,600.0	3,574.6	3,596.5	3,565.1	19.6	19.9	-78.68	-437.3	112.4	144.6	116.5	28.03	5.158		
3,700.0	3,673.7	3,696.9	3,664.3	20.1	20.5	-78.15	-452.5	114.9	148.5	119.6	28.85	5.148		
3,800.0	3,772.9	3,797.4	3,763.7	20.7	21.1	-77.70	-467.5	117.1	151.9	122.3	29.66	5.122		
3,900.0	3,872.1	3,897.6	3,862.9	21.3	21.7	-77.54	-481.7	119.3	155.2	124.8	30.48	5.094		
4,000.0	3,971.2	3,998.9	3,963.4	21.8	22.3	-78.20	-493.8	121.7	158.1	126.8	31.31	5.050		
4,100.0	4,070.4	4,097.9	4,061.8	22.4	22.8	-79.55	-503.5	123.9	160.4	128.2	32.14	4.990		
4,200.0	4,169.6	4,197.2	4,160.4	23.0	23.4	-80.30	-515.1	127.1	164.0	131.0	32.96	4.976		
4,300.0	4,268.7	4,297.9	4,260.3	23.6	24.0	-80.76	-527.5	129.5	167.1	133.3	33.79	4.945		
4,400.0	4,367.9	4,398.4	4,359.7	24.1	24.5	-80.34	-542.2	131.2	170.0	135.4	34.60	4.912		
4,500.0	4,467.1	4,499.4	4,459.8	24.7	25.1	-80.32	-555.8	132.6	172.3	136.9	35.43	4.865		
4,600.0	4,566.2	4,593.4	4,553.1	25.3	25.7	-80.87	-567.0	135.3	175.7	139.5	36.20	4.854		
4,700.0	4,665.4	4,693.0	4,652.0	25.8	26.2	-82.28	-576.8	141.1	181.7	144.7	37.02	4.908		
4,800.0	4,764.6	4,793.7	4,752.2	26.4	26.7	-84.23	-584.6	146.8	187.2	149.3	37.86	4.945		
4,900.0	4,863.7	4,899.1	4,857.4	27.0	27.3	-86.90	-590.0	151.3	191.1	152.4	38.72	4.937		
5,000.0	4,963.1	5,001.8	4,960.1	27.5	27.7	-90.22	-590.6	153.7	193.3	153.8	39.49	4.894		
5,100.0	5,062.8	5,104.6	5,062.8	28.1	28.1	-93.57	-587.1	154.5	194.1	154.0	40.18	4.832		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Project:	Weld County, CO	TVD Reference:	21' KB @ 4920.0usft
Reference Site:	S7-T10N-R57W	MD Reference:	21' KB @ 4920.0usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.79 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design S7-T10N-R57W - HORSETAIL #07F-0608 - OH - SURVEYS													Offset Site Error: 0.0 usft	
Survey Program: 149-MWD+HDGM													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
5,200.0	5,162.7	5,203.9	5,161.4	28.6	28.4	-97.91	-576.5	154.2	194.7	153.9	40.79	4.772		
5,300.0	5,262.7	5,300.1	5,255.3	29.0	28.7	79.51	-555.2	153.5	196.9	155.7	41.21	4.779		
5,400.0	5,362.6	5,394.0	5,344.5	29.4	29.0	71.96	-526.1	151.5	202.0	160.7	41.32	4.889		
5,500.0	5,460.9	5,483.7	5,427.3	29.7	29.2	66.29	-491.7	149.9	208.1	167.1	41.10	5.065		
5,600.0	5,555.2	5,571.1	5,504.3	29.9	29.4	62.38	-450.5	148.8	213.9	173.3	40.61	5.268		
5,700.0	5,643.1	5,648.0	5,568.1	30.2	29.6	60.14	-407.6	149.2	219.8	180.2	39.55	5.558		
5,800.0	5,722.6	5,742.0	5,639.5	30.4	29.8	58.87	-346.6	151.8	225.2	185.8	39.41	5.714		
5,900.0	5,791.7	5,821.3	5,692.4	30.6	30.1	58.48	-287.7	154.8	230.0	191.3	38.71	5.943		
6,000.0	5,848.5	5,906.2	5,739.9	30.8	30.3	58.37	-217.4	157.3	233.4	194.9	38.49	6.065		
6,100.0	5,891.9	5,996.1	5,778.3	31.1	30.6	58.22	-136.3	157.1	233.8	195.2	38.58	6.060		
6,200.0	5,920.6	6,078.3	5,803.5	31.5	31.0	58.62	-58.2	156.1	232.0	193.2	38.86	5.970		
6,300.0	5,934.0	6,164.0	5,818.9	32.0	31.5	59.62	26.1	155.4	229.2	189.5	39.73	5.769		
6,400.0	5,935.0	6,256.9	5,826.8	32.6	32.1	61.22	118.7	154.5	225.0	183.8	41.14	5.468		
6,500.0	5,935.0	6,351.8	5,828.7	33.4	32.8	61.43	213.5	152.3	222.2	180.0	42.26	5.259		
6,536.8	5,935.0	6,385.7	5,828.4	33.7	33.1	61.30	247.4	151.7	222.0	179.4	42.63	5.207		
6,600.0	5,935.0	6,447.5	5,826.7	34.2	33.7	60.85	309.2	150.9	222.3	179.1	43.24	5.142		
6,700.0	5,935.0	6,547.2	5,822.9	35.2	34.7	59.84	408.8	149.3	223.1	178.9	44.21	5.046		
6,800.0	5,935.0	6,645.1	5,820.3	36.3	35.7	59.23	506.7	148.7	224.2	178.7	45.45	4.933		
6,900.0	5,935.0	6,747.0	5,819.2	37.5	37.0	59.17	608.6	149.7	226.0	179.0	47.02	4.806		
7,000.0	5,935.0	6,846.4	5,819.5	38.8	38.2	59.35	708.0	150.4	226.7	177.9	48.81	4.644		
7,100.0	5,935.0	6,944.5	5,818.4	40.2	39.6	59.30	806.0	151.3	228.3	177.7	50.59	4.513		
7,200.0	5,935.0	7,042.3	5,817.4	41.6	41.0	59.37	903.8	153.2	230.8	178.3	52.52	4.395		
7,300.0	5,935.0	7,145.8	5,816.1	43.1	42.5	59.36	1,007.3	154.9	233.2	178.7	54.51	4.278		
7,400.0	5,935.0	7,245.0	5,816.0	44.7	44.1	59.57	1,106.5	156.5	234.9	178.3	56.66	4.146		
7,500.0	5,935.0	7,352.3	5,817.3	46.3	45.8	59.96	1,213.8	157.0	235.1	176.1	59.00	3.985		
7,600.0	5,935.0	7,452.3	5,819.6	48.0	47.5	60.42	1,313.7	156.5	233.8	172.4	61.43	3.806		
7,700.0	5,935.0	7,551.9	5,820.7	49.7	49.2	60.56	1,413.3	155.4	232.6	168.8	63.77	3.647		
7,800.0	5,935.0	7,650.2	5,820.1	51.4	51.0	60.26	1,511.6	153.6	231.7	165.7	65.93	3.514		
7,828.2	5,935.0	7,677.5	5,820.0	51.9	51.5	60.24	1,538.9	153.4	231.6	165.0	66.58	3.479		
7,900.0	5,935.0	7,745.0	5,820.6	53.2	52.7	60.46	1,606.4	154.1	232.1	163.8	68.36	3.396		
8,000.0	5,935.0	7,843.6	5,820.7	55.1	54.4	60.91	1,704.9	157.3	235.2	164.3	70.95	3.315		
8,100.0	5,935.0	7,947.2	5,822.7	56.9	56.3	61.62	1,808.4	159.2	236.2	162.5	73.77	3.202		
8,200.0	5,935.0	8,052.5	5,824.0	58.8	58.3	62.04	1,913.8	160.1	236.7	160.2	76.48	3.095		
8,300.0	5,935.0	8,153.2	5,826.0	60.7	60.2	62.34	2,014.4	158.6	234.8	155.6	79.16	2.966		
8,400.0	5,935.0	8,249.9	5,826.7	62.6	62.1	62.40	2,111.1	157.6	233.8	152.1	81.74	2.861		
8,500.0	5,935.0	8,355.0	5,828.3	64.5	64.2	62.72	2,216.2	156.7	232.7	148.3	84.49	2.755		
8,600.0	5,935.0	8,451.9	5,830.5	66.5	66.1	63.10	2,313.0	155.7	231.1	143.8	87.31	2.646		
8,700.0	5,935.0	8,550.9	5,830.0	68.5	68.0	62.91	2,412.0	154.4	230.5	140.7	89.83	2.566		
8,800.0	5,935.0	8,654.2	5,829.8	70.5	70.1	62.62	2,515.4	151.9	228.7	136.4	92.31	2.478		
8,900.0	5,935.0	8,751.5	5,829.7	72.5	72.1	62.42	2,612.6	150.1	227.5	132.6	94.85	2.398		
9,000.0	5,935.0	8,851.5	5,832.5	74.5	74.1	63.10	2,712.5	150.2	226.5	128.6	97.94	2.313		
9,100.0	5,935.0	8,956.5	5,836.3	76.5	76.3	63.99	2,817.5	150.2	225.3	124.1	101.19	2.227		
9,200.0	5,935.0	9,058.9	5,839.5	78.5	78.4	64.38	2,919.7	146.5	221.0	116.9	104.15	2.122		
9,300.0	5,935.0	9,157.6	5,840.0	80.6	80.4	64.07	3,018.4	142.3	217.3	110.6	106.71	2.036		
9,400.0	5,935.0	9,258.8	5,839.8	82.7	82.6	63.48	3,119.5	137.6	213.5	104.4	109.07	1.957		
9,500.0	5,935.0	9,359.9	5,838.1	84.7	84.7	62.36	3,220.4	131.4	209.1	98.0	111.04	1.883		
9,600.0	5,935.0	9,453.0	5,836.3	86.8	86.7	61.46	3,313.4	127.5	206.7	93.5	113.17	1.826		
9,606.7	5,935.0	9,456.9	5,836.2	86.9	86.8	61.44	3,317.3	127.5	206.6	93.3	113.33	1.823		
9,700.0	5,935.0	9,549.0	5,833.7	88.9	88.7	60.70	3,409.3	126.1	206.9	91.6	115.29	1.795		
9,800.0	5,935.0	9,651.0	5,832.5	91.0	90.8	60.33	3,511.3	125.1	207.0	89.2	117.73	1.758		
9,828.7	5,935.0	9,679.0	5,832.6	91.6	91.4	60.35	3,539.3	125.0	206.9	88.4	118.52	1.746		
9,900.0	5,935.0	9,748.9	5,832.3	93.1	92.9	60.27	3,609.2	124.9	207.2	86.8	120.39	1.721		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Project:	Weld County, CO	TVD Reference:	21' KB @ 4920.0usft
Reference Site:	S7-T10N-R57W	MD Reference:	21' KB @ 4920.0usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.79 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design S7-T10N-R57W - HORSETAIL #07F-0608 - OH - SURVEYS												Offset Site Error: 0.0 usft	
Survey Program: 149-MWD+HDGM												Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance					Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis		Separation Factor
10,000.0	5,935.0	9,849.3	5,832.9	95.2	95.0	60.54	3,709.6	125.4	207.7	84.3	123.35	1.684	
10,100.0	5,935.0	9,949.3	5,833.0	97.3	97.1	60.71	3,809.6	126.1	208.5	82.3	126.24	1.652	
10,200.0	5,935.0	10,053.3	5,834.7	99.4	99.3	61.13	3,913.5	125.7	207.7	78.3	129.37	1.605	
10,300.0	5,935.0	10,153.9	5,836.1	101.5	101.4	61.34	4,014.1	124.5	206.3	73.9	132.32	1.559	
10,400.0	5,935.0	10,253.6	5,835.8	103.6	103.6	60.93	4,113.8	121.7	204.3	69.5	134.74	1.516	
10,500.0	5,935.0	10,350.7	5,835.9	105.7	105.6	60.86	4,210.9	120.5	203.4	66.0	137.45	1.480	Level 3
10,514.4	5,935.0	10,364.8	5,835.8	106.0	105.9	60.83	4,225.0	120.4	203.4	65.6	137.81	1.476	Level 3
10,600.0	5,935.0	10,448.0	5,834.7	107.9	107.7	60.55	4,308.2	120.0	203.9	64.0	139.90	1.458	Level 3
10,700.0	5,935.0	10,545.2	5,833.9	110.0	109.8	60.55	4,405.3	121.2	205.8	63.2	142.61	1.443	Level 3
10,800.0	5,935.0	10,645.7	5,831.7	112.1	111.9	60.29	4,505.8	122.8	208.5	63.4	145.13	1.437	Level 3
10,900.0	5,935.0	10,753.4	5,831.2	114.3	114.2	60.27	4,613.5	123.1	209.4	61.4	147.96	1.415	Level 3
11,000.0	5,935.0	10,854.8	5,831.7	116.4	116.4	60.08	4,714.9	120.5	207.1	56.6	150.54	1.376	Level 3
11,100.0	5,935.0	10,954.3	5,831.4	118.6	118.6	59.68	4,814.3	117.8	205.2	52.3	152.91	1.342	Level 3
11,200.0	5,935.0	11,056.5	5,833.1	120.7	120.8	59.84	4,916.5	115.6	202.9	47.1	155.85	1.302	Level 3
11,300.0	5,935.0	11,153.3	5,834.4	122.9	122.9	59.90	5,013.3	113.5	200.7	42.0	158.74	1.264	Level 3
11,400.0	5,935.0	11,256.8	5,836.0	125.0	125.1	60.05	5,116.7	111.4	198.4	36.7	161.67	1.227	Level 2
11,500.0	5,935.0	11,353.9	5,837.8	127.2	127.3	60.28	5,213.8	109.4	196.0	31.3	164.77	1.190	Level 2
11,600.0	5,935.0	11,451.9	5,837.2	129.3	129.4	59.92	5,311.7	107.6	195.0	27.9	167.16	1.167	Level 2
11,700.0	5,935.0	11,552.8	5,836.4	131.5	131.6	59.43	5,412.7	105.4	193.9	24.5	169.38	1.144	Level 2
11,742.1	5,935.0	11,592.8	5,836.3	132.4	132.5	59.37	5,452.6	104.9	193.6	23.1	170.47	1.136	Level 2
11,800.0	5,935.0	11,648.5	5,836.3	133.7	133.7	59.43	5,508.4	105.2	194.0	21.9	172.14	1.127	Level 2
11,900.0	5,935.0	11,748.0	5,834.9	135.8	135.8	59.20	5,607.8	105.6	195.4	20.8	174.63	1.119	Level 2
12,000.0	5,935.0	11,848.4	5,834.7	138.0	138.0	59.29	5,708.2	106.4	196.5	19.0	177.53	1.107	Level 2
12,100.0	5,935.0	11,947.8	5,834.0	140.2	140.1	59.31	5,807.6	107.3	198.0	17.7	180.33	1.098	Level 2
12,200.0	5,935.0	12,048.1	5,835.3	142.3	142.3	59.98	5,907.8	109.2	199.3	15.3	183.99	1.083	Level 2
12,300.0	5,935.0	12,146.7	5,835.2	144.5	144.4	60.21	6,006.5	110.7	200.9	13.8	187.06	1.074	Level 2
12,400.0	5,935.0	12,249.3	5,834.0	146.7	146.6	60.11	6,109.0	111.8	202.8	13.0	189.78	1.068	Level 2
12,500.0	5,935.0	12,349.1	5,835.8	148.9	148.8	60.76	6,208.8	112.8	203.0	9.6	193.45	1.050	Level 2
12,600.0	5,935.0	12,447.5	5,836.6	151.0	150.9	61.21	6,307.2	114.4	204.4	7.6	196.84	1.039	Level 2
12,700.0	5,935.0	12,553.4	5,836.6	153.2	153.2	61.31	6,413.1	114.8	205.1	5.2	199.86	1.026	Level 2
12,800.0	5,935.0	12,654.6	5,838.3	155.4	155.4	61.61	6,514.3	113.4	203.3	0.2	203.10	1.001	Level 2
12,851.1	5,935.0	12,702.0	5,838.8	156.5	156.5	61.61	6,561.7	112.5	202.4	-2.1	204.57	0.990	Level 1, ES, SF
12,900.0	5,935.0	12,702.0	5,838.8	157.6	156.5	61.61	6,561.7	112.5	208.2	8.1	200.13	1.041	Level 2
13,000.0	5,935.0	12,702.0	5,838.8	159.7	156.5	61.61	6,561.7	112.5	251.3	81.9	169.43	1.483	Level 3
13,100.0	5,935.0	12,702.0	5,838.8	161.9	156.5	61.61	6,561.7	112.5	320.8	183.9	136.90	2.343	
13,200.0	5,935.0	12,702.0	5,838.8	164.1	156.5	61.61	6,561.7	112.5	403.4	290.1	113.25	3.562	
13,300.0	5,935.0	12,702.0	5,838.8	166.3	156.5	61.61	6,561.7	112.5	492.4	395.3	97.10	5.071	
13,400.0	5,935.0	12,702.0	5,838.8	168.5	156.5	61.61	6,561.7	112.5	585.0	499.1	85.93	6.808	
13,500.0	5,935.0	12,702.0	5,838.8	170.7	156.5	61.61	6,561.7	112.5	679.7	601.7	78.00	8.714	
13,600.0	5,935.0	12,702.0	5,838.8	172.9	156.5	61.61	6,561.7	112.5	775.8	703.5	72.21	10.743	
13,617.5	5,935.0	12,702.0	5,838.8	173.3	156.5	61.61	6,561.7	112.5	792.7	721.3	71.36	11.109	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Project:	Weld County, CO	TVD Reference:	21' KB @ 4920.0usft
Reference Site:	S7-T10N-R57W	MD Reference:	21' KB @ 4920.0usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.79 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design S7-T10N-R57W - HORSETAIL #07F-1805 - OH - PLAN #1													Offset Site Error:	0.0 usft
Survey Program: O-MWD+HDGM													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-69.86	54.7	-149.1	158.8					
100.0	100.0	100.0	100.0	0.2	0.2	-69.86	54.7	-149.1	158.8	158.5	0.28	560.724		
200.0	200.0	200.0	200.0	0.7	0.7	-69.86	54.7	-149.1	158.8	157.8	1.00	158.771		
300.0	300.0	300.0	300.0	1.2	1.2	-69.86	54.7	-149.1	158.8	157.1	1.72	92.479 CC, ES		
400.0	400.0	394.8	394.8	1.7	1.7	106.91	55.5	-150.4	160.9	158.5	2.42	66.457		
500.0	499.8	489.1	489.0	2.2	2.1	108.74	58.0	-154.3	167.4	164.2	3.15	53.219		
600.0	599.5	582.5	582.0	2.6	2.6	111.46	62.2	-160.8	178.5	174.7	3.89	45.931		
700.0	698.7	674.4	673.4	3.2	3.1	114.72	67.9	-169.6	194.7	190.1	4.64	41.986		
800.0	797.9	765.2	763.1	3.7	3.6	117.85	75.1	-180.8	215.1	209.7	5.38	40.012		
900.0	897.1	856.8	853.4	4.2	4.1	120.45	83.8	-194.3	238.9	232.8	6.09	39.223		
1,000.0	996.2	953.2	948.1	4.8	4.7	122.69	93.3	-209.2	264.0	257.2	6.78	38.956		
1,100.0	1,095.4	1,049.5	1,042.8	5.4	5.3	124.54	102.9	-224.0	289.3	281.8	7.48	38.678		
1,200.0	1,194.6	1,145.9	1,137.5	5.9	5.8	126.10	112.4	-238.8	314.8	306.7	8.19	38.445		
1,300.0	1,293.7	1,242.2	1,232.2	6.5	6.4	127.42	122.0	-253.7	340.6	331.7	8.91	38.242		
1,400.0	1,392.9	1,338.6	1,327.0	7.0	7.0	128.56	131.5	-268.5	366.5	356.9	9.63	38.062		
1,500.0	1,492.1	1,434.9	1,421.7	7.6	7.6	129.55	141.1	-283.3	392.5	382.2	10.36	37.904		
1,600.0	1,591.2	1,531.3	1,516.4	8.2	8.2	130.41	150.6	-298.2	418.6	407.5	11.09	37.762		
1,700.0	1,690.4	1,627.6	1,611.1	8.7	8.8	131.17	160.2	-313.0	444.8	433.0	11.82	37.635		
1,800.0	1,789.6	1,724.0	1,705.8	9.3	9.4	131.85	169.8	-327.8	471.1	458.5	12.55	37.521		
1,900.0	1,888.7	1,820.3	1,800.6	9.9	10.0	132.46	179.3	-342.7	497.4	484.1	13.29	37.418		
2,000.0	1,987.9	1,916.7	1,895.3	10.4	10.6	133.00	188.9	-357.5	523.7	509.7	14.03	37.324		
2,100.0	2,087.1	2,013.0	1,990.0	11.0	11.2	133.50	198.4	-372.3	550.1	535.4	14.77	37.238		
2,200.0	2,186.2	2,109.4	2,084.7	11.6	11.8	133.95	208.0	-387.2	576.6	561.0	15.52	37.160		
2,300.0	2,285.4	2,205.7	2,179.4	12.1	12.4	134.36	217.5	-402.0	603.0	586.8	16.26	37.088		
2,400.0	2,384.6	2,302.1	2,274.2	12.7	13.0	134.73	227.1	-416.8	629.5	612.5	17.00	37.021		
2,500.0	2,483.7	2,398.4	2,368.9	13.3	13.6	135.08	236.6	-431.7	656.0	638.3	17.75	36.960		
2,600.0	2,582.9	2,494.8	2,463.6	13.9	14.2	135.39	246.2	-446.5	682.6	664.1	18.50	36.903		
2,700.0	2,682.1	2,591.1	2,558.3	14.4	14.8	135.69	255.7	-461.3	709.1	689.9	19.24	36.851		
2,800.0	2,781.2	2,687.5	2,653.0	15.0	15.5	135.96	265.3	-476.2	735.7	715.7	19.99	36.802		
2,900.0	2,880.4	2,783.8	2,747.8	15.6	16.1	136.22	274.8	-491.0	762.3	741.5	20.74	36.756		
3,000.0	2,979.6	2,880.2	2,842.5	16.1	16.7	136.45	284.4	-505.9	788.9	767.4	21.49	36.713		
3,100.0	3,078.7	2,976.5	2,937.2	16.7	17.3	136.67	293.9	-520.7	815.5	793.2	22.24	36.673		
3,200.0	3,177.9	3,072.9	3,031.9	17.3	17.9	136.88	303.5	-535.5	842.1	819.1	22.99	36.635		
3,300.0	3,277.1	3,169.2	3,126.6	17.8	18.5	137.08	313.0	-550.4	868.7	845.0	23.74	36.599		
3,400.0	3,376.2	3,265.6	3,221.4	18.4	19.1	137.26	322.6	-565.2	895.3	870.8	24.49	36.566		
3,500.0	3,475.4	3,361.9	3,316.1	19.0	19.7	137.43	332.1	-580.0	922.0	896.7	25.24	36.534		
3,600.0	3,574.6	3,458.3	3,410.8	19.6	20.3	137.60	341.7	-594.9	948.6	922.6	25.99	36.504		
3,700.0	3,673.7	3,554.6	3,505.5	20.1	20.9	137.75	351.2	-609.7	975.3	948.5	26.74	36.476		
3,800.0	3,772.9	3,651.0	3,600.2	20.7	21.5	137.90	360.8	-624.5	1,001.9	974.5	27.49	36.449		
3,900.0	3,872.1	3,747.3	3,695.0	21.3	22.1	138.03	370.3	-639.4	1,028.6	1,000.4	28.24	36.423		
4,000.0	3,971.2	3,843.7	3,789.7	21.8	22.7	138.16	379.9	-654.2	1,055.3	1,026.3	28.99	36.399		
4,100.0	4,070.4	3,940.0	3,884.4	22.4	23.4	138.29	389.4	-669.0	1,082.0	1,052.2	29.74	36.375		
4,200.0	4,169.6	4,036.4	3,979.1	23.0	24.0	138.41	399.0	-683.9	1,108.7	1,078.2	30.50	36.353		
4,300.0	4,268.7	4,132.7	4,073.8	23.6	24.6	138.52	408.5	-698.7	1,135.3	1,104.1	31.25	36.332		
4,400.0	4,367.9	4,229.1	4,168.6	24.1	25.2	138.63	418.1	-713.5	1,162.0	1,130.0	32.00	36.312		
4,500.0	4,467.1	4,325.4	4,263.3	24.7	25.8	138.73	427.6	-728.4	1,188.7	1,156.0	32.75	36.293		
4,600.0	4,566.2	4,421.8	4,358.0	25.3	26.4	138.83	437.2	-743.2	1,215.4	1,181.9	33.51	36.274		
4,700.0	4,665.4	4,518.1	4,452.7	25.8	27.0	138.93	446.7	-758.0	1,242.1	1,207.9	34.26	36.256		
4,800.0	4,764.6	4,619.9	4,554.0	26.4	27.8	139.00	456.1	-772.7	1,268.7	1,228.5	35.00	36.237		
4,900.0	4,863.7	4,718.7	4,652.0	27.0	28.6	139.06	465.5	-787.4	1,294.3	1,253.1	35.74	36.218		
5,000.0	4,963.1	4,818.7	4,751.0	27.5	29.1	139.11	474.9	-802.0	1,319.8	1,277.6	36.48	36.199		
5,100.0	5,062.8	4,919.3	4,851.0	28.1	29.7	139.16	484.3	-816.7	1,345.3	1,303.1	37.22	36.180		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Project:	Weld County, CO	TVD Reference:	21' KB @ 4920.0usft
Reference Site:	S7-T10N-R57W	MD Reference:	21' KB @ 4920.0usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.79 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design S7-T10N-R57W - HORSETAIL #07F-1805 - OH - PLAN #1													Offset Site Error:	0.0 usft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis			Distance				Total		Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Uncertainty Axis	Separation Factor		
5,200.0	5,162.7	6,615.4	5,745.0	28.6	35.2	86.67	-596.8	-796.8	954.9	920.2	34.70	27.516		
5,300.0	5,262.7	6,616.2	5,745.0	29.0	35.2	-90.50	-597.6	-796.8	897.4	860.1	37.32	24.047		
5,400.0	5,362.6	6,612.9	5,745.0	29.4	35.2	-93.21	-594.3	-796.8	847.9	808.0	39.91	21.244		
5,500.0	5,460.9	6,595.1	5,745.0	29.7	35.0	-95.75	-576.5	-796.9	808.5	766.3	42.20	19.158		
5,600.0	5,555.2	6,562.1	5,745.0	29.9	34.6	-96.04	-543.5	-797.2	780.5	736.5	43.97	17.753		
5,700.0	5,643.1	6,514.8	5,745.0	30.2	34.0	-94.41	-496.1	-797.6	764.1	719.1	45.05	16.960		
5,800.0	5,722.6	6,454.2	5,745.0	30.4	33.4	-91.34	-435.6	-798.2	757.9	712.5	45.49	16.661		
5,825.5	5,741.3	6,436.9	5,745.0	30.4	33.2	-90.41	-418.3	-798.3	757.7	712.2	45.51	16.649 SF		
5,900.0	5,791.7	6,382.0	5,745.0	30.6	32.6	-87.45	-363.4	-798.8	759.4	714.0	45.40	16.728		
6,000.0	5,848.5	6,299.9	5,745.0	30.8	31.9	-83.42	-281.3	-799.5	765.4	720.4	45.00	17.010		
6,100.0	5,891.9	6,209.9	5,745.0	31.1	31.4	-79.87	-191.3	-800.3	772.9	728.4	44.53	17.356		
6,200.0	5,920.6	6,128.0	5,743.1	31.5	31.4	-77.40	-109.4	-801.0	779.9	735.7	44.22	17.638		
6,300.0	5,934.0	6,050.0	5,732.3	32.0	31.5	-75.31	-32.2	-801.7	787.0	742.9	44.05	17.866		
6,400.0	5,935.0	5,981.9	5,715.2	32.6	31.5	-73.87	33.6	-802.2	794.6	750.5	44.08	18.025		
6,500.0	5,935.0	5,914.6	5,691.5	33.4	31.6	-72.24	96.6	-802.8	806.0	761.8	44.17	18.249		
6,600.0	5,935.0	5,850.0	5,662.6	34.2	31.6	-70.29	154.3	-803.3	822.3	778.0	44.29	18.566		
6,700.0	5,935.0	5,800.0	5,636.3	35.2	31.6	-68.56	196.9	-803.7	844.0	799.4	44.55	18.944		
6,800.0	5,935.0	5,750.0	5,606.8	36.3	31.6	-66.67	237.2	-804.0	871.7	826.9	44.80	19.457		
6,900.0	5,935.0	5,700.0	5,574.1	37.5	31.5	-64.64	275.1	-804.3	905.5	860.5	45.01	20.117		
7,000.0	5,935.0	5,664.1	5,548.9	38.8	31.5	-63.11	300.6	-804.5	945.5	900.2	45.35	20.848		
7,100.0	5,935.0	5,629.4	5,523.2	40.2	31.5	-61.60	324.0	-804.8	991.4	945.8	45.66	21.715		
7,200.0	5,935.0	5,600.0	5,500.5	41.6	31.4	-60.29	342.6	-804.9	1,042.9	996.9	45.97	22.687		
7,300.0	5,935.0	5,571.1	5,477.3	43.1	31.4	-59.00	359.8	-805.1	1,099.4	1,053.2	46.23	23.780		
7,400.0	5,935.0	5,550.0	5,459.9	44.7	31.4	-58.05	371.8	-805.2	1,160.5	1,114.0	46.52	24.944		
7,500.0	5,935.0	5,524.8	5,438.6	46.3	31.3	-56.91	385.3	-805.3	1,225.6	1,178.9	46.72	26.234		
7,600.0	5,935.0	5,500.0	5,417.2	48.0	31.3	-55.80	397.7	-805.4	1,294.5	1,247.6	46.88	27.611		
7,700.0	5,935.0	5,500.0	5,417.2	49.7	31.3	-55.80	397.7	-805.4	1,366.6	1,319.4	47.21	28.948		
7,800.0	5,935.0	5,471.3	5,391.8	51.4	31.2	-54.52	411.1	-805.5	1,441.2	1,393.9	47.27	30.491		

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Project:	Weld County, CO	TVD Reference:	21' KB @ 4920.0usft
Reference Site:	S7-T10N-R57W	MD Reference:	21' KB @ 4920.0usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.79 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design S7-T10N-R57W - HORSETAIL #07F-1806 - OH - PLAN #1													Offset Site Error: 0.0 usft	
Survey Program: 0-MWD+HDGM													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-59.23	52.6	-88.4	102.9					
100.0	100.0	100.0	100.0	0.2	0.2	-59.23	52.6	-88.4	102.9	102.6	0.28	363.210		
200.0	200.0	200.0	200.0	0.7	0.7	-59.23	52.6	-88.4	102.9	101.9	1.00	102.844		
300.0	300.0	300.0	300.0	1.2	1.2	-59.23	52.6	-88.4	102.9	101.1	1.72	59.903	CC, ES	
400.0	400.0	396.6	396.6	1.7	1.7	117.94	53.8	-89.5	105.3	102.8	2.43	43.333		
500.0	499.8	492.6	492.5	2.2	2.2	120.76	57.4	-92.7	112.7	109.6	3.16	35.632		
600.0	599.5	587.5	587.0	2.6	2.6	124.65	63.3	-98.0	125.7	121.8	3.92	32.102		
700.0	698.7	681.3	680.2	3.2	3.1	128.90	71.4	-105.4	144.5	139.8	4.66	30.981		
800.0	797.9	778.5	776.6	3.7	3.7	132.70	80.7	-113.7	165.7	160.4	5.35	30.992		
900.0	897.1	875.7	873.0	4.2	4.2	135.63	90.0	-122.1	187.5	181.5	6.04	31.064		
1,000.0	996.2	972.9	969.3	4.8	4.7	137.95	99.2	-130.5	209.7	203.0	6.74	31.120		
1,100.0	1,095.4	1,070.1	1,065.7	5.4	5.2	139.83	108.5	-138.9	232.2	224.7	7.45	31.183		
1,200.0	1,194.6	1,167.3	1,162.1	5.9	5.8	141.38	117.8	-147.3	254.8	246.7	8.16	31.244		
1,300.0	1,293.7	1,264.5	1,258.5	6.5	6.3	142.67	127.1	-155.7	277.6	268.7	8.87	31.299		
1,400.0	1,392.9	1,361.6	1,354.9	7.0	6.9	143.77	136.3	-164.0	300.5	290.9	9.59	31.349		
1,500.0	1,492.1	1,458.8	1,451.2	7.6	7.4	144.71	145.6	-172.4	323.5	313.2	10.31	31.394		
1,600.0	1,591.2	1,556.0	1,547.6	8.2	7.9	145.53	154.9	-180.8	346.6	335.6	11.03	31.434		
1,700.0	1,690.4	1,653.2	1,644.0	8.7	8.5	146.24	164.2	-189.2	369.7	358.0	11.75	31.471		
1,800.0	1,789.6	1,750.4	1,740.4	9.3	9.0	146.88	173.4	-197.6	392.9	380.4	12.47	31.504		
1,900.0	1,888.7	1,847.6	1,836.8	9.9	9.6	147.44	182.7	-206.0	416.1	402.9	13.20	31.534		
2,000.0	1,987.9	1,944.8	1,933.2	10.4	10.1	147.94	192.0	-214.4	439.4	425.5	13.92	31.562		
2,100.0	2,087.1	2,042.0	2,029.5	11.0	10.7	148.39	201.3	-222.7	462.7	448.0	14.65	31.587		
2,200.0	2,186.2	2,139.2	2,125.9	11.6	11.2	148.80	210.5	-231.1	486.0	470.6	15.37	31.610		
2,300.0	2,285.4	2,236.4	2,222.3	12.1	11.7	149.17	219.8	-239.5	509.3	493.2	16.10	31.631		
2,400.0	2,384.6	2,333.5	2,318.7	12.7	12.3	149.51	229.1	-247.9	532.6	515.8	16.83	31.650		
2,500.0	2,483.7	2,430.7	2,415.1	13.3	12.8	149.82	238.4	-256.3	556.0	538.4	17.56	31.668		
2,600.0	2,582.9	2,527.9	2,511.5	13.9	13.4	150.10	247.6	-264.7	579.4	561.1	18.29	31.685		
2,700.0	2,682.1	2,625.1	2,607.8	14.4	13.9	150.36	256.9	-273.1	602.8	583.7	19.01	31.700		
2,800.0	2,781.2	2,722.3	2,704.2	15.0	14.5	150.61	266.2	-281.4	626.2	606.4	19.74	31.714		
2,900.0	2,880.4	2,819.5	2,800.6	15.6	15.0	150.83	275.5	-289.8	649.6	629.1	20.47	31.728		
3,000.0	2,979.6	2,916.7	2,897.0	16.1	15.6	151.04	284.8	-298.2	673.0	651.8	21.20	31.740		
3,100.0	3,078.7	3,013.9	2,993.4	16.7	16.1	151.24	294.0	-306.6	696.4	674.5	21.93	31.752		
3,200.0	3,177.9	3,111.1	3,089.8	17.3	16.7	151.42	303.3	-315.0	719.8	697.2	22.66	31.763		
3,300.0	3,277.1	3,208.3	3,186.1	17.8	17.2	151.59	312.6	-323.4	743.3	719.9	23.39	31.774		
3,400.0	3,376.2	3,305.5	3,282.5	18.4	17.7	151.76	321.9	-331.7	766.7	742.6	24.12	31.783		
3,500.0	3,475.4	3,402.6	3,378.9	19.0	18.3	151.91	331.1	-340.1	790.2	765.3	24.85	31.793		
3,600.0	3,574.6	3,499.8	3,475.3	19.6	18.8	152.05	340.4	-348.5	813.6	788.1	25.59	31.801		
3,700.0	3,673.7	3,597.0	3,571.7	20.1	19.4	152.19	349.7	-356.9	837.1	810.8	26.32	31.810		
3,800.0	3,772.9	3,694.2	3,668.1	20.7	19.9	152.31	359.0	-365.3	860.6	833.5	27.05	31.817		
3,900.0	3,872.1	3,791.4	3,764.4	21.3	20.5	152.43	368.2	-373.7	884.0	856.3	27.78	31.825		
4,000.0	3,971.2	3,888.6	3,860.8	21.8	21.0	152.55	377.5	-382.1	907.5	879.0	28.51	31.832		
4,100.0	4,070.4	3,985.8	3,957.2	22.4	21.6	152.66	386.8	-390.4	931.0	901.7	29.24	31.838		
4,200.0	4,169.6	4,083.0	4,053.6	23.0	22.1	152.76	396.1	-398.8	954.5	924.5	29.97	31.845		
4,300.0	4,268.7	4,180.2	4,150.0	23.6	22.7	152.86	405.3	-407.2	977.9	947.2	30.70	31.851		
4,400.0	4,367.9	4,277.4	4,246.4	24.1	23.2	152.95	414.6	-415.6	1,001.4	970.0	31.44	31.857		
4,500.0	4,467.1	4,374.6	4,342.7	24.7	23.7	153.04	423.9	-424.0	1,024.9	992.7	32.17	31.862		
4,600.0	4,566.2	4,471.7	4,439.1	25.3	24.3	153.13	433.2	-432.4	1,048.4	1,015.5	32.90	31.867		
4,700.0	4,665.4	4,568.9	4,535.5	25.8	24.8	153.21	442.4	-440.8	1,071.9	1,038.3	33.63	31.872		
4,800.0	4,764.6	4,666.1	4,631.9	26.4	25.4	153.29	451.7	-449.1	1,095.4	1,061.0	34.36	31.877		
4,900.0	4,863.7	4,764.1	4,728.0	27.0	26.0	153.36	460.9	-457.9	1,119.9	1,085.8	35.09	31.882		
5,000.0	4,963.1	4,862.5	4,828.0	27.5	26.5	153.42	470.1	-466.6	1,144.9	1,110.8	35.82	31.887		
5,100.0	5,062.8	4,960.1	4,924.0	28.1	27.1	153.47	479.3	-475.3	1,170.4	1,136.3	36.55	31.892		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Project:	Weld County, CO	TVD Reference:	21' KB @ 4920.0usft
Reference Site:	S7-T10N-R57W	MD Reference:	21' KB @ 4920.0usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.79 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design S7-T10N-R57W - HORSETAIL #07F-1806 - OH - PLAN #1													Offset Site Error:	0.0 usft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
5,200.0	5,162.7	6,664.1	5,828.0	28.6	34.9	87.78	-593.6	-465.9	790.0	765.2	24.76	31.899		
5,300.0	5,262.7	6,664.9	5,828.0	29.0	34.9	-90.45	-594.4	-465.9	707.8	680.3	27.48	25.755		
5,400.0	5,362.6	6,661.7	5,828.0	29.4	34.9	-96.53	-591.1	-465.9	630.9	600.2	30.73	20.533		
5,500.0	5,460.9	6,643.8	5,828.0	29.7	34.7	-102.63	-573.3	-466.1	562.4	528.0	34.35	16.371		
5,600.0	5,555.2	6,610.8	5,828.0	29.9	34.3	-104.69	-540.3	-466.3	506.0	467.9	38.07	13.293		
5,700.0	5,643.1	6,563.5	5,828.0	30.2	33.8	-103.41	-492.9	-466.7	464.7	423.3	41.38	11.230		
5,800.0	5,722.6	6,503.0	5,828.0	30.4	33.1	-99.53	-432.4	-467.2	439.4	395.7	43.70	10.055		
5,900.0	5,791.7	6,430.8	5,828.0	30.6	32.4	-93.93	-360.2	-467.8	428.5	383.7	44.80	9.563		
5,956.3	5,825.3	6,385.6	5,828.0	30.7	32.0	-90.44	-315.0	-468.1	427.1	382.2	44.93	9.505 SF		
6,000.0	5,848.5	6,348.6	5,828.0	30.8	31.7	-87.75	-278.1	-468.4	427.8	382.9	44.86	9.535		
6,100.0	5,891.9	6,258.6	5,828.0	31.1	31.0	-82.16	-188.1	-469.1	432.4	388.0	44.39	9.742		
6,200.0	5,920.6	6,171.3	5,825.5	31.5	30.5	-78.03	-100.8	-469.8	438.6	394.7	43.86	9.999		
6,300.0	5,934.0	6,089.5	5,813.1	32.0	30.1	-74.46	-20.0	-470.4	446.0	402.6	43.41	10.274		
6,400.0	5,935.0	6,010.7	5,791.4	32.6	29.9	-71.48	55.7	-471.0	455.2	412.1	43.07	10.568		
6,500.0	5,935.0	5,938.1	5,763.3	33.4	29.8	-68.19	122.6	-471.6	470.0	427.3	42.67	11.015		
6,600.0	5,935.0	5,872.7	5,731.6	34.2	29.7	-64.65	179.8	-472.0	492.1	449.9	42.23	11.654		
6,700.0	5,935.0	5,814.7	5,698.8	35.2	29.6	-61.18	227.5	-472.4	522.4	480.6	41.81	12.495		
6,800.0	5,935.0	5,763.7	5,666.4	36.3	29.6	-57.98	266.9	-472.7	561.3	519.8	41.50	13.526		
6,900.0	5,935.0	5,719.1	5,635.5	37.5	29.5	-55.13	299.1	-472.9	608.3	567.0	41.31	14.725		
7,000.0	5,935.0	5,680.1	5,606.8	38.8	29.5	-52.64	325.4	-473.2	662.7	621.5	41.25	16.065		
7,100.0	5,935.0	5,650.0	5,583.5	40.2	29.4	-50.73	344.5	-473.3	723.6	682.2	41.37	17.491		
7,200.0	5,935.0	5,616.0	5,556.2	41.6	29.4	-48.62	364.7	-473.5	789.9	748.5	41.39	19.085		
7,300.0	5,935.0	5,600.0	5,543.0	43.1	29.3	-47.65	373.7	-473.5	861.1	819.4	41.70	20.649		
7,400.0	5,935.0	5,566.2	5,514.3	44.7	29.3	-45.64	391.7	-473.7	935.8	894.1	41.69	22.447		
7,500.0	5,935.0	5,550.0	5,500.2	46.3	29.2	-44.70	399.7	-473.7	1,014.0	972.0	41.91	24.193		
7,600.0	5,935.0	5,526.8	5,479.8	48.0	29.2	-43.38	410.6	-473.8	1,094.7	1,052.7	42.01	26.062		
7,700.0	5,935.0	5,500.0	5,455.6	49.7	29.1	-41.91	422.2	-473.9	1,177.9	1,135.9	42.05	28.016		
7,800.0	5,935.0	5,500.0	5,455.6	51.4	29.1	-41.91	422.2	-473.9	1,262.8	1,220.5	42.33	29.833		
7,900.0	5,935.0	5,481.6	5,438.7	53.2	29.1	-40.93	429.6	-474.0	1,349.4	1,307.0	42.41	31.821		
8,000.0	5,935.0	5,469.2	5,427.3	55.1	29.0	-40.29	434.3	-474.0	1,437.5	1,394.9	42.52	33.808		

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Project:	Weld County, CO	TVD Reference:	21' KB @ 4920.0usft
Reference Site:	S7-T10N-R57W	MD Reference:	21' KB @ 4920.0usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.79 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design S7-T10N-R57W - HORSETAIL #07F-1807 - OH - PLAN #1													Offset Site Error: 0.0 usft	
Survey Program: 0-MWD+HDGM													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-29.32	50.6	-28.4	58.1					
100.0	100.0	100.0	100.0	0.2	0.2	-29.32	50.6	-28.4	58.1	57.8	0.28	205.001		
200.0	200.0	200.0	200.0	0.7	0.7	-29.32	50.6	-28.4	58.1	57.1	1.00	58.047		
300.0	300.0	300.0	300.0	1.2	1.2	-29.32	50.6	-28.4	58.1	56.3	1.72	33.810	CC	
400.0	400.0	398.0	398.0	1.7	1.7	148.15	52.3	-28.8	61.2	58.7	2.44	25.080		
500.0	499.8	495.3	495.2	2.2	2.2	151.44	57.2	-29.7	70.6	67.4	3.18	22.172		
600.0	599.5	591.6	591.1	2.6	2.7	155.29	65.2	-31.2	86.7	82.7	3.93	22.026		
700.0	698.7	689.2	688.2	3.2	3.2	158.74	74.6	-33.1	107.4	102.8	4.63	23.205		
800.0	797.9	786.7	785.2	3.7	3.7	161.28	83.9	-34.9	129.2	123.9	5.31	24.327		
900.0	897.1	884.1	882.2	4.2	4.2	163.08	93.3	-36.7	151.1	145.1	6.00	25.198		
1,000.0	996.2	981.6	979.2	4.8	4.7	164.43	102.7	-38.5	173.2	166.5	6.69	25.873		
1,100.0	1,095.4	1,079.1	1,076.2	5.4	5.2	165.47	112.1	-40.3	195.3	187.9	7.39	26.419		
1,200.0	1,194.6	1,176.5	1,173.2	5.9	5.7	166.30	121.5	-42.1	217.5	209.4	8.10	26.866		
1,300.0	1,293.7	1,274.0	1,270.2	6.5	6.2	166.98	130.9	-43.9	239.7	230.9	8.80	27.237		
1,400.0	1,392.9	1,371.5	1,367.2	7.0	6.8	167.54	140.3	-45.7	261.9	252.4	9.51	27.551		
1,500.0	1,492.1	1,468.9	1,464.2	7.6	7.3	168.01	149.7	-47.6	284.2	274.0	10.22	27.819		
1,600.0	1,591.2	1,566.4	1,561.2	8.2	7.8	168.42	159.1	-49.4	306.5	295.5	10.93	28.050		
1,700.0	1,690.4	1,663.9	1,658.2	8.7	8.3	168.77	168.5	-51.2	328.8	317.1	11.64	28.252		
1,800.0	1,789.6	1,761.3	1,755.2	9.3	8.8	169.07	177.8	-53.0	351.1	338.7	12.35	28.429		
1,900.0	1,888.7	1,858.8	1,852.2	9.9	9.3	169.34	187.2	-54.8	373.4	360.3	13.06	28.586		
2,000.0	1,987.9	1,956.3	1,949.2	10.4	9.9	169.58	196.6	-56.6	395.7	381.9	13.77	28.726		
2,100.0	2,087.1	2,053.7	2,046.2	11.0	10.4	169.79	206.0	-58.4	418.0	403.5	14.49	28.852		
2,200.0	2,186.2	2,151.2	2,143.2	11.6	10.9	169.98	215.4	-60.2	440.3	425.1	15.20	28.965		
2,300.0	2,285.4	2,248.7	2,240.2	12.1	11.4	170.16	224.8	-62.1	462.7	446.7	15.92	29.068		
2,400.0	2,384.6	2,346.1	2,337.2	12.7	11.9	170.31	234.2	-63.9	485.0	468.4	16.63	29.162		
2,500.0	2,483.7	2,443.6	2,434.2	13.3	12.5	170.46	243.6	-65.7	507.3	490.0	17.35	29.247		
2,600.0	2,582.9	2,541.1	2,531.2	13.9	13.0	170.59	253.0	-67.5	529.7	511.6	18.06	29.326		
2,700.0	2,682.1	2,638.5	2,628.2	14.4	13.5	170.71	262.3	-69.3	552.0	533.2	18.78	29.398		
2,800.0	2,781.2	2,736.0	2,725.2	15.0	14.0	170.82	271.7	-71.1	574.4	554.9	19.49	29.465		
2,900.0	2,880.4	2,833.5	2,822.2	15.6	14.5	170.92	281.1	-72.9	596.7	576.5	20.21	29.526		
3,000.0	2,979.6	2,930.9	2,919.1	16.1	15.0	171.02	290.5	-74.7	619.0	598.1	20.92	29.584		
3,100.0	3,078.7	3,028.4	3,016.1	16.7	15.6	171.11	299.9	-76.5	641.4	619.8	21.64	29.637		
3,200.0	3,177.9	3,125.9	3,113.1	17.3	16.1	171.19	309.3	-78.4	663.7	641.4	22.36	29.687		
3,300.0	3,277.1	3,223.3	3,210.1	17.8	16.6	171.27	318.7	-80.2	686.1	663.0	23.07	29.734		
3,400.0	3,376.2	3,320.8	3,307.1	18.4	17.1	171.34	328.1	-82.0	708.4	684.7	23.79	29.778		
3,500.0	3,475.4	3,418.3	3,404.1	19.0	17.6	171.41	337.5	-83.8	730.8	706.3	24.51	29.819		
3,600.0	3,574.6	3,515.7	3,501.1	19.6	18.2	171.47	346.8	-85.6	753.2	727.9	25.22	29.858		
3,700.0	3,673.7	3,613.2	3,598.1	20.1	18.7	171.53	356.2	-87.4	775.5	749.6	25.94	29.895		
3,800.0	3,772.9	3,710.7	3,695.1	20.7	19.2	171.59	365.6	-89.2	797.9	771.2	26.66	29.929		
3,900.0	3,872.1	3,808.1	3,792.1	21.3	19.7	171.65	375.0	-91.0	820.2	792.8	27.38	29.962		
4,000.0	3,971.2	3,905.6	3,889.1	21.8	20.2	171.70	384.4	-92.9	842.6	814.5	28.09	29.993		
4,100.0	4,070.4	4,003.1	3,986.1	22.4	20.8	171.74	393.8	-94.7	864.9	836.1	28.81	30.022		
4,200.0	4,169.6	4,100.5	4,083.1	23.0	21.3	171.79	403.2	-96.5	887.3	857.8	29.53	30.050		
4,300.0	4,268.7	4,198.0	4,180.1	23.6	21.8	171.83	412.6	-98.3	909.7	879.4	30.24	30.076		
4,400.0	4,367.9	4,295.5	4,277.1	24.1	22.3	171.88	422.0	-100.1	932.0	901.0	30.96	30.102		
4,500.0	4,467.1	4,392.9	4,374.1	24.7	22.8	171.92	431.3	-101.9	954.4	922.7	31.68	30.126		
4,600.0	4,566.2	4,490.4	4,471.1	25.3	23.4	171.95	440.7	-103.7	976.7	944.3	32.40	30.149		
4,700.0	4,665.4	4,587.9	4,568.1	25.8	23.9	171.99	450.1	-105.5	999.1	966.0	33.11	30.171		
4,800.0	4,764.6	4,628.4	4,608.1	26.4	23.8	149.95	-554.9	-107.9	983.0	972.0	10.93	89.938		
4,900.0	4,863.7	4,541.2	5,745.0	27.0	33.9	147.26	-567.8	-107.9	884.0	872.9	11.14	79.349		
5,000.0	4,963.1	6,552.3	5,745.0	27.5	34.1	134.78	-578.8	-107.8	784.9	773.5	11.38	68.981		
5,100.0	5,062.8	6,559.8	5,745.0	28.1	34.2	117.24	-586.4	-107.8	685.6	673.9	11.65	58.850		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Project:	Weld County, CO	TVD Reference:	21' KB @ 4920.0usft
Reference Site:	S7-T10N-R57W	MD Reference:	21' KB @ 4920.0usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.79 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design S7-T10N-R57W - HORSETAIL #07F-1807 - OH - PLAN #1													Offset Site Error:	0.0 usft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis			Distance				Total		Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Uncertainty Axis	Separation Factor		
5,200.0	5,162.7	6,563.9	5,745.0	28.6	34.2	97.46	-590.4	-107.8	586.2	574.2	11.99	48.875		
5,300.0	5,262.7	6,564.7	5,745.0	29.0	34.2	-90.19	-591.2	-107.8	487.0	474.5	12.50	38.964		
5,400.0	5,362.6	6,561.4	5,745.0	29.4	34.2	-119.63	-588.0	-107.8	388.4	375.0	13.33	29.124		
5,500.0	5,460.9	6,543.6	5,745.0	29.7	34.0	-136.92	-570.1	-107.9	292.1	277.3	14.82	19.715		
5,600.0	5,555.2	6,510.6	5,745.0	29.9	33.6	-138.47	-537.1	-108.0	201.6	183.5	18.04	11.170		
5,700.0	5,643.1	6,463.3	5,745.0	30.2	33.1	-129.13	-489.8	-108.1	122.3	96.2	26.17	4.675		
5,800.0	5,722.6	6,402.7	5,745.0	30.4	32.4	-102.40	-429.3	-108.4	71.4	28.7	42.66	1.673		
5,830.7	5,745.0	6,381.7	5,745.0	30.4	32.2	-89.98	-408.3	-108.4	67.8	22.9	44.89	1.510 ES, SF		
5,900.0	5,791.7	6,330.5	5,745.0	30.6	31.7	-61.91	-357.1	-108.6	82.3	44.8	37.48	2.195		
6,000.0	5,848.5	6,248.4	5,745.0	30.8	31.0	-37.13	-274.9	-108.9	123.7	97.9	25.81	4.794		
6,100.0	5,891.9	6,158.4	5,745.0	31.1	30.3	-26.32	-184.9	-109.2	161.7	141.3	20.41	7.925		
6,200.0	5,920.6	6,077.3	5,742.9	31.5	29.8	-21.64	-103.9	-109.5	190.8	172.5	18.22	10.471		
6,300.0	5,934.0	6,000.0	5,731.9	32.0	29.4	-18.72	-27.4	-109.7	216.4	198.5	17.90	12.086		
6,400.0	5,935.0	5,931.5	5,714.5	32.6	29.0	-17.06	38.8	-109.9	241.3	221.8	19.56	12.339		
6,500.0	5,935.0	5,864.3	5,690.6	33.4	28.8	-15.47	101.6	-110.1	275.7	254.2	21.54	12.802		
6,600.0	5,935.0	5,800.0	5,661.6	34.2	28.5	-13.90	158.9	-110.3	319.4	295.9	23.52	13.583		
6,700.0	5,935.0	5,750.0	5,635.2	35.2	28.4	-12.72	201.4	-110.5	371.3	345.1	26.18	14.184		
6,800.0	5,935.0	5,700.0	5,605.6	36.3	28.2	-11.60	241.6	-110.6	430.1	401.9	28.15	15.278		
6,900.0	5,935.0	5,650.0	5,572.8	37.5	28.1	-10.58	279.4	-110.8	494.8	465.2	29.61	16.709		
7,000.0	5,935.0	5,614.8	5,548.0	38.8	28.0	-9.91	304.4	-110.8	564.4	533.1	31.35	18.005		
7,100.0	5,935.0	5,580.2	5,522.4	40.2	28.0	-9.31	327.6	-110.9	638.2	605.5	32.66	19.542		
7,200.0	5,935.0	5,550.0	5,499.0	41.6	27.9	-8.82	346.7	-111.0	715.3	681.5	33.77	21.179		
7,300.0	5,935.0	5,522.1	5,476.6	43.1	27.8	-8.39	363.3	-111.0	795.3	760.6	34.69	22.928		
7,400.0	5,935.0	5,500.0	5,458.3	44.7	27.8	-8.07	375.8	-111.1	877.7	842.2	35.52	24.711		
7,500.0	5,935.0	5,476.0	5,438.0	46.3	27.7	-7.75	388.6	-111.1	962.1	926.0	36.14	26.624		
7,600.0	5,935.0	5,450.0	5,415.5	48.0	27.7	-7.42	401.6	-111.2	1,048.3	1,011.7	36.61	28.636		
7,700.0	5,935.0	5,450.0	5,415.5	49.7	27.7	-7.42	401.6	-111.2	1,136.1	1,098.7	37.34	30.426		
7,800.0	5,935.0	5,422.7	5,391.4	51.4	27.6	-7.09	414.3	-111.2	1,224.8	1,187.2	37.61	32.565		
7,900.0	5,935.0	5,400.0	5,370.8	53.2	27.5	-6.83	424.0	-111.2	1,314.8	1,276.9	37.89	34.699		
8,000.0	5,935.0	5,400.0	5,370.8	55.1	27.5	-6.83	424.0	-111.2	1,405.7	1,367.3	38.34	36.668		
8,100.0	5,935.0	5,400.0	5,370.8	56.9	27.5	-6.83	424.0	-111.2	1,497.7	1,459.0	38.70	38.699		

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Project:	Weld County, CO	TVD Reference:	21' KB @ 4920.0usft
Reference Site:	S7-T10N-R57W	MD Reference:	21' KB @ 4920.0usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.79 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design S7-T10N-R57W - HORSETAIL #07F-1808 - OH - PLAN #1													Offset Site Error: 0.0 usft	
Survey Program: 0-MWD+HDGM													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	32.45	49.6	31.5	58.8					
100.0	100.0	100.0	100.0	0.2	0.2	32.45	49.6	31.5	58.8	58.5	0.28	207.564		
200.0	200.0	200.0	200.0	0.7	0.7	32.45	49.6	31.5	58.8	57.8	1.00	58.773		
300.0	300.0	300.0	300.0	1.2	1.2	32.45	49.6	31.5	58.8	57.1	1.72	34.233	CC, ES	
400.0	400.0	397.9	397.9	1.7	1.7	-152.33	51.1	32.3	62.0	59.6	2.44	25.420		
500.0	499.8	495.1	495.0	2.2	2.2	-154.54	55.6	34.4	71.8	68.6	3.19	22.523		
600.0	599.5	591.0	590.5	2.6	2.7	-157.10	62.9	38.0	88.2	84.2	3.94	22.357		
700.0	698.7	688.1	687.0	3.2	3.2	-159.50	72.2	42.5	109.9	105.2	4.64	23.673		
800.0	797.9	785.4	783.8	3.7	3.7	-161.31	81.5	47.0	132.5	127.2	5.32	24.919		
900.0	897.1	882.7	880.6	4.2	4.2	-162.59	90.8	51.5	155.2	149.2	6.00	25.867		
1,000.0	996.2	980.1	977.4	4.8	4.7	-163.55	100.2	56.0	178.0	171.3	6.70	26.588		
1,100.0	1,095.4	1,077.4	1,074.1	5.4	5.2	-164.29	109.5	60.5	200.9	193.5	7.39	27.165		
1,200.0	1,194.6	1,174.7	1,170.9	5.9	5.7	-164.87	118.8	65.0	223.7	215.6	8.10	27.632		
1,300.0	1,293.7	1,272.1	1,267.7	6.5	6.3	-165.35	128.2	69.5	246.6	237.8	8.80	28.017		
1,400.0	1,392.9	1,369.4	1,364.5	7.0	6.8	-165.75	137.5	74.0	269.5	260.0	9.51	28.340		
1,500.0	1,492.1	1,466.7	1,461.2	7.6	7.3	-166.08	146.8	78.5	292.4	282.2	10.22	28.615		
1,600.0	1,591.2	1,564.0	1,558.0	8.2	7.8	-166.37	156.2	83.1	315.3	304.4	10.93	28.851		
1,700.0	1,690.4	1,661.4	1,654.8	8.7	8.3	-166.62	165.5	87.6	338.2	326.6	11.64	29.055		
1,800.0	1,789.6	1,758.7	1,751.6	9.3	8.9	-166.83	174.8	92.1	361.1	348.8	12.35	29.235		
1,900.0	1,888.7	1,856.0	1,848.3	9.9	9.4	-167.02	184.1	96.6	384.0	371.0	13.07	29.393		
2,000.0	1,987.9	1,953.4	1,945.1	10.4	9.9	-167.19	193.5	101.1	407.0	393.2	13.78	29.534		
2,100.0	2,087.1	2,050.7	2,041.9	11.0	10.4	-167.34	202.8	105.6	429.9	415.4	14.49	29.660		
2,200.0	2,186.2	2,148.0	2,138.7	11.6	11.0	-167.48	212.1	110.1	452.8	437.6	15.21	29.773		
2,300.0	2,285.4	2,245.4	2,235.5	12.1	11.5	-167.60	221.5	114.6	475.8	459.8	15.93	29.875		
2,400.0	2,384.6	2,342.7	2,332.2	12.7	12.0	-167.71	230.8	119.1	498.7	482.1	16.64	29.968		
2,500.0	2,483.7	2,440.0	2,429.0	13.3	12.5	-167.82	240.1	123.7	521.6	504.3	17.36	30.053		
2,600.0	2,582.9	2,537.3	2,525.8	13.9	13.1	-167.91	249.5	128.2	544.6	526.5	18.07	30.131		
2,700.0	2,682.1	2,634.7	2,622.6	14.4	13.6	-167.99	258.8	132.7	567.5	548.7	18.79	30.202		
2,800.0	2,781.2	2,732.0	2,719.3	15.0	14.1	-168.07	268.1	137.2	590.5	570.9	19.51	30.268		
2,900.0	2,880.4	2,829.3	2,816.1	15.6	14.6	-168.15	277.5	141.7	613.4	593.2	20.22	30.329		
3,000.0	2,979.6	2,926.7	2,912.9	16.1	15.1	-168.21	286.8	146.2	636.3	615.4	20.94	30.386		
3,100.0	3,078.7	3,024.0	3,009.7	16.7	15.7	-168.28	296.1	150.7	659.3	637.6	21.66	30.439		
3,200.0	3,177.9	3,121.3	3,106.4	17.3	16.2	-168.34	305.5	155.2	682.2	659.8	22.38	30.488		
3,300.0	3,277.1	3,218.7	3,203.2	17.8	16.7	-168.39	314.8	159.7	705.2	682.1	23.09	30.534		
3,400.0	3,376.2	3,316.0	3,300.0	18.4	17.2	-168.44	324.1	164.3	728.1	704.3	23.81	30.577		
3,500.0	3,475.4	3,413.3	3,396.8	19.0	17.8	-168.49	333.4	168.8	751.1	726.5	24.53	30.617		
3,600.0	3,574.6	3,510.6	3,493.5	19.6	18.3	-168.54	342.8	173.3	774.0	748.8	25.25	30.655		
3,700.0	3,673.7	3,608.0	3,590.3	20.1	18.8	-168.58	352.1	177.8	797.0	771.0	25.97	30.691		
3,800.0	3,772.9	3,705.3	3,687.1	20.7	19.3	-168.62	361.4	182.3	819.9	793.2	26.69	30.725		
3,900.0	3,872.1	3,802.6	3,783.9	21.3	19.9	-168.66	370.8	186.8	842.9	815.4	27.40	30.757		
4,000.0	3,971.2	3,900.0	3,880.7	21.8	20.4	-168.69	380.1	191.3	865.8	837.7	28.12	30.787		
4,100.0	4,070.4	3,997.3	3,977.4	22.4	20.9	-168.73	389.4	195.8	888.7	859.9	28.84	30.815		
4,200.0	4,169.6	4,094.6	4,074.2	23.0	21.4	-168.76	398.8	200.4	911.7	882.1	29.56	30.843		
4,300.0	4,268.7	4,192.0	4,171.0	23.6	22.0	-168.79	408.1	204.9	934.6	904.4	30.28	30.868		
4,400.0	4,367.9	4,289.3	4,267.8	24.1	22.5	-168.82	417.4	209.4	957.6	926.6	31.00	30.893		
4,500.0	4,467.1	4,386.6	4,364.5	24.7	23.0	-168.85	426.8	213.9	980.5	948.8	31.72	30.916		
4,600.0	4,566.2	4,483.9	4,461.3	25.3	23.5	-168.88	436.1	218.4	1,003.5	971.1	32.43	30.939		
4,700.0	4,665.4	4,581.3	4,558.1	25.8	24.1	-168.90	445.4	222.9	1,026.4	993.3	33.15	30.960		
4,800.0	4,764.6	4,678.6	4,654.9	26.4	24.6	-168.93	454.8	227.4	1,049.4	1,015.5	33.87	30.980		
4,900.0	4,863.7	4,775.1	4,750.0	27.0	25.2	-168.96	464.2	231.9	1,072.3	1,038.4	34.59	31.000		
5,000.0	4,963.1	4,872.1	4,846.0	27.5	25.7	-168.99	473.6	236.4	1,095.2	1,061.3	35.31	31.020		
5,100.0	5,062.8	4,969.7	4,942.0	28.1	26.3	-169.02	483.0	240.9	1,118.1	1,083.2	36.03	31.040		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Project:	Weld County, CO	TVD Reference:	21' KB @ 4920.0usft
Reference Site:	S7-T10N-R57W	MD Reference:	21' KB @ 4920.0usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.79 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design S7-T10N-R57W - HORSETAIL #07F-1808 - OH - PLAN #1													Offset Site Error: 0.0 usft	
Survey Program: 0-MWD+HDGM													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
5,200.0	5,162.7	6,653.7	5,828.0	28.6	34.5	-97.03	-590.2	241.4	722.3	702.5	19.82	36.435		
5,300.0	5,262.7	6,654.5	5,828.0	29.0	34.5	90.00	-591.0	241.4	631.4	609.4	22.02	28.673		
5,400.0	5,362.6	6,651.3	5,828.0	29.4	34.5	99.67	-587.8	241.4	543.8	518.9	24.91	21.835		
5,500.0	5,460.9	6,633.4	5,828.0	29.7	34.2	108.59	-569.9	241.4	462.6	434.0	28.59	16.182		
5,600.0	5,555.2	6,600.4	5,828.0	29.9	33.9	111.51	-536.9	241.4	392.1	359.0	33.07	11.854		
5,700.0	5,643.1	6,553.1	5,828.0	30.2	33.4	109.71	-489.6	241.4	337.0	299.0	37.97	8.874		
5,800.0	5,722.6	6,492.6	5,828.0	30.4	32.7	104.13	-429.0	241.4	301.0	258.8	42.15	7.140		
5,900.0	5,791.7	6,420.4	5,828.0	30.6	32.0	95.83	-356.8	241.4	284.5	240.1	44.40	6.408		
5,958.5	5,826.5	6,373.4	5,828.0	30.7	31.6	90.37	-309.9	241.4	282.4	237.7	44.68	6.320 SF		
6,000.0	5,848.5	6,338.2	5,828.0	30.8	31.4	86.51	-274.7	241.4	283.2	238.7	44.51	6.363		
6,100.0	5,891.9	6,248.2	5,828.0	31.1	30.7	78.18	-184.7	241.4	289.9	246.5	43.46	6.671		
6,200.0	5,920.6	6,160.8	5,825.6	31.5	30.1	72.20	-97.4	241.4	298.8	256.5	42.28	7.067		
6,300.0	5,934.0	6,079.0	5,813.2	32.0	29.7	67.21	-16.5	241.4	309.3	268.1	41.21	7.506		
6,400.0	5,935.0	6,000.0	5,791.5	32.6	29.4	63.17	59.4	241.4	322.1	281.8	40.31	7.990		
6,500.0	5,935.0	5,927.5	5,763.5	33.4	29.1	58.87	126.2	241.4	342.4	303.1	39.28	8.716		
6,600.0	5,935.0	5,862.0	5,731.8	34.2	29.0	54.43	183.5	241.4	371.9	333.6	38.29	9.711		
6,700.0	5,935.0	5,800.0	5,696.5	35.2	28.8	50.01	234.4	241.4	410.9	373.5	37.42	10.982		
6,800.0	5,935.0	5,750.0	5,664.6	36.3	28.7	46.45	272.9	241.4	459.1	422.0	37.09	12.378		
6,900.0	5,935.0	5,700.0	5,629.7	37.5	28.7	42.99	308.7	241.4	515.3	478.5	36.86	13.981		
7,000.0	5,935.0	5,669.3	5,607.0	38.8	28.6	40.95	329.3	241.4	578.2	540.9	37.32	15.492		
7,100.0	5,935.0	5,635.2	5,580.5	40.2	28.5	38.77	350.9	241.4	646.9	609.3	37.63	17.192		
7,200.0	5,935.0	5,600.0	5,552.1	41.6	28.5	36.64	371.6	241.4	720.2	682.3	37.86	19.021		
7,300.0	5,935.0	5,578.7	5,534.3	43.1	28.4	35.41	383.3	241.4	797.2	758.9	38.35	20.787		
7,400.0	5,935.0	5,550.0	5,509.8	44.7	28.4	33.82	398.2	241.4	877.5	838.8	38.61	22.724		
7,500.0	5,935.0	5,534.5	5,496.3	46.3	28.3	33.00	405.8	241.4	960.2	921.1	39.03	24.598		
7,600.0	5,935.0	5,515.9	5,479.8	48.0	28.3	32.05	414.5	241.4	1,045.0	1,005.7	39.33	26.571		
7,700.0	5,935.0	5,500.0	5,465.6	49.7	28.2	31.26	421.5	241.4	1,131.6	1,092.0	39.60	28.575		
7,800.0	5,935.0	5,500.0	5,465.6	51.4	28.2	31.26	421.5	241.4	1,220.0	1,180.0	39.99	30.511		
7,900.0	5,935.0	5,470.7	5,438.8	53.2	28.2	29.87	433.6	241.4	1,309.1	1,269.1	40.04	32.698		
8,000.0	5,935.0	5,450.0	5,419.6	55.1	28.1	28.95	441.3	241.4	1,399.6	1,359.5	40.16	34.856		
8,100.0	5,935.0	5,450.0	5,419.6	56.9	28.1	28.95	441.3	241.4	1,490.9	1,450.5	40.41	36.897		

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Project:	Weld County, CO	TVD Reference:	21' KB @ 4920.0usft
Reference Site:	S7-T10N-R57W	MD Reference:	21' KB @ 4920.0usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.79 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design S7-T10N-R57W - HORSETAIL #07F-1838 - OH - PLAN #1													Offset Site Error: 0.0 usft	
Survey Program: 0-MWD+HDGM													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-66.02	52.6	-118.4	129.5					
100.0	100.0	100.0	100.0	0.2	0.2	-66.02	52.6	-118.4	129.5	129.3	0.28	457.459		
200.0	200.0	200.0	200.0	0.7	0.7	-66.02	52.6	-118.4	129.5	128.5	1.00	129.531		
300.0	300.0	300.0	300.0	1.2	1.2	-66.02	52.6	-118.4	129.5	127.8	1.72	75.447	CC, ES	
400.0	400.0	395.7	395.7	1.7	1.7	110.93	53.7	-119.6	131.8	129.3	2.43	54.332		
500.0	499.8	491.0	490.8	2.2	2.2	113.24	56.7	-123.3	138.6	135.5	3.15	43.947		
600.0	599.5	585.1	584.7	2.6	2.6	116.56	61.7	-129.3	150.5	146.6	3.90	38.574		
700.0	698.7	677.8	676.7	3.2	3.1	120.40	68.5	-137.5	167.7	163.1	4.66	36.033		
800.0	797.9	772.2	770.2	3.7	3.6	124.00	77.1	-148.0	188.9	183.6	5.37	35.213		
900.0	897.1	869.2	866.1	4.2	4.2	126.96	86.2	-158.9	211.1	205.0	6.05	34.862		
1,000.0	996.2	966.2	962.1	4.8	4.7	129.36	95.3	-169.9	233.7	226.9	6.76	34.588		
1,100.0	1,095.4	1,063.2	1,058.0	5.4	5.3	131.33	104.3	-180.8	256.6	249.1	7.46	34.375		
1,200.0	1,194.6	1,160.2	1,153.9	5.9	5.8	132.98	113.4	-191.8	279.7	271.5	8.18	34.208		
1,300.0	1,293.7	1,257.2	1,249.9	6.5	6.4	134.38	122.5	-202.8	303.1	294.2	8.89	34.072		
1,400.0	1,392.9	1,354.2	1,345.8	7.0	6.9	135.58	131.5	-213.7	326.6	316.9	9.62	33.959		
1,500.0	1,492.1	1,451.2	1,441.8	7.6	7.5	136.62	140.6	-224.7	350.2	339.8	10.34	33.865		
1,600.0	1,591.2	1,548.2	1,537.7	8.2	8.0	137.53	149.7	-235.6	373.9	362.8	11.07	33.784		
1,700.0	1,690.4	1,645.2	1,633.7	8.7	8.6	138.33	158.7	-246.6	397.6	385.8	11.79	33.715		
1,800.0	1,789.6	1,742.2	1,729.6	9.3	9.2	139.04	167.8	-257.6	421.5	409.0	12.52	33.655		
1,900.0	1,888.7	1,839.1	1,825.5	9.9	9.7	139.67	176.9	-268.5	445.4	432.1	13.25	33.602		
2,000.0	1,987.9	1,936.1	1,921.5	10.4	10.3	140.24	185.9	-279.5	469.3	455.3	13.99	33.555		
2,100.0	2,087.1	2,033.1	2,017.4	11.0	10.8	140.75	195.0	-290.5	493.3	478.6	14.72	33.513		
2,200.0	2,186.2	2,130.1	2,113.4	11.6	11.4	141.22	204.1	-301.4	517.3	501.9	15.45	33.476		
2,300.0	2,285.4	2,227.1	2,209.3	12.1	12.0	141.65	213.1	-312.4	541.4	525.2	16.19	33.443		
2,400.0	2,384.6	2,324.1	2,305.2	12.7	12.5	142.04	222.2	-323.3	565.4	548.5	16.92	33.412		
2,500.0	2,483.7	2,421.1	2,401.2	13.3	13.1	142.39	231.3	-334.3	589.5	571.9	17.66	33.385		
2,600.0	2,582.9	2,518.1	2,497.1	13.9	13.7	142.72	240.3	-345.3	613.6	595.3	18.40	33.359		
2,700.0	2,682.1	2,615.1	2,593.1	14.4	14.2	143.03	249.4	-356.2	637.8	618.7	19.13	33.336		
2,800.0	2,781.2	2,712.1	2,689.0	15.0	14.8	143.31	258.5	-367.2	661.9	642.1	19.87	33.315		
2,900.0	2,880.4	2,809.1	2,785.0	15.6	15.3	143.57	267.5	-378.1	686.1	665.5	20.61	33.295		
3,000.0	2,979.6	2,906.0	2,880.9	16.1	15.9	143.81	276.6	-389.1	710.3	688.9	21.34	33.277		
3,100.0	3,078.7	3,003.0	2,976.8	16.7	16.5	144.04	285.7	-400.1	734.5	712.4	22.08	33.260		
3,200.0	3,177.9	3,100.0	3,072.8	17.3	17.0	144.26	294.7	-411.0	758.7	735.8	22.82	33.245		
3,300.0	3,277.1	3,197.0	3,168.7	17.8	17.6	144.46	303.8	-422.0	782.9	759.3	23.56	33.230		
3,400.0	3,376.2	3,294.0	3,264.7	18.4	18.2	144.65	312.9	-433.0	807.1	782.8	24.30	33.216		
3,500.0	3,475.4	3,391.0	3,360.6	19.0	18.7	144.82	321.9	-443.9	831.3	806.3	25.04	33.203		
3,600.0	3,574.6	3,488.0	3,456.6	19.6	19.3	144.99	331.0	-454.9	855.5	829.7	25.78	33.191		
3,700.0	3,673.7	3,585.0	3,552.5	20.1	19.9	145.15	340.1	-465.8	879.8	853.2	26.51	33.180		
3,800.0	3,772.9	3,682.0	3,648.4	20.7	20.4	145.30	349.1	-476.8	904.0	876.7	27.25	33.169		
3,900.0	3,872.1	3,779.0	3,744.4	21.3	21.0	145.44	358.2	-487.8	928.3	900.3	27.99	33.159		
4,000.0	3,971.2	3,876.0	3,840.3	21.8	21.6	145.58	367.3	-498.7	952.5	923.8	28.73	33.149		
4,100.0	4,070.4	3,972.9	3,936.3	22.4	22.1	145.70	376.3	-509.7	976.8	947.3	29.47	33.140		
4,200.0	4,169.6	4,069.9	4,032.2	23.0	22.7	145.83	385.4	-520.7	1,001.0	970.8	30.21	33.132		
4,300.0	4,268.7	4,166.9	4,128.1	23.6	23.2	145.94	394.5	-531.6	1,025.3	994.3	30.95	33.123		
4,400.0	4,367.9	4,263.9	4,224.1	24.1	23.8	146.05	403.5	-542.6	1,049.6	1,017.9	31.69	33.116		
4,500.0	4,467.1	4,360.9	4,320.0	24.7	24.4	146.16	412.6	-553.5	1,073.8	1,041.4	32.43	33.108		
4,600.0	4,566.2	4,457.9	4,416.0	25.3	24.9	146.26	421.7	-564.5	1,098.1	1,064.9	33.17	33.101		
4,700.0	4,665.4	4,554.9	4,511.9	25.8	25.5	146.36	430.7	-575.5	1,122.4	1,088.5	33.91	33.094		
4,800.0	4,764.6	4,651.9	4,607.9	26.4	26.1	146.45	439.8	-586.4	1,146.7	1,112.0	34.66	33.088		
4,900.0	4,863.7	4,748.9	4,703.8	27.0	26.6	146.54	448.9	-597.4	1,171.0	1,135.6	35.40	33.082		
5,000.0	4,963.1	4,847.2	4,795.0	27.5	27.2	146.62	458.0	-608.3	1,195.2	1,158.8	36.14	33.076		
5,100.0	5,062.8	4,945.7	4,891.0	28.1	27.7	146.70	467.1	-619.2	1,219.4	1,182.0	36.88	33.070		
5,200.0	5,162.0	5,043.5	4,987.0	28.6	28.2	146.78	476.2	-630.1	1,243.6	1,205.2	37.62	33.064		
5,300.0	5,261.2	5,141.5	5,084.0	29.1	28.7	146.86	485.3	-641.0	1,267.8	1,228.4	38.36	33.058		
5,400.0	5,360.4	5,238.7	5,179.0	29.6	29.2	146.94	494.4	-651.9	1,292.0	1,251.6	39.10	33.052		
5,500.0	5,459.6	5,336.9	5,275.0	30.1	29.7	147.02	503.5	-662.8	1,316.2	1,274.8	39.84	33.046		
5,600.0	5,558.8	5,435.1	5,372.0	30.6	30.2	147.10	512.6	-673.7	1,340.4	1,300.0	40.58	33.040		
5,700.0	5,658.0	5,533.3	5,468.0	31.1	30.7	147.18	521.7	-684.6	1,364.6	1,321.2	41.32	33.034		
5,800.0	5,757.2	5,632.5	5,566.0	31.6	31.2	147.26	530.8	-695.5	1,388.8	1,344.4	42.06	33.028		
5,900.0	5,856.4	5,731.7	5,663.0	32.1	31.7	147.34	539.9	-706.4	1,413.0	1,367.6	42.80	33.022		
6,000.0	5,955.6	5,830.9	5,760.0	32.6	32.2	147.42	549.0	-717.3	1,437.2	1,390.8	43.54	33.016		
6,100.0	6,054.8	5,930.1	5,858.0	33.1	32.7	147.50	558.1	-728.2	1,461.4	1,414.0	44.28	33.010		
6,200.0	6,154.0	6,029.3	5,956.0	33.6	33.2	147.58	567.2	-739.1	1,485.6	1,437.2	45.02	33.004		
6,300.0	6,253.2	6,128.5	6,054.0	34.1	33.7	147.66	576.3	-750.0	1,509.8	1,460.4	45.76	33.000		
6,400.0	6,352.4	6,227.7	6,153.0	34.6	34.2	147.74	585.4	-760.9	1,534.0	1,483.6	46.50	33.000		
6,500.0	6,451.6	6,326.9	6,252.0	35.1	34.7	147.82	594.5	-771.8	1,558.2	1,506.8	47.24	33.000		
6,600.0	6,550.8	6,426.1	6,350.0	35.6	35.2	147.90	603.6	-782.7	1,582.4	1,529.6	47.98	33.000		
6,700.0	6,650.0	6,525.3	6,448.0	36.1	35.7	147.98	612.7	-793.6	1,606.6	1,552.8	48.72	33.000		
6,800.0	6,749.2	6,624.5	6,546.0	36.6	36.2	148.06	621.8	-804.5	1,630.8	1,576.0	49.46	33.000		
6,900.0	6,848.4	6,723.7	6,644.0	37.1	36.7	148.14	630.9	-815.4	1,655.0	1,599.2	50.20	33.000		
7,000.0	6,947.6	6,822.9	6,740.0	37.6	37.2	148.22	640.0	-826.3	1,679.2	1,622.4				

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Project:	Weld County, CO	TVD Reference:	21' KB @ 4920.0usft
Reference Site:	S7-T10N-R57W	MD Reference:	21' KB @ 4920.0usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.79 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design S7-T10N-R57W - HORSETAIL #07F-1838 - OH - PLAN #1													Offset Site Error:	0.0 usft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis			Distance				Total		Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Uncertainty Axis	Separation Factor		
5,200.0	5,162.7	6,798.8	5,951.0	28.6	35.6	87.51	-594.6	-625.3	981.9	955.0	26.86	36.549		
5,300.0	5,262.7	6,799.6	5,951.0	29.0	35.7	-90.43	-595.4	-625.3	903.5	874.3	29.24	30.900		
5,400.0	5,362.6	6,796.3	5,951.0	29.4	35.6	-96.01	-592.1	-625.3	830.0	798.0	31.91	26.009		
5,500.0	5,460.9	6,778.5	5,951.0	29.7	35.4	-102.27	-574.3	-625.5	763.5	728.8	34.72	21.992		
5,600.0	5,555.2	6,745.5	5,951.0	29.9	35.0	-105.44	-541.3	-625.7	706.8	669.3	37.48	18.855		
5,700.0	5,643.1	6,698.1	5,951.0	30.2	34.5	-106.06	-494.0	-626.1	661.7	621.7	39.98	16.552		
5,800.0	5,722.6	6,637.6	5,951.0	30.4	33.9	-104.72	-433.4	-626.5	628.9	586.9	42.00	14.973		
5,900.0	5,791.7	6,565.4	5,951.0	30.6	33.2	-102.03	-361.2	-627.1	607.5	564.1	43.41	13.996		
6,000.0	5,848.5	6,483.3	5,951.0	30.8	32.4	-98.69	-279.1	-627.7	595.4	551.2	44.22	13.465		
6,100.0	5,891.9	6,393.3	5,951.0	31.1	31.8	-95.45	-189.1	-628.4	589.9	545.3	44.61	13.224		
6,200.0	5,920.6	6,294.6	5,947.4	31.5	31.3	-92.54	-90.6	-629.1	587.9	543.1	44.79	13.127		
6,262.7	5,930.8	6,233.4	5,938.0	31.9	31.2	-90.71	-30.1	-629.5	587.6	542.7	44.91	13.085		
6,300.0	5,934.0	6,197.9	5,929.9	32.0	31.2	-89.62	4.5	-629.8	587.7	542.7	44.96	13.071		
6,400.0	5,935.0	6,106.5	5,900.4	32.6	31.1	-86.63	90.8	-630.5	589.3	544.1	45.17	13.045 SF		
6,500.0	5,935.0	6,024.8	5,863.7	33.4	31.1	-83.09	163.8	-631.0	594.2	548.8	45.43	13.081		
6,600.0	5,935.0	5,950.0	5,822.2	34.2	31.1	-79.15	226.0	-631.5	604.8	559.2	45.61	13.261		
6,700.0	5,935.0	5,892.8	5,785.7	35.2	31.0	-75.77	270.0	-631.8	622.8	577.0	45.79	13.601		
6,800.0	5,935.0	5,840.9	5,749.3	36.3	31.0	-72.49	307.0	-632.1	649.3	603.4	45.88	14.153		
6,900.0	5,935.0	5,800.0	5,718.5	37.5	30.9	-69.82	333.9	-632.3	684.7	638.7	45.97	14.895		
7,000.0	5,935.0	5,750.0	5,678.7	38.8	30.9	-66.49	364.1	-632.5	728.6	682.8	45.82	15.901		
7,100.0	5,935.0	5,726.4	5,659.1	40.2	30.8	-64.91	377.2	-632.6	780.1	734.2	45.96	16.975		
7,200.0	5,935.0	5,700.0	5,636.6	41.6	30.8	-63.14	391.1	-632.7	838.6	792.6	45.98	18.236		
7,300.0	5,935.0	5,674.1	5,614.0	43.1	30.7	-61.42	403.7	-632.8	902.9	856.9	45.97	19.641		
7,400.0	5,935.0	5,650.0	5,592.5	44.7	30.7	-59.84	414.7	-632.9	972.1	926.2	45.94	21.160		
7,500.0	5,935.0	5,634.1	5,578.1	46.3	30.6	-58.80	421.4	-632.9	1,045.5	999.5	45.97	22.742		
7,600.0	5,935.0	5,617.5	5,562.9	48.0	30.6	-57.73	428.1	-633.0	1,122.3	1,076.4	45.97	24.415		
7,700.0	5,935.0	5,600.0	5,546.7	49.7	30.6	-56.62	434.7	-633.0	1,202.1	1,156.1	45.94	26.164		
7,800.0	5,935.0	5,600.0	5,546.7	51.4	30.6	-56.62	434.7	-633.0	1,284.4	1,238.3	46.04	27.899		
7,900.0	5,935.0	5,577.6	5,525.7	53.2	30.5	-55.22	442.5	-633.1	1,368.5	1,322.5	45.95	29.780		
8,000.0	5,935.0	5,550.0	5,499.5	55.1	30.4	-53.54	451.1	-633.2	1,454.8	1,408.9	45.84	31.735		

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Project:	Weld County, CO	TVD Reference:	21' KB @ 4920.0usft
Reference Site:	S7-T10N-R57W	MD Reference:	21' KB @ 4920.0usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.79 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design S7-T10N-R57W - HORSETAIL #07F-1839 - OH - PLAN #1													Offset Site Error:	0.0 usft
Survey Program: O-MWD+HDGM													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	-48.53	51.6	-58.4	78.0					
100.0	100.0	100.0	100.0	0.2	0.2	-48.53	51.6	-58.4	78.0	77.7	0.28	275.259		
200.0	200.0	200.0	200.0	0.7	0.7	-48.53	51.6	-58.4	78.0	77.0	1.00	77.941		
300.0	300.0	300.0	300.0	1.2	1.2	-48.53	51.6	-58.4	78.0	76.2	1.72	45.398 CC, ES		
400.0	400.0	397.4	397.4	1.7	1.7	128.92	53.1	-59.2	80.6	78.2	2.43	33.133		
500.0	499.8	494.2	494.0	2.2	2.2	132.36	57.4	-61.6	88.9	85.8	3.17	28.018		
600.0	599.5	589.7	589.2	2.6	2.7	136.79	64.5	-65.4	103.3	99.4	3.93	26.285		
700.0	698.7	687.1	686.1	3.2	3.2	141.31	73.3	-70.2	122.6	117.9	4.63	26.479		
800.0	797.9	784.6	783.1	3.7	3.7	144.94	82.1	-75.1	143.1	137.8	5.32	26.924		
900.0	897.1	882.2	880.1	4.2	4.2	147.65	91.0	-79.9	164.1	158.1	6.01	27.312		
1,000.0	996.2	979.7	977.1	4.8	4.7	149.75	99.8	-84.7	185.4	178.7	6.71	27.625		
1,100.0	1,095.4	1,077.2	1,074.1	5.4	5.2	151.41	108.7	-89.5	206.8	199.4	7.42	27.894		
1,200.0	1,194.6	1,174.7	1,171.1	5.9	5.7	152.76	117.5	-94.3	228.4	220.3	8.12	28.121		
1,300.0	1,293.7	1,272.2	1,268.1	6.5	6.3	153.88	126.3	-99.2	250.1	241.3	8.83	28.316		
1,400.0	1,392.9	1,369.7	1,365.1	7.0	6.8	154.82	135.2	-104.0	271.9	262.3	9.54	28.484		
1,500.0	1,492.1	1,467.2	1,462.1	7.6	7.3	155.62	144.0	-108.8	293.7	283.4	10.26	28.630		
1,600.0	1,591.2	1,564.8	1,559.1	8.2	7.8	156.31	152.9	-113.6	315.6	304.6	10.97	28.758		
1,700.0	1,690.4	1,662.3	1,656.0	8.7	8.3	156.91	161.7	-118.5	337.5	325.8	11.69	28.871		
1,800.0	1,789.6	1,759.8	1,753.0	9.3	8.9	157.44	170.6	-123.3	359.4	347.0	12.41	28.971		
1,900.0	1,888.7	1,857.3	1,850.0	9.9	9.4	157.91	179.4	-128.1	381.4	368.3	13.12	29.061		
2,000.0	1,987.9	1,954.8	1,947.0	10.4	9.9	158.32	188.2	-132.9	403.4	389.5	13.84	29.142		
2,100.0	2,087.1	2,052.3	2,044.0	11.0	10.4	158.70	197.1	-137.7	425.4	410.8	14.56	29.215		
2,200.0	2,186.2	2,149.8	2,141.0	11.6	11.0	159.03	205.9	-142.6	447.4	432.1	15.28	29.281		
2,300.0	2,285.4	2,247.4	2,238.0	12.1	11.5	159.34	214.8	-147.4	469.4	453.4	16.00	29.341		
2,400.0	2,384.6	2,344.9	2,335.0	12.7	12.0	159.62	223.6	-152.2	491.5	474.7	16.72	29.396		
2,500.0	2,483.7	2,442.4	2,432.0	13.3	12.5	159.87	232.4	-157.0	513.5	496.1	17.44	29.447		
2,600.0	2,582.9	2,539.9	2,529.0	13.9	13.1	160.10	241.3	-161.9	535.6	517.4	18.16	29.494		
2,700.0	2,682.1	2,637.4	2,626.0	14.4	13.6	160.32	250.1	-166.7	557.6	538.8	18.88	29.537		
2,800.0	2,781.2	2,734.9	2,723.0	15.0	14.1	160.51	259.0	-171.5	579.7	560.1	19.60	29.577		
2,900.0	2,880.4	2,832.4	2,820.0	15.6	14.6	160.70	267.8	-176.3	601.8	581.5	20.32	29.614		
3,000.0	2,979.6	2,930.0	2,916.9	16.1	15.2	160.87	276.6	-181.1	623.9	602.8	21.04	29.648		
3,100.0	3,078.7	3,027.5	3,013.9	16.7	15.7	161.03	285.5	-186.0	646.0	624.2	21.76	29.681		
3,200.0	3,177.9	3,125.0	3,110.9	17.3	16.2	161.18	294.3	-190.8	668.1	645.6	22.49	29.711		
3,300.0	3,277.1	3,222.5	3,207.9	17.8	16.7	161.31	303.2	-195.6	690.2	667.0	23.21	29.739		
3,400.0	3,376.2	3,320.0	3,304.9	18.4	17.2	161.45	312.0	-200.4	712.3	688.4	23.93	29.766		
3,500.0	3,475.4	3,417.5	3,401.9	19.0	17.8	161.57	320.9	-205.3	734.4	709.7	24.65	29.791		
3,600.0	3,574.6	3,515.0	3,498.9	19.6	18.3	161.68	329.7	-210.1	756.5	731.1	25.37	29.815		
3,700.0	3,673.7	3,612.6	3,595.9	20.1	18.8	161.79	338.5	-214.9	778.6	752.5	26.10	29.837		
3,800.0	3,772.9	3,710.1	3,692.9	20.7	19.3	161.89	347.4	-219.7	800.7	773.9	26.82	29.858		
3,900.0	3,872.1	3,807.6	3,789.9	21.3	19.9	161.99	356.2	-224.6	822.9	795.3	27.54	29.879		
4,000.0	3,971.2	3,905.1	3,886.9	21.8	20.4	162.08	365.1	-229.4	845.0	816.7	28.26	29.898		
4,100.0	4,070.4	4,002.6	3,983.9	22.4	20.9	162.17	373.9	-234.2	867.1	838.1	28.98	29.916		
4,200.0	4,169.6	4,100.1	4,080.9	23.0	21.4	162.25	382.7	-239.0	889.2	859.5	29.71	29.933		
4,300.0	4,268.7	4,197.6	4,177.8	23.6	22.0	162.33	391.6	-243.8	911.3	880.9	30.43	29.949		
4,400.0	4,367.9	4,295.1	4,274.8	24.1	22.5	162.41	400.4	-248.7	933.5	902.3	31.15	29.965		
4,500.0	4,467.1	4,392.7	4,371.8	24.7	23.0	162.48	409.3	-253.5	955.6	923.7	31.88	29.980		
4,600.0	4,566.2	4,490.2	4,468.8	25.3	23.5	162.55	418.1	-258.3	977.7	945.1	32.60	29.994		
4,700.0	4,665.4	4,587.7	4,565.8	25.8	24.1	162.61	426.9	-263.1	999.9	966.5	33.32	30.007		
4,800.0	4,764.6	4,685.2	4,662.8	26.4	24.6	162.68	435.8	-268.0	1,022.0	988.0	34.04	30.020		
4,900.0	4,863.7	4,782.7	4,759.8	27.0	25.1	162.74	444.6	-272.8	1,044.1	1,009.4	34.77	30.033		
5,000.0	4,963.1	4,880.6	4,857.2	27.5	25.6	162.89	453.5	-277.6	1,064.5	1,029.1	35.49	29.998		
5,100.0	5,062.8	6,843.7	6,024.0	28.1	35.4	98.80	-587.5	-286.4	992.4	977.4	14.94	66.443		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Project:	Weld County, CO	TVD Reference:	21' KB @ 4920.0usft
Reference Site:	S7-T10N-R57W	MD Reference:	21' KB @ 4920.0usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.79 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design S7-T10N-R57W - HORSETAIL #07F-1839 - OH - PLAN #1													Offset Site Error:	0.0 usft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Total Uncertainty Axis	Separation Factor	Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Between Centres (usft)	Between Ellipses (usft)						
5,200.0	5,162.7	6,847.8	6,024.0	28.6	35.5	90.52	-591.6	-286.4	895.8	880.0	15.86	56.496		
5,300.0	5,262.7	6,848.6	6,024.0	29.0	35.5	-90.32	-592.4	-286.4	800.2	783.2	17.01	47.033		
5,400.0	5,362.6	6,845.3	6,024.0	29.4	35.4	-105.26	-589.1	-286.4	705.8	687.3	18.50	38.148		
5,500.0	5,460.9	6,827.5	6,024.0	29.7	35.2	-120.34	-571.3	-286.5	614.7	594.3	20.35	30.201		
5,600.0	5,555.2	6,794.5	6,024.0	29.9	34.9	-127.56	-538.3	-286.7	529.7	507.0	22.69	23.341		
5,700.0	5,643.1	6,747.1	6,024.0	30.2	34.4	-129.97	-490.9	-286.9	453.7	428.1	25.63	17.699		
5,800.0	5,722.6	6,686.6	6,024.0	30.4	33.7	-129.20	-430.4	-287.3	389.5	360.3	29.14	13.366		
5,900.0	5,791.7	6,614.4	6,024.0	30.6	33.1	-126.15	-358.2	-287.7	339.0	306.1	32.95	10.289		
6,000.0	5,848.5	6,532.3	6,024.0	30.8	32.4	-121.59	-276.1	-288.2	303.0	266.5	36.53	8.294		
6,100.0	5,891.9	6,442.3	6,024.0	31.1	31.7	-116.52	-186.1	-288.7	280.3	241.0	39.33	7.127		
6,200.0	5,920.6	6,334.3	6,019.2	31.5	31.1	-110.79	-78.3	-289.3	266.6	225.3	41.34	6.449		
6,300.0	5,934.0	6,226.0	5,997.0	32.0	30.5	-104.02	27.5	-289.9	256.2	213.0	43.20	5.930		
6,400.0	5,935.0	6,125.7	5,960.6	32.6	30.2	-95.90	120.9	-290.4	249.4	204.8	44.61	5.591		
6,458.1	5,935.0	6,073.2	5,935.9	33.1	30.1	-90.20	167.2	-290.6	247.9	202.8	45.15	5.491 SF		
6,500.0	5,935.0	6,038.2	5,917.3	33.4	30.0	-85.92	196.8	-290.8	248.9	203.6	45.28	5.498		
6,600.0	5,935.0	5,964.3	5,872.9	34.2	29.8	-75.94	255.8	-291.1	261.3	216.5	44.71	5.843		
6,700.0	5,935.0	5,900.0	5,828.9	35.2	29.7	-66.85	302.7	-291.4	290.2	246.9	43.25	6.709		
6,800.0	5,935.0	5,850.0	5,791.5	36.3	29.6	-59.98	335.9	-291.6	335.0	293.0	41.95	7.986		
6,900.0	5,935.0	5,800.0	5,751.7	37.5	29.5	-53.56	366.1	-291.8	392.8	352.0	40.81	9.625		
7,000.0	5,935.0	5,771.6	5,728.0	38.8	29.5	-50.20	381.8	-291.9	460.0	419.4	40.66	11.315		
7,100.0	5,935.0	5,750.0	5,709.6	40.2	29.4	-47.78	393.1	-291.9	534.4	493.6	40.74	13.115		
7,200.0	5,935.0	5,714.6	5,678.6	41.6	29.3	-44.09	410.1	-292.0	613.5	573.0	40.51	15.143		
7,300.0	5,935.0	5,700.0	5,665.5	43.1	29.3	-42.67	416.6	-292.0	696.6	655.9	40.75	17.096		
7,400.0	5,935.0	5,672.3	5,640.4	44.7	29.2	-40.14	428.2	-292.1	782.4	741.7	40.71	19.217		
7,500.0	5,935.0	5,650.0	5,619.7	46.3	29.2	-38.24	436.7	-292.2	870.4	829.7	40.77	21.352		
7,600.0	5,935.0	5,650.0	5,619.7	48.0	29.2	-38.24	436.7	-292.2	960.3	919.2	41.07	23.380		
7,700.0	5,935.0	5,626.5	5,597.7	49.7	29.1	-36.38	444.9	-292.2	1,051.3	1,010.2	41.07	25.598		
7,800.0	5,935.0	5,600.0	5,572.5	51.4	29.0	-34.43	453.1	-292.3	1,143.8	1,102.7	41.04	27.868		
7,900.0	5,935.0	5,600.0	5,572.5	53.2	29.0	-34.43	453.1	-292.3	1,236.7	1,195.4	41.24	29.990		
8,000.0	5,935.0	5,600.0	5,572.5	55.1	29.0	-34.43	453.1	-292.3	1,330.6	1,289.2	41.39	32.147		
8,100.0	5,935.0	5,600.0	5,572.5	56.9	29.0	-34.43	453.1	-292.3	1,425.4	1,383.9	41.52	34.333		

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Project:	Weld County, CO	TVD Reference:	21' KB @ 4920.0usft
Reference Site:	S7-T10N-R57W	MD Reference:	21' KB @ 4920.0usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.79 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design S7-T10N-R57W - HORSETAIL #07F-1840 - OH - PLAN #1														Offset Site Error:	0.0 usft
Survey Program: O-MWD+HDGM														Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis			Distance								
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning		
0.0	0.0	0.0	0.0	0.0	0.0	1.77	49.6	1.5	49.6						
100.0	100.0	100.0	100.0	0.2	0.2	1.77	49.6	1.5	49.6	49.3	0.28	175.228			
200.0	200.0	200.0	200.0	0.7	0.7	1.77	49.6	1.5	49.6	48.6	1.00	49.617			
300.0	300.0	300.0	300.0	1.2	1.2	1.77	49.6	1.5	49.6	47.9	1.72	28.900 CC, ES			
400.0	400.0	398.2	398.2	1.7	1.7	178.14	51.3	1.7	53.1	50.6	2.44	21.731			
500.0	499.8	495.7	495.5	2.2	2.2	178.71	56.2	2.4	63.4	60.2	3.19	19.856			
600.0	599.5	592.5	592.0	2.6	2.7	179.33	64.3	3.4	80.4	76.5	3.93	20.457			
700.0	698.7	690.2	689.3	3.2	3.2	179.79	73.3	4.6	101.6	97.0	4.62	21.989			
800.0	797.9	787.7	786.4	3.7	3.7	-179.91	82.3	5.8	123.7	118.4	5.30	23.330			
900.0	897.1	885.3	883.5	4.2	4.2	-179.70	91.4	6.9	145.7	139.8	5.99	24.336			
1,000.0	996.2	982.8	980.6	4.8	4.7	-179.54	100.4	8.1	167.8	161.1	6.68	25.107			
1,100.0	1,095.4	1,080.3	1,077.7	5.4	5.2	-179.42	109.4	9.3	189.9	182.5	7.38	25.719			
1,200.0	1,194.6	1,177.9	1,174.8	5.9	5.7	-179.33	118.4	10.4	211.9	203.8	8.08	26.214			
1,300.0	1,293.7	1,275.4	1,271.9	6.5	6.2	-179.25	127.4	11.6	234.0	225.2	8.79	26.623			
1,400.0	1,392.9	1,372.9	1,369.0	7.0	6.7	-179.19	136.5	12.8	256.1	246.6	9.50	26.966			
1,500.0	1,492.1	1,470.5	1,466.2	7.6	7.3	-179.14	145.5	13.9	278.1	267.9	10.20	27.257			
1,600.0	1,591.2	1,568.0	1,563.3	8.2	7.8	-179.09	154.5	15.1	300.2	289.3	10.91	27.508			
1,700.0	1,690.4	1,665.5	1,660.4	8.7	8.3	-179.05	163.5	16.3	322.2	310.6	11.62	27.725			
1,800.0	1,789.6	1,763.1	1,757.5	9.3	8.8	-179.02	172.5	17.4	344.3	332.0	12.33	27.916			
1,900.0	1,888.7	1,860.6	1,854.6	9.9	9.3	-178.99	181.5	18.6	366.4	353.3	13.05	28.084			
2,000.0	1,987.9	1,958.2	1,951.7	10.4	9.8	-178.96	190.6	19.8	388.4	374.7	13.76	28.234			
2,100.0	2,087.1	2,055.7	2,048.8	11.0	10.3	-178.94	199.6	20.9	410.5	396.0	14.47	28.368			
2,200.0	2,186.2	2,153.2	2,145.9	11.6	10.9	-178.92	208.6	22.1	432.6	417.4	15.18	28.489			
2,300.0	2,285.4	2,250.8	2,243.0	12.1	11.4	-178.90	217.6	23.3	454.6	438.7	15.90	28.598			
2,400.0	2,384.6	2,348.3	2,340.1	12.7	11.9	-178.88	226.6	24.4	476.7	460.1	16.61	28.698			
2,500.0	2,483.7	2,445.8	2,437.3	13.3	12.4	-178.87	235.7	25.6	498.7	481.4	17.32	28.788			
2,600.0	2,582.9	2,543.4	2,534.4	13.9	12.9	-178.85	244.7	26.8	520.8	502.8	18.04	28.871			
2,700.0	2,682.1	2,640.9	2,631.5	14.4	13.4	-178.84	253.7	27.9	542.9	524.1	18.75	28.948			
2,800.0	2,781.2	2,738.4	2,728.6	15.0	13.9	-178.83	262.7	29.1	564.9	545.5	19.47	29.018			
2,900.0	2,880.4	2,836.0	2,825.7	15.6	14.5	-178.81	271.7	30.3	587.0	566.8	20.18	29.084			
3,000.0	2,979.6	2,933.5	2,922.8	16.1	15.0	-178.80	280.8	31.4	609.1	588.2	20.90	29.144			
3,100.0	3,078.7	3,031.0	3,019.9	16.7	15.5	-178.79	289.8	32.6	631.1	609.5	21.61	29.201			
3,200.0	3,177.9	3,128.6	3,117.0	17.3	16.0	-178.79	298.8	33.8	653.2	630.9	22.33	29.253			
3,300.0	3,277.1	3,226.1	3,214.1	17.8	16.5	-178.78	307.8	34.9	675.3	652.2	23.04	29.303			
3,400.0	3,376.2	3,323.6	3,311.3	18.4	17.0	-178.77	316.8	36.1	697.3	673.6	23.76	29.349			
3,500.0	3,475.4	3,421.2	3,408.4	19.0	17.6	-178.76	325.9	37.3	719.4	694.9	24.48	29.392			
3,600.0	3,574.6	3,518.7	3,505.5	19.6	18.1	-178.75	334.9	38.4	741.4	716.3	25.19	29.433			
3,700.0	3,673.7	3,616.3	3,602.6	20.1	18.6	-178.75	343.9	39.6	763.5	737.6	25.91	29.471			
3,800.0	3,772.9	3,713.8	3,699.7	20.7	19.1	-178.74	352.9	40.8	785.6	758.9	26.62	29.507			
3,900.0	3,872.1	3,811.3	3,796.8	21.3	19.6	-178.73	361.9	41.9	807.6	780.3	27.34	29.542			
4,000.0	3,971.2	3,908.9	3,893.9	21.8	20.1	-178.73	370.9	43.1	829.7	801.6	28.05	29.574			
4,100.0	4,070.4	4,006.4	3,991.0	22.4	20.7	-178.72	380.0	44.3	851.8	823.0	28.77	29.605			
4,200.0	4,169.6	4,103.9	4,088.1	23.0	21.2	-178.72	389.0	45.4	873.8	844.3	29.49	29.634			
4,300.0	4,268.7	4,201.5	4,185.3	23.6	21.7	-178.71	398.0	46.6	895.9	865.7	30.20	29.662			
4,400.0	4,367.9	4,299.0	4,282.4	24.1	22.2	-178.71	407.0	47.8	918.0	887.0	30.92	29.688			
4,500.0	4,467.1	4,396.5	4,379.5	24.7	22.7	-178.71	416.0	48.9	940.0	908.4	31.64	29.714			
4,600.0	4,566.2	4,494.1	4,476.6	25.3	23.2	-178.70	425.1	50.1	962.1	929.7	32.35	29.738			
4,700.0	4,665.4	4,591.6	4,573.7	25.8	23.8	-178.70	434.1	51.3	984.1	951.1	33.07	29.761			
4,800.0	4,764.6	4,689.1	4,670.8	26.4	24.3	-178.69	443.1	52.4	1,006.2	972.4	33.79	29.782			
4,900.0	4,863.7	4,786.7	4,767.9	27.0	24.8	-178.69	452.1	53.6	1,028.3	993.8	34.50	29.803			
5,000.0	4,963.1	4,758.7	4,739.5	27.5	25.3	-134.92	-578.3	60.4	992.9	981.1	11.79	84.183			
5,100.0	5,062.8	4,766.2	4,739.5	28.1	25.9	-120.52	-585.9	60.4	893.8	881.7	12.11	73.820			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Project:	Weld County, CO	TVD Reference:	21' KB @ 4920.0usft
Reference Site:	S7-T10N-R57W	MD Reference:	21' KB @ 4920.0usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.79 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design S7-T10N-R57W - HORSETAIL #07F-1840 - OH - PLAN #1													Offset Site Error: 0.0 usft	
Survey Program: 0-MWD+HDGM													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
5,200.0	5,162.7	6,770.3	5,951.0	28.6	35.0	-104.32	-589.9	60.4	794.6	782.2	12.47	63.737		
5,300.0	5,262.7	6,771.1	5,951.0	29.0	35.0	89.85	-590.7	60.4	695.6	682.7	12.91	53.867		
5,400.0	5,362.6	6,767.9	5,951.0	29.4	34.9	120.63	-587.5	60.4	596.9	583.4	13.51	44.178		
5,500.0	5,460.9	6,750.0	5,951.0	29.7	34.7	141.27	-569.6	60.3	500.3	486.0	14.28	35.031		
5,600.0	5,555.2	6,717.0	5,951.0	29.9	34.4	147.84	-536.6	60.3	408.4	392.9	15.43	26.469		
5,700.0	5,643.1	6,669.7	5,951.0	30.2	33.9	148.93	-489.3	60.1	323.8	306.5	17.31	18.712		
5,800.0	5,722.6	6,609.1	5,951.0	30.4	33.2	146.56	-428.8	60.0	249.5	229.1	20.42	12.219		
5,900.0	5,791.7	6,536.9	5,951.0	30.6	32.6	140.84	-356.6	59.8	188.5	163.1	25.34	7.437		
6,000.0	5,848.5	6,454.8	5,951.0	30.8	31.9	131.34	-274.4	59.6	143.7	111.6	32.04	4.483		
6,100.0	5,891.9	6,364.8	5,951.0	31.1	31.2	118.69	-184.4	59.3	116.8	78.1	38.73	3.016		
6,200.0	5,920.6	6,266.1	5,947.3	31.5	30.6	104.21	-85.9	59.1	104.4	61.3	43.10	2.422		
6,284.9	5,933.0	6,183.8	5,933.3	32.0	30.2	90.16	-4.8	58.8	100.9	56.4	44.56	2.265 SF		
6,300.0	5,934.0	6,169.4	5,929.7	32.0	30.1	87.63	9.1	58.8	101.0	56.5	44.54	2.269		
6,400.0	5,935.0	6,078.1	5,900.1	32.6	29.7	70.95	95.4	58.6	107.9	65.5	42.41	2.544		
6,500.0	5,935.0	5,996.5	5,863.4	33.4	29.5	54.70	168.2	58.4	130.8	93.1	37.74	3.466		
6,600.0	5,935.0	5,925.5	5,824.2	34.2	29.3	42.38	227.3	58.2	171.5	137.2	34.26	5.005		
6,700.0	5,935.0	5,864.7	5,785.4	35.2	29.1	34.08	274.2	58.1	226.1	192.9	33.22	6.807		
6,800.0	5,935.0	5,812.8	5,749.0	36.3	29.0	28.56	311.2	58.0	290.7	257.1	33.57	8.661		
6,900.0	5,935.0	5,768.6	5,715.7	37.5	28.9	24.78	340.2	57.9	362.4	328.0	34.39	10.538		
7,000.0	5,935.0	5,730.9	5,685.7	38.8	28.8	22.11	363.1	57.9	439.3	404.0	35.27	12.453		
7,100.0	5,935.0	5,700.0	5,660.2	40.2	28.7	20.23	380.5	57.8	520.1	484.0	36.14	14.391		
7,200.0	5,935.0	5,670.5	5,635.1	41.6	28.6	18.66	395.9	57.8	604.0	567.2	36.79	16.418		
7,300.0	5,935.0	5,650.0	5,617.2	43.1	28.6	17.68	406.0	57.7	690.3	652.8	37.47	18.422		
7,400.0	5,935.0	5,624.9	5,594.9	44.7	28.5	16.59	417.5	57.7	778.4	740.6	37.88	20.551		
7,500.0	5,935.0	5,600.0	5,572.4	46.3	28.5	15.61	428.0	57.7	868.2	830.0	38.20	22.731		
7,600.0	5,935.0	5,600.0	5,572.4	48.0	28.5	15.61	428.0	57.7	959.3	920.5	38.79	24.732		
7,700.0	5,935.0	5,574.8	5,549.2	49.7	28.4	14.72	437.7	57.7	1,051.2	1,012.3	38.95	26.991		
7,800.0	5,935.0	5,550.0	5,525.9	51.4	28.3	13.91	446.4	57.6	1,144.3	1,105.2	39.08	29.278		
7,900.0	5,935.0	5,550.0	5,525.9	53.2	28.3	13.91	446.4	57.6	1,237.8	1,198.4	39.43	31.397		
8,000.0	5,935.0	5,550.0	5,525.9	55.1	28.3	13.91	446.4	57.6	1,332.3	1,292.6	39.70	33.560		
8,100.0	5,935.0	5,529.2	5,506.2	56.9	28.3	13.30	453.0	57.6	1,427.0	1,387.2	39.78	35.872		

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Project:	Weld County, CO	TVD Reference:	21' KB @ 4920.0usft
Reference Site:	S7-T10N-R57W	MD Reference:	21' KB @ 4920.0usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.79 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design S7-T10N-R57W - HORSETAIL FED #07F-0605 - OH - PLAN #1													Offset Site Error: 0.0 usft	
Survey Program: O-MWD+HDGM													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-88.45	4.1	-149.9	150.0					
100.0	100.0	100.0	100.0	0.2	0.2	-88.45	4.1	-149.9	150.0	149.7	0.28	529.550		
200.0	200.0	200.0	200.0	0.7	0.7	-88.45	4.1	-149.9	150.0	149.0	1.00	149.944		
300.0	300.0	300.0	300.0	1.2	1.2	-88.45	4.1	-149.9	150.0	148.2	1.72	87.337	CC, ES	
400.0	400.0	396.2	396.2	1.7	1.7	87.89	3.0	-151.2	151.2	148.8	2.41	62.812		
500.0	499.8	492.2	492.1	2.2	2.1	88.50	0.0	-154.9	154.8	151.7	3.10	49.869		
600.0	599.5	588.1	587.6	2.6	2.6	89.46	-5.1	-161.1	160.8	157.0	3.83	42.047		
700.0	698.7	683.7	682.5	3.2	3.1	90.67	-12.2	-169.8	169.4	164.8	4.57	37.083		
800.0	797.9	778.9	776.7	3.7	3.6	91.42	-21.2	-180.8	180.4	175.0	5.33	33.854		
900.0	897.1	873.7	869.8	4.2	4.2	91.40	-32.2	-194.2	193.7	187.6	6.10	31.735		
1,000.0	996.2	968.1	962.1	4.8	4.8	90.77	-45.1	-209.9	209.3	202.4	6.88	30.406		
1,100.0	1,095.4	1,066.7	1,058.1	5.4	5.4	89.97	-59.3	-227.3	226.0	218.3	7.67	29.462		
1,200.0	1,194.6	1,165.3	1,154.0	5.9	6.0	89.28	-73.6	-244.7	242.6	234.2	8.47	28.662		
1,300.0	1,293.7	1,263.8	1,250.0	6.5	6.7	88.68	-87.8	-262.1	259.3	250.1	9.27	27.981		
1,400.0	1,392.9	1,362.4	1,345.9	7.0	7.4	88.15	-102.0	-279.5	276.0	266.0	10.08	27.396		
1,500.0	1,492.1	1,460.9	1,441.9	7.6	8.0	87.68	-116.3	-296.9	292.8	281.9	10.89	26.890		
1,600.0	1,591.2	1,559.5	1,537.9	8.2	8.7	87.26	-130.5	-314.4	309.6	297.8	11.70	26.448		
1,700.0	1,690.4	1,658.1	1,633.8	8.7	9.4	86.88	-144.8	-331.8	326.3	313.8	12.52	26.060		
1,800.0	1,789.6	1,756.6	1,729.8	9.3	10.1	86.54	-159.0	-349.2	343.1	329.8	13.34	25.717		
1,900.0	1,888.7	1,855.2	1,825.7	9.9	10.8	86.24	-173.3	-366.6	359.9	345.7	14.16	25.411		
2,000.0	1,987.9	1,953.8	1,921.7	10.4	11.4	85.96	-187.5	-384.0	376.7	361.7	14.99	25.137		
2,100.0	2,087.1	2,052.3	2,017.7	11.0	12.1	85.70	-201.8	-401.4	393.5	377.7	15.81	24.891		
2,200.0	2,186.2	2,150.9	2,113.6	11.6	12.8	85.46	-216.0	-418.8	410.4	393.7	16.64	24.668		
2,300.0	2,285.4	2,249.4	2,209.6	12.1	13.5	85.25	-230.3	-436.2	427.2	409.7	17.46	24.465		
2,400.0	2,384.6	2,348.0	2,305.6	12.7	14.2	85.05	-244.5	-453.6	444.0	425.7	18.29	24.280		
2,500.0	2,483.7	2,446.6	2,401.5	13.3	14.9	84.86	-258.8	-471.0	460.9	441.7	19.11	24.111		
2,600.0	2,582.9	2,545.1	2,497.5	13.9	15.6	84.69	-273.0	-488.4	477.7	457.8	19.94	23.955		
2,700.0	2,682.1	2,643.7	2,593.4	14.4	16.3	84.53	-287.3	-505.8	494.5	473.8	20.77	23.811		
2,800.0	2,781.2	2,742.2	2,689.4	15.0	17.0	84.38	-301.5	-523.2	511.4	489.8	21.60	23.679		
2,900.0	2,880.4	2,840.8	2,785.4	15.6	17.7	84.24	-315.8	-540.6	528.3	505.8	22.43	23.555		
3,000.0	2,979.6	2,939.4	2,881.3	16.1	18.4	84.11	-330.0	-558.0	545.1	521.9	23.25	23.441		
3,100.0	3,078.7	3,037.9	2,977.3	16.7	19.0	83.98	-344.2	-575.4	562.0	537.9	24.08	23.334		
3,200.0	3,177.9	3,136.5	3,073.2	17.3	19.7	83.87	-358.5	-592.8	578.8	553.9	24.91	23.234		
3,300.0	3,277.1	3,235.1	3,169.2	17.8	20.4	83.76	-372.7	-610.2	595.7	570.0	25.74	23.140		
3,400.0	3,376.2	3,333.6	3,265.2	18.4	21.1	83.65	-387.0	-627.6	612.6	586.0	26.57	23.053		
3,500.0	3,475.4	3,432.2	3,361.1	19.0	21.8	83.55	-401.2	-645.1	629.4	602.0	27.40	22.970		
3,600.0	3,574.6	3,530.7	3,457.1	19.6	22.5	83.46	-415.5	-662.5	646.3	618.1	28.23	22.892		
3,700.0	3,673.7	3,629.3	3,553.0	20.1	23.2	83.37	-429.7	-679.9	663.2	634.1	29.06	22.819		
3,800.0	3,772.9	3,727.9	3,649.0	20.7	23.9	83.29	-444.0	-697.3	680.0	650.2	29.89	22.750		
3,900.0	3,872.1	3,826.4	3,745.0	21.3	24.6	83.21	-458.2	-714.7	696.9	666.2	30.72	22.684		
4,000.0	3,971.2	3,925.0	3,840.9	21.8	25.3	83.13	-472.5	-732.1	713.8	682.2	31.55	22.622		
4,100.0	4,070.4	4,023.5	3,936.9	22.4	26.0	83.06	-486.7	-749.5	730.7	698.3	32.38	22.563		
4,200.0	4,169.6	4,122.1	4,032.8	23.0	26.7	82.99	-501.0	-766.9	747.5	714.3	33.21	22.507		
4,300.0	4,268.7	4,220.7	4,128.8	23.6	27.4	82.92	-515.2	-784.3	764.4	730.4	34.04	22.454		
4,400.0	4,367.9	4,319.2	4,224.8	24.1	28.1	82.86	-529.5	-801.7	781.3	746.4	34.88	22.403		
4,500.0	4,467.1	4,417.8	4,320.7	24.7	28.8	82.80	-543.7	-819.1	798.2	762.5	35.71	22.354		
4,600.0	4,566.2	4,530.5	4,430.6	25.3	29.6	82.76	-559.6	-838.5	814.7	778.0	36.65	22.229		
4,700.0	4,665.4	4,659.2	4,557.1	25.8	30.4	82.92	-574.7	-856.9	828.0	790.4	37.67	21.980		
4,800.0	4,764.6	4,788.8	4,685.4	26.4	31.1	83.32	-586.2	-871.0	837.8	799.2	38.64	21.683		
4,900.0	4,863.7	4,918.8	4,814.8	27.0	31.8	83.95	-594.1	-880.7	844.1	804.5	39.55	21.344		
5,000.0	4,963.1	5,048.8	4,944.6	27.5	32.4	84.70	-598.2	-885.7	847.0	806.6	40.37	20.981		
5,100.0	5,062.8	5,167.0	5,062.8	28.1	32.8	85.27	-598.9	-886.6	847.0	805.9	41.08	20.617		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Project:	Weld County, CO	TVD Reference:	21' KB @ 4920.0usft
Reference Site:	S7-T10N-R57W	MD Reference:	21' KB @ 4920.0usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.79 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design S7-T10N-R57W - HORSETAIL FED #07F-0605 - OH - PLAN #1												Offset Site Error:	0.0 usft
Survey Program: O-MWD+HDGM												Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,162.7	5,267.6	5,163.3	28.6	33.2	85.70	-596.6	-886.6	846.7	804.9	41.74	20.286	
5,261.0	5,223.7	5,328.1	5,223.3	28.8	33.4	86.31	-588.5	-886.6	846.6	804.5	42.11	20.104	
5,300.0	5,262.7	5,365.9	5,260.2	29.0	33.4	-89.29	-580.6	-886.6	846.7	804.3	42.35	19.991	
5,400.0	5,362.6	5,458.4	5,348.1	29.4	33.6	-87.30	-552.1	-886.6	847.4	804.5	42.94	19.737	
5,500.0	5,460.9	5,547.3	5,427.9	29.7	33.7	-85.51	-513.0	-886.6	849.1	805.7	43.40	19.564	
5,600.0	5,555.2	5,633.4	5,499.2	29.9	33.8	-83.84	-464.9	-886.6	851.3	807.6	43.73	19.468	
5,700.0	5,643.1	5,717.1	5,561.7	30.2	33.8	-82.32	-409.3	-886.6	853.9	810.0	43.94	19.434	
5,800.0	5,722.6	5,800.0	5,615.9	30.4	33.7	-80.94	-346.6	-886.6	856.7	812.6	44.08	19.436	
5,900.0	5,791.7	5,879.3	5,659.7	30.6	33.7	-79.79	-280.6	-886.6	859.4	815.2	44.17	19.454	
6,000.0	5,848.5	5,958.3	5,694.9	30.8	33.6	-78.83	-209.9	-886.6	861.7	817.4	44.30	19.452	
6,100.0	5,891.9	6,036.5	5,720.8	31.1	33.4	-78.09	-136.1	-886.6	863.6	819.1	44.51	19.402	
6,200.0	5,920.6	6,114.1	5,737.4	31.5	33.3	-77.60	-60.4	-886.6	864.9	820.0	44.85	19.284	
6,300.0	5,934.0	6,191.2	5,744.6	32.0	33.2	-77.35	16.3	-886.6	865.4	820.1	45.34	19.087	
6,400.0	5,935.0	6,284.9	5,745.0	32.6	33.1	-77.31	110.0	-886.6	865.2	819.1	46.10	18.769	
6,500.0	5,935.0	6,384.9	5,745.0	33.4	33.1	-77.31	210.0	-886.6	864.8	817.8	47.07	18.373	
6,600.0	5,935.0	6,484.9	5,745.0	34.2	33.4	-77.30	310.0	-886.6	864.5	816.3	48.23	17.924	
6,700.0	5,935.0	6,584.9	5,745.0	35.2	34.1	-77.30	410.0	-886.6	864.1	814.6	49.56	17.436	
6,800.0	5,935.0	6,684.9	5,745.0	36.3	35.1	-77.29	510.0	-886.6	863.8	812.7	51.05	16.921	
6,900.0	5,935.0	6,784.9	5,745.0	37.5	36.2	-77.29	609.9	-886.6	863.4	810.8	52.68	16.390	
7,000.0	5,935.0	6,884.9	5,745.0	38.8	37.5	-77.28	709.9	-886.6	863.1	808.6	54.44	15.853	
7,100.0	5,935.0	6,984.9	5,745.0	40.2	38.8	-77.28	809.9	-886.6	862.7	806.4	56.32	15.318	
7,200.0	5,935.0	7,084.9	5,745.0	41.6	40.2	-77.27	909.9	-886.6	862.4	804.1	58.31	14.790	
7,300.0	5,935.0	7,184.9	5,745.0	43.1	41.7	-77.27	1,009.9	-886.6	862.0	801.6	60.39	14.273	
7,400.0	5,935.0	7,284.9	5,745.0	44.7	43.2	-77.26	1,109.9	-886.6	861.7	799.1	62.57	13.772	
7,500.0	5,935.0	7,384.9	5,745.0	46.3	44.8	-77.26	1,209.9	-886.6	861.3	796.5	64.82	13.289	
7,600.0	5,935.0	7,484.9	5,745.0	48.0	46.5	-77.25	1,309.9	-886.6	861.0	793.9	67.14	12.824	
7,700.0	5,935.0	7,584.9	5,745.0	49.7	48.2	-77.25	1,409.9	-886.6	860.6	791.1	69.52	12.380	
7,800.0	5,935.0	7,684.9	5,745.0	51.4	49.9	-77.24	1,509.9	-886.6	860.3	788.3	71.96	11.955	
7,900.0	5,935.0	7,784.9	5,745.0	53.2	51.6	-77.24	1,609.9	-886.6	859.9	785.5	74.45	11.550	
8,000.0	5,935.0	7,884.9	5,745.0	55.1	53.4	-77.23	1,709.9	-886.6	859.6	782.6	76.99	11.165	
8,100.0	5,935.0	7,984.9	5,745.0	56.9	55.3	-77.22	1,809.9	-886.6	859.2	779.7	79.57	10.799	
8,200.0	5,935.0	8,084.9	5,745.0	58.8	57.1	-77.22	1,909.9	-886.6	858.9	776.7	82.19	10.450	
8,300.0	5,935.0	8,184.9	5,745.0	60.7	59.0	-77.21	2,009.9	-886.6	858.5	773.7	84.84	10.119	
8,400.0	5,935.0	8,284.9	5,745.0	62.6	60.9	-77.21	2,109.9	-886.6	858.2	770.7	87.52	9.805	
8,500.0	5,935.0	8,384.9	5,745.0	64.5	62.8	-77.20	2,209.9	-886.6	857.8	767.6	90.24	9.507	
8,600.0	5,935.0	8,484.9	5,745.0	66.5	64.7	-77.20	2,309.9	-886.6	857.5	764.5	92.97	9.223	
8,700.0	5,935.0	8,584.9	5,745.0	68.5	66.7	-77.19	2,409.9	-886.6	857.1	761.4	95.74	8.953	
8,800.0	5,935.0	8,684.9	5,745.0	70.5	68.7	-77.19	2,509.9	-886.6	856.8	758.3	98.52	8.697	
8,900.0	5,935.0	8,784.9	5,745.0	72.5	70.7	-77.18	2,609.9	-886.6	856.4	755.1	101.32	8.452	
9,000.0	5,935.0	8,884.9	5,745.0	74.5	72.7	-77.18	2,709.9	-886.6	856.1	751.9	104.15	8.220	
9,100.0	5,935.0	8,984.9	5,745.0	76.5	74.7	-77.17	2,809.9	-886.6	855.7	748.8	106.98	7.999	
9,200.0	5,935.0	9,084.9	5,745.0	78.5	76.7	-77.17	2,909.9	-886.6	855.4	745.5	109.84	7.788	
9,300.0	5,935.0	9,184.8	5,745.0	80.6	78.7	-77.16	3,009.9	-886.6	855.0	742.3	112.71	7.586	
9,400.0	5,935.0	9,284.8	5,745.0	82.7	80.8	-77.16	3,109.9	-886.6	854.7	739.1	115.59	7.394	
9,500.0	5,935.0	9,384.8	5,745.0	84.7	82.8	-77.15	3,209.9	-886.6	854.3	735.9	118.48	7.211	
9,600.0	5,935.0	9,484.8	5,745.0	86.8	84.9	-77.14	3,309.9	-886.6	854.0	732.6	121.39	7.035	
9,700.0	5,935.0	9,584.8	5,745.0	88.9	86.9	-77.14	3,409.9	-886.6	853.6	729.3	124.31	6.867	
9,800.0	5,935.0	9,684.8	5,745.0	91.0	89.0	-77.13	3,509.9	-886.6	853.3	726.1	127.23	6.707	
9,900.0	5,935.0	9,784.8	5,745.0	93.1	91.1	-77.13	3,609.9	-886.6	852.9	722.8	130.17	6.553	
10,000.0	5,935.0	9,884.8	5,745.0	95.2	93.2	-77.12	3,709.9	-886.6	852.6	719.5	133.11	6.405	
10,100.0	5,935.0	9,984.8	5,745.0	97.3	95.3	-77.12	3,809.9	-886.6	852.2	716.2	136.06	6.264	
10,200.0	5,935.0	10,084.8	5,745.0	99.4	97.4	-77.11	3,909.9	-886.6	851.9	712.9	139.02	6.128	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Project:	Weld County, CO	TVD Reference:	21' KB @ 4920.0usft
Reference Site:	S7-T10N-R57W	MD Reference:	21' KB @ 4920.0usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.79 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design S7-T10N-R57W - HORSETAIL FED #07F-0605 - OH - PLAN #1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD+HDGM												Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis			Distance					Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis		
10,300.0	5,935.0	10,184.8	5,745.0	101.5	99.5	-77.11	4,009.9	-886.6	851.5	709.6	141.99	5.997	
10,400.0	5,935.0	10,284.8	5,745.0	103.6	101.6	-77.10	4,109.9	-886.6	851.2	706.2	144.96	5.872	
10,500.0	5,935.0	10,384.8	5,745.0	105.7	103.7	-77.10	4,209.9	-886.6	850.8	702.9	147.94	5.751	
10,600.0	5,935.0	10,484.8	5,745.0	107.9	105.8	-77.09	4,309.9	-886.6	850.5	699.6	150.93	5.635	
10,700.0	5,935.0	10,584.8	5,745.0	110.0	108.0	-77.09	4,409.9	-886.6	850.1	696.2	153.92	5.523	
10,800.0	5,935.0	10,684.8	5,745.0	112.1	110.1	-77.08	4,509.9	-886.6	849.8	692.9	156.91	5.416	
10,900.0	5,935.0	10,784.8	5,745.0	114.3	112.2	-77.07	4,609.9	-886.6	849.4	689.5	159.91	5.312	
11,000.0	5,935.0	10,884.8	5,745.0	116.4	114.3	-77.07	4,709.9	-886.6	849.1	686.2	162.92	5.212	
11,100.0	5,935.0	10,984.8	5,745.0	118.6	116.5	-77.06	4,809.9	-886.6	848.7	682.8	165.93	5.115	
11,200.0	5,935.0	11,084.8	5,745.0	120.7	118.6	-77.06	4,909.9	-886.6	848.4	679.5	168.94	5.022	
11,300.0	5,935.0	11,184.8	5,745.0	122.9	120.8	-77.05	5,009.9	-886.6	848.0	676.1	171.96	4.932	
11,400.0	5,935.0	11,284.8	5,745.0	125.0	122.9	-77.05	5,109.9	-886.6	847.7	672.7	174.98	4.845	
11,500.0	5,935.0	11,384.8	5,745.0	127.2	125.1	-77.04	5,209.9	-886.6	847.3	669.3	178.00	4.760	
11,600.0	5,935.0	11,484.8	5,745.0	129.3	127.2	-77.04	5,309.9	-886.6	847.0	666.0	181.03	4.679	
11,700.0	5,935.0	11,584.8	5,745.0	131.5	129.4	-77.03	5,409.9	-886.5	846.6	662.6	184.06	4.600	
11,800.0	5,935.0	11,684.8	5,745.0	133.7	131.5	-77.03	5,509.9	-886.5	846.3	659.2	187.10	4.523	
11,900.0	5,935.0	11,784.8	5,745.0	135.8	133.7	-77.02	5,609.9	-886.5	845.9	655.8	190.13	4.449	
12,000.0	5,935.0	11,884.8	5,745.0	138.0	135.8	-77.02	5,709.9	-886.5	845.6	652.4	193.17	4.377	
12,100.0	5,935.0	11,984.8	5,745.0	140.2	138.0	-77.01	5,809.9	-886.5	845.2	649.0	196.21	4.308	
12,200.0	5,935.0	12,084.8	5,745.0	142.3	140.2	-77.00	5,909.9	-886.5	844.9	645.6	199.26	4.240	
12,300.0	5,935.0	12,184.8	5,745.0	144.5	142.3	-77.00	6,009.9	-886.5	844.5	642.2	202.30	4.175	
12,400.0	5,935.0	12,284.8	5,745.0	146.7	144.5	-76.99	6,109.9	-886.5	844.2	638.8	205.35	4.111	
12,500.0	5,935.0	12,384.8	5,745.0	148.9	146.7	-76.99	6,209.9	-886.5	843.8	635.4	208.40	4.049	
12,600.0	5,935.0	12,484.8	5,745.0	151.0	148.8	-76.98	6,309.9	-886.5	843.5	632.0	211.46	3.989	
12,700.0	5,935.0	12,584.8	5,745.0	153.2	151.0	-76.98	6,409.9	-886.5	843.1	628.6	214.51	3.931	
12,800.0	5,935.0	12,684.8	5,745.0	155.4	153.2	-76.97	6,509.9	-886.5	842.8	625.2	217.57	3.874	
12,900.0	5,935.0	12,784.8	5,745.0	157.6	155.4	-76.97	6,609.9	-886.5	842.4	621.8	220.63	3.818	
13,000.0	5,935.0	12,884.8	5,745.0	159.7	157.5	-76.96	6,709.9	-886.5	842.1	618.4	223.69	3.765	
13,100.0	5,935.0	12,984.8	5,745.0	161.9	159.7	-76.95	6,809.9	-886.5	841.7	615.0	226.75	3.712	
13,200.0	5,935.0	13,084.8	5,745.0	164.1	161.9	-76.95	6,909.9	-886.5	841.4	611.6	229.81	3.661	
13,300.0	5,935.0	13,184.8	5,745.0	166.3	164.1	-76.94	7,009.9	-886.5	841.0	608.2	232.88	3.612	
13,400.0	5,935.0	13,284.8	5,745.0	168.5	166.2	-76.94	7,109.9	-886.5	840.7	604.8	235.94	3.563	
13,500.0	5,935.0	13,384.8	5,745.0	170.7	168.4	-76.93	7,209.9	-886.5	840.3	601.3	239.01	3.516	
13,600.0	5,935.0	13,484.8	5,745.0	172.9	170.6	-76.93	7,309.9	-886.5	840.0	597.9	242.08	3.470	
13,611.4	5,935.0	13,493.2	5,745.0	173.1	170.8	-76.93	7,318.3	-886.5	840.0	597.6	242.40	3.465	
13,617.5	5,935.0	13,493.2	5,745.0	173.3	170.8	-76.93	7,318.3	-886.5	840.0	597.4	242.54	3.463 SF	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Project:	Weld County, CO	TVD Reference:	21' KB @ 4920.0usft
Reference Site:	S7-T10N-R57W	MD Reference:	21' KB @ 4920.0usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.79 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design S7-T10N-R57W - HORSETAIL FED #07F-0606 - OH - PLAN #1													Offset Site Error: 0.0 usft	
Survey Program: O-MWD+HDGM													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-88.07	3.0	-89.9	90.0					
100.0	100.0	100.0	100.0	0.2	0.2	-88.07	3.0	-89.9	90.0	89.7	0.28	317.661		
200.0	200.0	200.0	200.0	0.7	0.7	-88.07	3.0	-89.9	90.0	89.0	1.00	89.947		
300.0	300.0	300.0	300.0	1.2	1.2	-88.07	3.0	-89.9	90.0	88.2	1.72	52.391	CC, ES	
400.0	400.0	398.2	398.1	1.7	1.7	88.26	1.7	-90.9	90.9	88.5	2.41	37.777		
500.0	499.8	496.3	496.1	2.2	2.1	88.85	-2.3	-94.1	93.8	90.7	3.10	30.265		
600.0	599.5	594.3	593.7	2.6	2.6	89.75	-8.8	-99.2	98.6	94.8	3.82	25.822		
700.0	698.7	692.1	690.9	3.2	3.1	90.83	-18.0	-106.5	105.3	100.8	4.56	23.085		
800.0	797.9	789.7	787.3	3.7	3.7	90.85	-29.8	-115.7	114.0	108.6	5.33	21.371		
900.0	897.1	889.0	885.1	4.2	4.2	90.08	-43.3	-126.4	123.7	117.6	6.11	20.258		
1,000.0	996.2	988.5	983.1	4.8	4.8	89.41	-56.9	-137.0	133.5	126.6	6.89	19.368		
1,100.0	1,095.4	1,088.0	1,081.1	5.4	5.4	88.84	-70.5	-147.7	143.3	135.7	7.69	18.640		
1,200.0	1,194.6	1,187.5	1,179.1	5.9	6.0	88.33	-84.1	-158.4	153.2	144.7	8.49	18.038		
1,300.0	1,293.7	1,287.0	1,277.0	6.5	6.6	87.89	-97.7	-169.1	163.0	153.7	9.30	17.532		
1,400.0	1,392.9	1,386.5	1,375.0	7.0	7.2	87.50	-111.3	-179.8	172.9	162.7	10.11	17.103		
1,500.0	1,492.1	1,486.0	1,473.0	7.6	7.8	87.15	-124.9	-190.5	182.7	171.8	10.92	16.734		
1,600.0	1,591.2	1,585.5	1,571.0	8.2	8.4	86.84	-138.4	-201.1	192.6	180.8	11.73	16.413		
1,700.0	1,690.4	1,685.0	1,669.0	8.7	9.1	86.56	-152.0	-211.8	202.4	189.9	12.55	16.133		
1,800.0	1,789.6	1,784.5	1,767.0	9.3	9.7	86.30	-165.6	-222.5	212.3	198.9	13.36	15.886		
1,900.0	1,888.7	1,884.0	1,865.0	9.9	10.3	86.07	-179.2	-233.2	222.2	208.0	14.18	15.666		
2,000.0	1,987.9	1,983.5	1,963.0	10.4	10.9	85.85	-192.8	-243.9	232.0	217.0	15.00	15.470		
2,100.0	2,087.1	2,083.0	2,061.0	11.0	11.5	85.66	-206.4	-254.6	241.9	226.1	15.82	15.293		
2,200.0	2,186.2	2,182.6	2,159.0	11.6	12.1	85.47	-220.0	-265.2	251.8	235.2	16.64	15.134		
2,300.0	2,285.4	2,282.1	2,257.0	12.1	12.7	85.31	-233.6	-275.9	261.7	244.2	17.46	14.989		
2,400.0	2,384.6	2,381.6	2,355.0	12.7	13.4	85.15	-247.1	-286.6	271.6	253.3	18.28	14.857		
2,500.0	2,483.7	2,481.1	2,453.0	13.3	14.0	85.01	-260.7	-297.3	281.4	262.3	19.10	14.736		
2,600.0	2,582.9	2,580.6	2,551.0	13.9	14.6	84.87	-274.3	-308.0	291.3	271.4	19.92	14.625		
2,700.0	2,682.1	2,680.1	2,649.0	14.4	15.2	84.75	-287.9	-318.7	301.2	280.5	20.74	14.522		
2,800.0	2,781.2	2,779.6	2,747.0	15.0	15.8	84.63	-301.5	-329.3	311.1	289.6	21.56	14.428		
2,900.0	2,880.4	2,879.1	2,845.0	15.6	16.4	84.52	-315.1	-340.0	321.0	298.6	22.39	14.340		
3,000.0	2,979.6	2,978.6	2,943.0	16.1	17.1	84.42	-328.7	-350.7	330.9	307.7	23.21	14.258		
3,100.0	3,078.7	3,078.1	3,041.0	16.7	17.7	84.32	-342.3	-361.4	340.8	316.8	24.03	14.182		
3,200.0	3,177.9	3,177.6	3,139.0	17.3	18.3	84.23	-355.8	-372.1	350.7	325.8	24.85	14.111		
3,300.0	3,277.1	3,277.1	3,236.9	17.8	18.9	84.14	-369.4	-382.8	360.6	334.9	25.67	14.044		
3,400.0	3,376.2	3,376.6	3,334.9	18.4	19.5	84.06	-383.0	-393.4	370.5	344.0	26.50	13.982		
3,500.0	3,475.4	3,476.2	3,432.9	19.0	20.2	83.98	-396.6	-404.1	380.4	353.1	27.32	13.923		
3,600.0	3,574.6	3,575.7	3,530.9	19.6	20.8	83.90	-410.2	-414.8	390.3	362.1	28.14	13.868		
3,700.0	3,673.7	3,675.2	3,628.9	20.1	21.4	83.83	-423.8	-425.5	400.2	371.2	28.97	13.815		
3,800.0	3,772.9	3,774.7	3,726.9	20.7	22.0	83.77	-437.4	-436.2	410.1	380.3	29.79	13.766		
3,900.0	3,872.1	3,874.2	3,824.9	21.3	22.6	83.70	-451.0	-446.9	420.0	389.4	30.61	13.719		
4,000.0	3,971.2	3,973.7	3,922.9	21.8	23.3	83.64	-464.6	-457.5	429.9	398.4	31.43	13.675		
4,100.0	4,070.4	4,073.2	4,020.9	22.4	23.9	83.58	-478.1	-468.2	439.8	407.5	32.26	13.633		
4,200.0	4,169.6	4,172.7	4,118.9	23.0	24.5	83.53	-491.7	-478.9	449.7	416.6	33.08	13.593		
4,300.0	4,268.7	4,272.2	4,216.9	23.6	25.1	83.47	-505.3	-489.6	459.6	425.7	33.90	13.555		
4,400.0	4,367.9	4,371.7	4,314.9	24.1	25.7	83.42	-518.9	-500.3	469.5	434.8	34.73	13.519		
4,500.0	4,467.1	4,471.2	4,412.9	24.7	26.4	83.37	-532.5	-511.0	479.4	443.8	35.55	13.484		
4,600.0	4,566.2	4,570.7	4,510.9	25.3	27.0	83.33	-546.1	-521.6	489.3	452.9	36.37	13.451		
4,700.0	4,665.4	4,670.2	4,608.9	25.8	27.6	83.28	-559.7	-532.3	499.2	462.0	37.20	13.420		
4,800.0	4,764.6	4,782.7	4,719.9	26.4	28.3	83.42	-573.3	-543.1	507.8	469.7	38.11	13.325		
4,900.0	4,863.7	4,895.4	4,831.9	27.0	28.9	83.93	-583.6	-551.1	513.9	474.9	39.00	13.179		
5,000.0	4,963.1	5,008.2	4,944.4	27.5	29.5	84.65	-590.3	-556.4	517.8	477.9	39.83	13.000		
5,100.0	5,062.8	5,121.0	5,057.1	28.1	30.0	85.27	-593.6	-559.0	519.4	478.9	40.58	12.801		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Project:	Weld County, CO	TVD Reference:	21' KB @ 4920.0usft
Reference Site:	S7-T10N-R57W	MD Reference:	21' KB @ 4920.0usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.79 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design S7-T10N-R57W - HORSETAIL FED #07F-0606 - OH - PLAN #1													Offset Site Error: 0.0 usft	
Survey Program: O-MWD+HDGM													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
5,200.0	5,162.7	5,226.6	5,162.7	28.6	30.4	85.71	-594.0	-559.3	519.4	478.1	41.24	12.592		
5,292.5	5,255.2	5,319.2	5,255.1	28.9	30.7	86.19	-590.8	-559.3	519.3	477.5	41.80	12.423		
5,300.0	5,262.7	5,326.7	5,262.6	29.0	30.8	-89.89	-590.0	-559.3	519.3	477.5	41.84	12.411		
5,400.0	5,362.6	5,424.1	5,358.2	29.4	31.1	-87.99	-571.7	-559.3	519.6	477.1	42.42	12.247		
5,500.0	5,460.9	5,519.2	5,447.8	29.7	31.3	-86.25	-540.1	-559.3	520.2	477.4	42.89	12.129		
5,600.0	5,555.2	5,612.2	5,529.8	29.9	31.4	-84.62	-496.5	-559.3	521.3	478.0	43.24	12.054		
5,700.0	5,643.1	5,703.4	5,603.4	30.2	31.5	-83.13	-442.7	-559.3	522.6	479.1	43.49	12.016		
5,800.0	5,722.6	5,793.1	5,667.4	30.4	31.6	-81.80	-380.0	-559.3	523.9	480.3	43.66	12.001		
5,900.0	5,791.7	5,881.5	5,721.4	30.6	31.6	-80.66	-310.1	-559.3	525.3	481.5	43.80	11.993		
6,000.0	5,848.5	5,968.9	5,764.7	30.8	31.6	-79.73	-234.2	-559.3	526.5	482.5	43.97	11.973		
6,100.0	5,891.9	6,055.5	5,796.9	31.1	31.7	-79.03	-153.9	-559.3	527.4	483.1	44.23	11.923		
6,200.0	5,920.6	6,141.6	5,817.9	31.5	31.8	-78.56	-70.5	-559.3	527.9	483.3	44.63	11.830		
6,300.0	5,934.0	6,227.3	5,827.4	32.0	31.9	-78.33	14.7	-559.3	528.0	482.9	45.19	11.686		
6,400.0	5,935.0	6,322.6	5,828.0	32.6	32.3	-78.30	110.0	-559.3	527.7	481.8	45.98	11.477		
6,500.0	5,935.0	6,422.6	5,828.0	33.4	32.8	-78.29	209.9	-559.3	527.4	480.4	46.99	11.224		
6,600.0	5,935.0	6,522.6	5,828.0	34.2	33.5	-78.29	309.9	-559.3	527.0	478.9	48.18	10.939		
6,700.0	5,935.0	6,622.6	5,828.0	35.2	34.4	-78.28	409.9	-559.3	526.7	477.2	49.54	10.631		
6,800.0	5,935.0	6,722.6	5,828.0	36.3	35.5	-78.27	509.9	-559.3	526.3	475.3	51.06	10.308		
6,900.0	5,935.0	6,822.6	5,828.0	37.5	36.6	-78.26	609.9	-559.3	526.0	473.3	52.72	9.977		
7,000.0	5,935.0	6,922.6	5,828.0	38.8	37.8	-78.25	709.9	-559.3	525.6	471.1	54.51	9.642		
7,100.0	5,935.0	7,022.6	5,828.0	40.2	39.2	-78.25	809.9	-559.3	525.3	468.9	56.42	9.310		
7,200.0	5,935.0	7,122.6	5,828.0	41.6	40.6	-78.24	909.9	-559.3	524.9	466.5	58.44	8.983		
7,300.0	5,935.0	7,222.6	5,828.0	43.1	42.1	-78.23	1,009.9	-559.3	524.6	464.0	60.55	8.664		
7,400.0	5,935.0	7,322.6	5,828.0	44.7	43.6	-78.22	1,109.9	-559.3	524.2	461.5	62.75	8.355		
7,500.0	5,935.0	7,422.6	5,828.0	46.3	45.2	-78.21	1,209.9	-559.3	523.9	458.9	65.02	8.057		
7,600.0	5,935.0	7,522.6	5,828.0	48.0	46.9	-78.21	1,309.9	-559.3	523.5	456.2	67.36	7.772		
7,700.0	5,935.0	7,622.6	5,828.0	49.7	48.6	-78.20	1,409.9	-559.3	523.2	453.4	69.77	7.499		
7,800.0	5,935.0	7,722.6	5,828.0	51.4	50.3	-78.19	1,509.9	-559.3	522.8	450.6	72.23	7.239		
7,900.0	5,935.0	7,822.6	5,828.0	53.2	52.1	-78.18	1,609.9	-559.3	522.5	447.7	74.74	6.991		
8,000.0	5,935.0	7,922.6	5,828.0	55.1	53.9	-78.17	1,709.9	-559.3	522.1	444.8	77.30	6.755		
8,100.0	5,935.0	8,022.6	5,828.0	56.9	55.7	-78.17	1,809.9	-559.3	521.8	441.9	79.89	6.531		
8,200.0	5,935.0	8,122.6	5,828.0	58.8	57.6	-78.16	1,909.9	-559.3	521.4	438.9	82.53	6.318		
8,300.0	5,935.0	8,222.6	5,828.0	60.7	59.5	-78.15	2,009.9	-559.3	521.1	435.9	85.20	6.116		
8,400.0	5,935.0	8,322.6	5,828.0	62.6	61.4	-78.14	2,109.9	-559.3	520.7	432.8	87.90	5.924		
8,500.0	5,935.0	8,422.6	5,828.0	64.5	63.3	-78.13	2,209.9	-559.3	520.4	429.7	90.63	5.742		
8,600.0	5,935.0	8,522.6	5,828.0	66.5	65.3	-78.13	2,309.9	-559.3	520.0	426.6	93.38	5.569		
8,700.0	5,935.0	8,622.6	5,828.0	68.5	67.2	-78.12	2,409.9	-559.3	519.7	423.5	96.16	5.404		
8,800.0	5,935.0	8,722.6	5,828.0	70.5	69.2	-78.11	2,509.9	-559.3	519.3	420.4	98.95	5.248		
8,900.0	5,935.0	8,822.6	5,828.0	72.5	71.2	-78.10	2,609.9	-559.3	519.0	417.2	101.77	5.099		
9,000.0	5,935.0	8,922.6	5,828.0	74.5	73.2	-78.09	2,709.9	-559.3	518.6	414.0	104.61	4.958		
9,100.0	5,935.0	9,022.6	5,828.0	76.5	75.2	-78.09	2,809.9	-559.3	518.3	410.8	107.46	4.823		
9,200.0	5,935.0	9,122.6	5,828.0	78.5	77.3	-78.08	2,909.9	-559.3	517.9	407.6	110.33	4.694		
9,300.0	5,935.0	9,222.6	5,828.0	80.6	79.3	-78.07	3,009.9	-559.3	517.6	404.4	113.21	4.572		
9,400.0	5,935.0	9,322.6	5,828.0	82.7	81.4	-78.06	3,109.9	-559.3	517.2	401.1	116.10	4.455		
9,500.0	5,935.0	9,422.6	5,828.0	84.7	83.4	-78.05	3,209.9	-559.3	516.9	397.9	119.01	4.343		
9,600.0	5,935.0	9,522.6	5,828.0	86.8	85.5	-78.04	3,309.9	-559.3	516.5	394.6	121.92	4.236		
9,700.0	5,935.0	9,622.6	5,828.0	88.9	87.6	-78.04	3,409.9	-559.3	516.2	391.3	124.85	4.134		
9,800.0	5,935.0	9,722.6	5,828.0	91.0	89.6	-78.03	3,509.9	-559.3	515.8	388.0	127.79	4.036		
9,900.0	5,935.0	9,822.6	5,828.0	93.1	91.7	-78.02	3,609.9	-559.3	515.5	384.7	130.73	3.943		
10,000.0	5,935.0	9,922.6	5,828.0	95.2	93.8	-78.01	3,709.9	-559.3	515.1	381.4	133.69	3.853		
10,100.0	5,935.0	10,022.6	5,828.0	97.3	95.9	-78.00	3,809.9	-559.3	514.8	378.1	136.65	3.767		
10,200.0	5,935.0	10,122.6	5,828.0	99.4	98.0	-77.99	3,909.9	-559.3	514.4	374.8	139.62	3.684		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Project:	Weld County, CO	TVD Reference:	21' KB @ 4920.0usft
Reference Site:	S7-T10N-R57W	MD Reference:	21' KB @ 4920.0usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.79 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design S7-T10N-R57W - HORSETAIL FED #07F-0606 - OH - PLAN #1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD+HDGM												Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis			Distance					Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis		
10,300.0	5,935.0	10,222.6	5,828.0	101.5	100.1	-77.99	4,009.9	-559.3	514.1	371.5	142.60	3.605	
10,400.0	5,935.0	10,322.6	5,828.0	103.6	102.3	-77.98	4,109.9	-559.3	513.7	368.1	145.58	3.529	
10,500.0	5,935.0	10,422.6	5,828.0	105.7	104.4	-77.97	4,209.9	-559.3	513.4	364.8	148.57	3.455	
10,600.0	5,935.0	10,522.6	5,828.0	107.9	106.5	-77.96	4,309.9	-559.3	513.0	361.4	151.56	3.385	
10,700.0	5,935.0	10,622.6	5,828.0	110.0	108.6	-77.95	4,409.9	-559.3	512.7	358.1	154.56	3.317	
10,800.0	5,935.0	10,722.6	5,828.0	112.1	110.8	-77.94	4,509.9	-559.3	512.3	354.7	157.57	3.251	
10,900.0	5,935.0	10,822.6	5,828.0	114.3	112.9	-77.94	4,609.9	-559.3	512.0	351.4	160.58	3.188	
11,000.0	5,935.0	10,922.6	5,828.0	116.4	115.0	-77.93	4,709.9	-559.3	511.6	348.0	163.59	3.127	
11,100.0	5,935.0	11,022.6	5,828.0	118.6	117.2	-77.92	4,809.9	-559.3	511.3	344.6	166.61	3.069	
11,200.0	5,935.0	11,122.6	5,828.0	120.7	119.3	-77.91	4,909.9	-559.3	510.9	341.3	169.63	3.012	
11,300.0	5,935.0	11,222.6	5,828.0	122.9	121.5	-77.90	5,009.9	-559.3	510.5	337.9	172.66	2.957	
11,400.0	5,935.0	11,322.6	5,828.0	125.0	123.6	-77.89	5,109.9	-559.3	510.2	334.5	175.69	2.904	
11,500.0	5,935.0	11,422.6	5,828.0	127.2	125.8	-77.89	5,209.9	-559.3	509.8	331.1	178.72	2.853	
11,600.0	5,935.0	11,522.6	5,828.0	129.3	127.9	-77.88	5,309.9	-559.3	509.5	327.7	181.75	2.803	
11,700.0	5,935.0	11,622.6	5,828.0	131.5	130.1	-77.87	5,409.9	-559.3	509.1	324.4	184.79	2.755	
11,800.0	5,935.0	11,722.6	5,828.0	133.7	132.2	-77.86	5,509.9	-559.3	508.8	321.0	187.83	2.709	
11,900.0	5,935.0	11,822.6	5,828.0	135.8	134.4	-77.85	5,609.9	-559.3	508.4	317.6	190.88	2.664	
12,000.0	5,935.0	11,922.6	5,828.0	138.0	136.6	-77.84	5,709.9	-559.3	508.1	314.2	193.93	2.620	
12,100.0	5,935.0	12,022.6	5,828.0	140.2	138.7	-77.83	5,809.9	-559.3	507.7	310.8	196.97	2.578	
12,200.0	5,935.0	12,122.6	5,828.0	142.3	140.9	-77.83	5,909.9	-559.3	507.4	307.4	200.03	2.537	
12,300.0	5,935.0	12,222.6	5,828.0	144.5	143.1	-77.82	6,009.9	-559.3	507.0	304.0	203.08	2.497	
12,400.0	5,935.0	12,322.6	5,828.0	146.7	145.2	-77.81	6,109.9	-559.3	506.7	300.6	206.14	2.458	
12,500.0	5,935.0	12,422.6	5,828.0	148.9	147.4	-77.80	6,209.9	-559.3	506.3	297.1	209.19	2.420	
12,600.0	5,935.0	12,522.6	5,828.0	151.0	149.6	-77.79	6,309.9	-559.3	506.0	293.7	212.25	2.384	
12,700.0	5,935.0	12,622.6	5,828.0	153.2	151.8	-77.78	6,409.9	-559.3	505.6	290.3	215.32	2.348	
12,800.0	5,935.0	12,722.6	5,828.0	155.4	153.9	-77.77	6,509.9	-559.3	505.3	286.9	218.38	2.314	
12,900.0	5,935.0	12,822.6	5,828.0	157.6	156.1	-77.77	6,609.9	-559.3	504.9	283.5	221.44	2.280	
13,000.0	5,935.0	12,922.6	5,828.0	159.7	158.3	-77.76	6,709.9	-559.3	504.6	280.1	224.51	2.247	
13,100.0	5,935.0	13,022.6	5,828.0	161.9	160.5	-77.75	6,809.9	-559.3	504.2	276.7	227.58	2.216	
13,200.0	5,935.0	13,122.6	5,828.0	164.1	162.6	-77.74	6,909.9	-559.3	503.9	273.2	230.65	2.185	
13,300.0	5,935.0	13,222.6	5,828.0	166.3	164.8	-77.73	7,009.9	-559.3	503.5	269.8	233.72	2.154	
13,400.0	5,935.0	13,322.6	5,828.0	168.5	167.0	-77.72	7,109.9	-559.3	503.2	266.4	236.79	2.125	
13,500.0	5,935.0	13,422.6	5,828.0	170.7	169.2	-77.71	7,209.9	-559.3	502.8	263.0	239.87	2.096	
13,600.0	5,935.0	13,522.6	5,828.0	172.9	171.4	-77.71	7,309.9	-559.3	502.5	259.5	242.94	2.068	
13,614.2	5,935.0	13,535.0	5,828.0	173.2	171.6	-77.70	7,322.4	-559.3	502.4	259.1	243.36	2.065	
13,617.5	5,935.0	13,535.0	5,828.0	173.3	171.6	-77.70	7,322.4	-559.3	502.4	259.0	243.43	2.064 SF	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Project:	Weld County, CO	TVD Reference:	21' KB @ 4920.0usft
Reference Site:	S7-T10N-R57W	MD Reference:	21' KB @ 4920.0usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.79 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design S7-T10N-R57W - HORSETAIL FED #07F-0638 - OH - PLAN #1													Offset Site Error: 0.0 usft	
Survey Program: 0-MWD+HDGM													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-88.54	3.1	-119.9	120.0					
100.0	100.0	100.0	100.0	0.2	0.2	-88.54	3.1	-119.9	120.0	119.7	0.28	423.571		
200.0	200.0	200.0	200.0	0.7	0.7	-88.54	3.1	-119.9	120.0	119.0	1.00	119.936		
300.0	300.0	300.0	300.0	1.2	1.2	-88.54	3.1	-119.9	120.0	118.2	1.72	69.858	CC, ES	
400.0	400.0	397.2	397.2	1.7	1.7	87.80	1.9	-121.1	121.1	118.6	2.41	50.288		
500.0	499.8	494.3	494.1	2.2	2.1	88.43	-1.6	-124.6	124.4	121.3	3.10	40.082		
600.0	599.5	591.2	590.7	2.6	2.6	89.39	-7.4	-130.4	129.9	126.1	3.82	33.975		
700.0	698.7	687.9	686.7	3.2	3.1	90.59	-15.4	-138.5	137.7	133.2	4.57	30.152		
800.0	797.9	784.3	782.0	3.7	3.6	91.09	-25.7	-148.9	147.8	142.4	5.33	27.708		
900.0	897.1	881.4	877.4	4.2	4.2	90.68	-38.2	-161.5	159.8	153.7	6.11	26.163		
1,000.0	996.2	980.6	974.8	4.8	4.8	90.12	-51.5	-174.9	172.4	165.5	6.89	25.033		
1,100.0	1,095.4	1,079.7	1,072.2	5.4	5.4	89.65	-64.8	-188.3	184.9	177.3	7.68	24.089		
1,200.0	1,194.6	1,178.9	1,169.6	5.9	6.0	89.23	-78.1	-201.7	197.5	189.0	8.48	23.306		
1,300.0	1,293.7	1,278.1	1,267.0	6.5	6.6	88.86	-91.4	-215.1	210.1	200.8	9.28	22.644		
1,400.0	1,392.9	1,377.3	1,364.3	7.0	7.3	88.53	-104.7	-228.4	222.7	212.6	10.09	22.080		
1,500.0	1,492.1	1,476.5	1,461.7	7.6	7.9	88.24	-118.0	-241.8	235.3	224.4	10.90	21.594		
1,600.0	1,591.2	1,575.7	1,559.1	8.2	8.5	87.98	-131.3	-255.2	247.9	236.2	11.71	21.171		
1,700.0	1,690.4	1,674.9	1,656.5	8.7	9.1	87.75	-144.6	-268.6	260.5	248.0	12.53	20.800		
1,800.0	1,789.6	1,774.1	1,753.9	9.3	9.8	87.53	-157.9	-282.0	273.1	259.8	13.34	20.472		
1,900.0	1,888.7	1,873.3	1,851.3	9.9	10.4	87.34	-171.2	-295.4	285.8	271.6	14.16	20.180		
2,000.0	1,987.9	1,972.5	1,948.6	10.4	11.0	87.16	-184.5	-308.8	298.4	283.4	14.98	19.919		
2,100.0	2,087.1	2,071.7	2,046.0	11.0	11.7	86.99	-197.8	-322.2	311.0	295.2	15.80	19.684		
2,200.0	2,186.2	2,170.9	2,143.4	11.6	12.3	86.84	-211.1	-335.6	323.6	307.0	16.62	19.472		
2,300.0	2,285.4	2,270.1	2,240.8	12.1	13.0	86.70	-224.4	-349.0	336.3	318.8	17.44	19.278		
2,400.0	2,384.6	2,369.3	2,338.2	12.7	13.6	86.57	-237.7	-362.4	348.9	330.6	18.26	19.102		
2,500.0	2,483.7	2,468.5	2,435.6	13.3	14.2	86.45	-251.0	-375.7	361.5	342.4	19.09	18.941		
2,600.0	2,582.9	2,567.7	2,533.0	13.9	14.9	86.34	-264.3	-389.1	374.2	354.3	19.91	18.793		
2,700.0	2,682.1	2,666.9	2,630.3	14.4	15.5	86.23	-277.6	-402.5	386.8	366.1	20.73	18.656		
2,800.0	2,781.2	2,766.1	2,727.7	15.0	16.1	86.13	-290.9	-415.9	399.4	377.9	21.56	18.529		
2,900.0	2,880.4	2,865.3	2,825.1	15.6	16.8	86.04	-304.1	-429.3	412.1	389.7	22.38	18.412		
3,000.0	2,979.6	2,964.5	2,922.5	16.1	17.4	85.95	-317.4	-442.7	424.7	401.5	23.21	18.302		
3,100.0	3,078.7	3,063.7	3,019.9	16.7	18.1	85.87	-330.7	-456.1	437.3	413.3	24.03	18.200		
3,200.0	3,177.9	3,162.9	3,117.3	17.3	18.7	85.79	-344.0	-469.5	450.0	425.1	24.85	18.105		
3,300.0	3,277.1	3,262.1	3,214.6	17.8	19.3	85.72	-357.3	-482.9	462.6	437.0	25.68	18.016		
3,400.0	3,376.2	3,361.3	3,312.0	18.4	20.0	85.65	-370.6	-496.3	475.3	448.8	26.50	17.932		
3,500.0	3,475.4	3,460.5	3,409.4	19.0	20.6	85.59	-383.9	-509.7	487.9	460.6	27.33	17.853		
3,600.0	3,574.6	3,559.7	3,506.8	19.6	21.3	85.52	-397.2	-523.0	500.6	472.4	28.15	17.779		
3,700.0	3,673.7	3,658.8	3,604.2	20.1	21.9	85.46	-410.5	-536.4	513.2	484.2	28.98	17.709		
3,800.0	3,772.9	3,758.0	3,701.6	20.7	22.5	85.41	-423.8	-549.8	525.8	496.0	29.81	17.643		
3,900.0	3,872.1	3,857.2	3,799.0	21.3	23.2	85.35	-437.1	-563.2	538.5	507.9	30.63	17.580		
4,000.0	3,971.2	3,956.4	3,896.3	21.8	23.8	85.30	-450.4	-576.6	551.1	519.7	31.46	17.521		
4,100.0	4,070.4	4,055.6	3,993.7	22.4	24.5	85.25	-463.7	-590.0	563.8	531.5	32.28	17.464		
4,200.0	4,169.6	4,154.8	4,091.1	23.0	25.1	85.21	-477.0	-603.4	576.4	543.3	33.11	17.411		
4,300.0	4,268.7	4,254.0	4,188.5	23.6	25.8	85.16	-490.3	-616.8	589.1	555.1	33.93	17.360		
4,400.0	4,367.9	4,353.2	4,285.9	24.1	26.4	85.12	-503.6	-630.2	601.7	567.0	34.76	17.311		
4,500.0	4,467.1	4,452.4	4,383.3	24.7	27.0	85.08	-516.9	-643.6	614.4	578.8	35.59	17.264		
4,600.0	4,566.2	4,551.6	4,480.6	25.3	27.7	85.04	-530.2	-657.0	627.0	590.6	36.41	17.220		
4,700.0	4,665.4	4,650.8	4,578.0	25.8	28.3	85.00	-543.5	-670.3	639.7	602.4	37.24	17.178		
4,800.0	4,764.6	4,750.0	4,675.4	26.4	29.0	84.96	-556.8	-683.7	652.3	614.2	38.06	17.137		
4,900.0	4,863.7	4,849.1	4,790.7	27.0	29.7	85.05	-571.1	-698.1	663.8	624.7	39.02	17.012		
5,000.0	4,963.1	4,948.6	4,909.2	27.5	30.4	85.40	-582.2	-709.4	672.4	632.5	39.92	16.842		
5,100.0	5,062.8	5,106.7	5,028.8	28.1	31.0	85.64	-590.0	-717.2	678.4	637.6	40.75	16.647		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Project:	Weld County, CO	TVD Reference:	21' KB @ 4920.0usft
Reference Site:	S7-T10N-R57W	MD Reference:	21' KB @ 4920.0usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.79 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design S7-T10N-R57W - HORSETAIL FED #07F-0638 - OH - PLAN #1												Offset Site Error:	0.0 usft
Survey Program: O-MWD+HDGM												Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,162.7	5,227.1	5,149.0	28.6	31.6	85.77	-594.1	-721.4	681.6	640.1	41.48	16.432	
5,300.0	5,262.7	5,340.8	5,262.7	29.0	32.0	-90.33	-594.9	-722.2	682.2	640.1	42.09	16.209	
5,400.0	5,362.6	5,441.2	5,363.0	29.4	32.4	-90.24	-593.1	-722.2	682.2	639.6	42.63	16.002	
5,500.0	5,460.9	5,542.2	5,462.7	29.7	32.7	-90.45	-577.4	-722.2	682.1	639.1	43.08	15.836	
5,600.0	5,555.2	5,643.6	5,559.0	29.9	32.9	-90.65	-546.1	-722.2	682.1	638.6	43.42	15.707	
5,700.0	5,643.1	5,745.3	5,649.4	30.2	33.1	-90.83	-499.7	-722.2	681.9	638.2	43.70	15.606	
5,800.0	5,722.6	5,847.3	5,731.5	30.4	33.1	-90.98	-439.3	-722.2	681.7	637.8	43.93	15.520	
5,900.0	5,791.7	5,949.6	5,803.1	30.6	33.1	-91.12	-366.3	-722.2	681.5	637.3	44.16	15.433	
6,000.0	5,848.5	6,052.1	5,862.1	30.8	33.1	-91.23	-282.8	-722.2	681.2	636.8	44.44	15.330	
6,100.0	5,891.9	6,154.7	5,907.1	31.1	33.1	-91.30	-190.7	-722.2	680.9	636.1	44.81	15.195	
6,200.0	5,920.6	6,257.3	5,936.7	31.5	33.0	-91.34	-92.5	-722.2	680.6	635.3	45.31	15.021	
6,300.0	5,934.0	6,359.9	5,950.2	32.0	33.0	-91.35	9.1	-722.2	680.2	634.3	45.94	14.805	
6,400.0	5,935.0	6,460.8	5,951.0	32.6	33.2	-91.35	110.0	-722.2	679.8	633.1	46.73	14.548	
6,500.0	5,935.0	6,560.8	5,951.0	33.4	33.5	-91.35	210.0	-722.2	679.5	631.8	47.70	14.246	
6,600.0	5,935.0	6,660.8	5,951.0	34.2	34.1	-91.35	310.0	-722.2	679.1	630.3	48.85	13.901	
6,700.0	5,935.0	6,760.8	5,951.0	35.2	34.9	-91.35	409.9	-722.2	678.8	628.6	50.18	13.525	
6,800.0	5,935.0	6,860.8	5,951.0	36.3	35.9	-91.35	509.9	-722.2	678.4	626.7	51.68	13.127	
6,900.0	5,935.0	6,960.8	5,951.0	37.5	37.0	-91.35	609.9	-722.2	678.1	624.7	53.32	12.716	
7,000.0	5,935.0	7,060.8	5,951.0	38.8	38.2	-91.35	709.9	-722.2	677.7	622.6	55.10	12.299	
7,100.0	5,935.0	7,160.8	5,951.0	40.2	39.5	-91.35	809.9	-722.2	677.3	620.3	57.00	11.883	
7,200.0	5,935.0	7,260.8	5,951.0	41.6	40.9	-91.35	909.9	-722.2	677.0	618.0	59.01	11.472	
7,300.0	5,935.0	7,360.8	5,951.0	43.1	42.4	-91.36	1,009.9	-722.2	676.6	615.5	61.13	11.069	
7,400.0	5,935.0	7,460.8	5,951.0	44.7	43.9	-91.36	1,109.9	-722.2	676.3	612.9	63.33	10.679	
7,500.0	5,935.0	7,560.8	5,951.0	46.3	45.5	-91.36	1,209.9	-722.2	675.9	610.3	65.61	10.301	
7,600.0	5,935.0	7,660.8	5,951.0	48.0	47.1	-91.36	1,309.9	-722.2	675.5	607.6	67.97	9.939	
7,700.0	5,935.0	7,760.8	5,951.0	49.7	48.8	-91.36	1,409.9	-722.2	675.2	604.8	70.39	9.592	
7,800.0	5,935.0	7,860.8	5,951.0	51.4	50.5	-91.36	1,509.9	-722.2	674.8	602.0	72.87	9.260	
7,900.0	5,935.0	7,960.8	5,951.0	53.2	52.3	-91.36	1,609.9	-722.2	674.5	599.1	75.41	8.944	
8,000.0	5,935.0	8,060.8	5,951.0	55.1	54.0	-91.36	1,709.9	-722.2	674.1	596.1	77.99	8.644	
8,100.0	5,935.0	8,160.8	5,951.0	56.9	55.9	-91.36	1,809.9	-722.2	673.8	593.1	80.61	8.358	
8,200.0	5,935.0	8,260.8	5,951.0	58.8	57.7	-91.36	1,909.9	-722.2	673.4	590.1	83.28	8.086	
8,300.0	5,935.0	8,360.8	5,951.0	60.7	59.6	-91.36	2,009.9	-722.2	673.0	587.1	85.98	7.828	
8,400.0	5,935.0	8,460.8	5,951.0	62.6	61.5	-91.36	2,109.9	-722.2	672.7	584.0	88.71	7.583	
8,500.0	5,935.0	8,560.8	5,951.0	64.5	63.4	-91.36	2,209.9	-722.2	672.3	580.8	91.47	7.350	
8,600.0	5,935.0	8,660.8	5,951.0	66.5	65.3	-91.36	2,309.9	-722.2	672.0	577.7	94.26	7.128	
8,700.0	5,935.0	8,760.7	5,951.0	68.5	67.3	-91.37	2,409.9	-722.2	671.6	574.5	97.08	6.918	
8,800.0	5,935.0	8,860.7	5,951.0	70.5	69.2	-91.37	2,509.9	-722.2	671.2	571.3	99.91	6.718	
8,900.0	5,935.0	8,960.7	5,951.0	72.5	71.2	-91.37	2,609.9	-722.2	670.9	568.1	102.77	6.528	
9,000.0	5,935.0	9,060.7	5,951.0	74.5	73.2	-91.37	2,709.9	-722.2	670.5	564.9	105.65	6.347	
9,100.0	5,935.0	9,160.7	5,951.0	76.5	75.2	-91.37	2,809.9	-722.2	670.2	561.6	108.54	6.174	
9,200.0	5,935.0	9,260.7	5,951.0	78.5	77.2	-91.37	2,909.9	-722.2	669.8	558.4	111.45	6.010	
9,300.0	5,935.0	9,360.7	5,951.0	80.6	79.3	-91.37	3,009.9	-722.2	669.4	555.1	114.37	5.853	
9,400.0	5,935.0	9,460.7	5,951.0	82.7	81.3	-91.37	3,109.9	-722.2	669.1	551.8	117.31	5.704	
9,500.0	5,935.0	9,560.7	5,951.0	84.7	83.4	-91.37	3,209.9	-722.2	668.7	548.5	120.26	5.561	
9,600.0	5,935.0	9,660.7	5,951.0	86.8	85.4	-91.37	3,309.9	-722.2	668.4	545.1	123.22	5.424	
9,700.0	5,935.0	9,760.7	5,951.0	88.9	87.5	-91.37	3,409.9	-722.2	668.0	541.8	126.20	5.293	
9,800.0	5,935.0	9,860.7	5,951.0	91.0	89.6	-91.37	3,509.9	-722.2	667.7	538.5	129.18	5.168	
9,900.0	5,935.0	9,960.7	5,951.0	93.1	91.6	-91.37	3,609.9	-722.2	667.3	535.1	132.18	5.049	
10,000.0	5,935.0	10,060.7	5,951.0	95.2	93.7	-91.37	3,709.9	-722.2	666.9	531.8	135.18	4.934	
10,100.0	5,935.0	10,160.7	5,951.0	97.3	95.8	-91.38	3,809.9	-722.2	666.6	528.4	138.19	4.824	
10,200.0	5,935.0	10,260.7	5,951.0	99.4	97.9	-91.38	3,909.9	-722.2	666.2	525.0	141.21	4.718	
10,300.0	5,935.0	10,360.7	5,951.0	101.5	100.0	-91.38	4,009.9	-722.2	665.9	521.6	144.23	4.617	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Project:	Weld County, CO	TVD Reference:	21' KB @ 4920.0usft
Reference Site:	S7-T10N-R57W	MD Reference:	21' KB @ 4920.0usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.79 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design S7-T10N-R57W - HORSETAIL FED #07F-0638 - OH - PLAN #1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD+HDGM												Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Total Uncertainty Axis	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)					
10,400.0	5,935.0	10,460.7	5,951.0	103.6	102.1	-91.38	4,109.9	-722.2	665.5	518.2	147.26	4.519	
10,500.0	5,935.0	10,560.7	5,951.0	105.7	104.2	-91.38	4,209.9	-722.2	665.1	514.8	150.30	4.425	
10,600.0	5,935.0	10,660.7	5,951.0	107.9	106.4	-91.38	4,309.9	-722.2	664.8	511.4	153.35	4.335	
10,700.0	5,935.0	10,760.7	5,951.0	110.0	108.5	-91.38	4,409.9	-722.2	664.4	508.0	156.40	4.248	
10,800.0	5,935.0	10,860.7	5,951.0	112.1	110.6	-91.38	4,509.9	-722.2	664.1	504.6	159.45	4.165	
10,900.0	5,935.0	10,960.7	5,951.0	114.3	112.7	-91.38	4,609.9	-722.2	663.7	501.2	162.52	4.084	
11,000.0	5,935.0	11,060.7	5,951.0	116.4	114.9	-91.38	4,709.9	-722.2	663.4	497.8	165.58	4.006	
11,100.0	5,935.0	11,160.7	5,951.0	118.6	117.0	-91.38	4,809.9	-722.2	663.0	494.3	168.65	3.931	
11,200.0	5,935.0	11,260.7	5,951.0	120.7	119.1	-91.38	4,909.9	-722.2	662.6	490.9	171.73	3.859	
11,300.0	5,935.0	11,360.7	5,951.0	122.9	121.3	-91.38	5,009.9	-722.2	662.3	487.5	174.80	3.789	
11,400.0	5,935.0	11,460.7	5,951.0	125.0	123.4	-91.39	5,109.9	-722.2	661.9	484.0	177.89	3.721	
11,500.0	5,935.0	11,560.7	5,951.0	127.2	125.6	-91.39	5,209.9	-722.1	661.6	480.6	180.97	3.656	
11,600.0	5,935.0	11,660.7	5,951.0	129.3	127.7	-91.39	5,309.9	-722.1	661.2	477.1	184.06	3.592	
11,700.0	5,935.0	11,760.7	5,951.0	131.5	129.9	-91.39	5,409.9	-722.1	660.8	473.7	187.16	3.531	
11,800.0	5,935.0	11,860.7	5,951.0	133.7	132.0	-91.39	5,509.9	-722.1	660.5	470.2	190.25	3.472	
11,900.0	5,935.0	11,960.7	5,951.0	135.8	134.2	-91.39	5,609.9	-722.1	660.1	466.8	193.35	3.414	
12,000.0	5,935.0	12,060.7	5,951.0	138.0	136.4	-91.39	5,709.9	-722.1	659.8	463.3	196.45	3.358	
12,100.0	5,935.0	12,160.7	5,951.0	140.2	138.5	-91.39	5,809.9	-722.1	659.4	459.8	199.56	3.304	
12,200.0	5,935.0	12,260.7	5,951.0	142.3	140.7	-91.39	5,909.9	-722.1	659.0	456.4	202.66	3.252	
12,300.0	5,935.0	12,360.7	5,951.0	144.5	142.8	-91.39	6,009.9	-722.1	658.7	452.9	205.77	3.201	
12,400.0	5,935.0	12,460.7	5,951.0	146.7	145.0	-91.39	6,109.9	-722.1	658.3	449.4	208.89	3.152	
12,500.0	5,935.0	12,560.7	5,951.0	148.9	147.2	-91.39	6,209.9	-722.1	658.0	446.0	212.00	3.104	
12,600.0	5,935.0	12,660.7	5,951.0	151.0	149.3	-91.39	6,309.9	-722.1	657.6	442.5	215.12	3.057	
12,700.0	5,935.0	12,760.7	5,951.0	153.2	151.5	-91.39	6,409.9	-722.1	657.3	439.0	218.23	3.012	
12,800.0	5,935.0	12,860.7	5,951.0	155.4	153.7	-91.40	6,509.9	-722.1	656.9	435.5	221.35	2.968	
12,900.0	5,935.0	12,960.7	5,951.0	157.6	155.9	-91.40	6,609.9	-722.1	656.5	432.1	224.48	2.925	
13,000.0	5,935.0	13,060.7	5,951.0	159.7	158.0	-91.40	6,709.9	-722.1	656.2	428.6	227.60	2.883	
13,100.0	5,935.0	13,160.7	5,951.0	161.9	160.2	-91.40	6,809.9	-722.1	655.8	425.1	230.73	2.842	
13,200.0	5,935.0	13,260.7	5,951.0	164.1	162.4	-91.40	6,909.9	-722.1	655.5	421.6	233.85	2.803	
13,300.0	5,935.0	13,360.7	5,951.0	166.3	164.6	-91.40	7,009.9	-722.1	655.1	418.1	236.98	2.764	
13,400.0	5,935.0	13,460.7	5,951.0	168.5	166.8	-91.40	7,109.9	-722.1	654.7	414.6	240.11	2.727	
13,500.0	5,935.0	13,560.7	5,951.0	170.7	168.9	-91.40	7,209.9	-722.1	654.4	411.1	243.25	2.690	
13,600.0	5,935.0	13,660.7	5,951.0	172.9	171.1	-91.40	7,309.9	-722.1	654.0	407.6	246.38	2.655	
13,612.8	5,935.0	13,671.2	5,951.0	173.1	171.3	-91.40	7,320.4	-722.1	654.0	407.2	246.76	2.650	
13,617.5	5,935.0	13,671.2	5,951.0	173.3	171.3	-91.40	7,320.4	-722.1	654.0	407.1	246.86	2.649 SF	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Project:	Weld County, CO	TVD Reference:	21' KB @ 4920.0usft
Reference Site:	S7-T10N-R57W	MD Reference:	21' KB @ 4920.0usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.79 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design S7-T10N-R57W - HORSETAIL FED #07F-0639 - OH - PLAN #1													Offset Site Error: 0.0 usft	
Survey Program: O-MWD+HDGM													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-88.07	2.0	-59.9	60.0					
100.0	100.0	100.0	100.0	0.2	0.2	-88.07	2.0	-59.9	60.0	59.7	0.28	211.786		
200.0	200.0	200.0	200.0	0.7	0.7	-88.07	2.0	-59.9	60.0	59.0	1.00	59.968		
300.0	300.0	300.0	300.0	1.2	1.2	-88.07	2.0	-59.9	60.0	58.3	1.72	34.929	CC, ES	
400.0	400.0	399.0	399.0	1.7	1.7	88.24	0.5	-60.8	60.7	58.3	2.41	25.244		
500.0	499.8	498.0	497.9	2.2	2.1	88.76	-3.9	-63.3	62.9	59.8	3.09	20.349		
600.0	599.5	597.0	596.4	2.6	2.6	89.55	-11.4	-67.5	66.6	62.8	3.81	17.497		
700.0	698.7	695.8	694.6	3.2	3.2	90.42	-21.8	-73.4	71.9	67.3	4.55	15.776		
800.0	797.9	795.3	793.0	3.7	3.7	90.14	-34.4	-80.5	78.2	72.8	5.32	14.693		
900.0	897.1	895.1	891.7	4.2	4.2	89.82	-47.2	-87.7	84.5	78.4	6.10	13.863		
1,000.0	996.2	994.9	990.4	4.8	4.8	89.54	-60.1	-95.0	90.9	84.0	6.89	13.201		
1,100.0	1,095.4	1,094.7	1,089.1	5.4	5.4	89.30	-72.9	-102.2	97.3	89.6	7.68	12.664		
1,200.0	1,194.6	1,194.5	1,187.8	5.9	6.0	89.08	-85.7	-109.5	103.6	95.2	8.48	12.220		
1,300.0	1,293.7	1,294.3	1,286.5	6.5	6.5	88.90	-98.6	-116.7	110.0	100.7	9.29	11.848		
1,400.0	1,392.9	1,394.1	1,385.2	7.0	7.1	88.73	-111.4	-123.9	116.4	106.3	10.09	11.532		
1,500.0	1,492.1	1,493.9	1,483.9	7.6	7.7	88.58	-124.2	-131.2	122.8	111.9	10.90	11.260		
1,600.0	1,591.2	1,593.7	1,582.6	8.2	8.3	88.45	-137.1	-138.4	129.2	117.4	11.71	11.025		
1,700.0	1,690.4	1,693.5	1,681.3	8.7	8.9	88.32	-149.9	-145.7	135.5	123.0	12.53	10.819		
1,800.0	1,789.6	1,793.3	1,780.0	9.3	9.4	88.21	-162.7	-152.9	141.9	128.6	13.34	10.637		
1,900.0	1,888.7	1,893.1	1,878.7	9.9	10.0	88.11	-175.5	-160.1	148.3	134.1	14.16	10.475		
2,000.0	1,987.9	1,992.9	1,977.4	10.4	10.6	88.02	-188.4	-167.4	154.7	139.7	14.97	10.330		
2,100.0	2,087.1	2,092.7	2,076.1	11.0	11.2	87.93	-201.2	-174.6	161.1	145.3	15.79	10.200		
2,200.0	2,186.2	2,192.4	2,174.8	11.6	11.8	87.85	-214.0	-181.8	167.4	150.8	16.61	10.083		
2,300.0	2,285.4	2,292.2	2,273.5	12.1	12.4	87.78	-226.9	-189.1	173.8	156.4	17.42	9.976		
2,400.0	2,384.6	2,392.0	2,372.2	12.7	13.0	87.71	-239.7	-196.3	180.2	162.0	18.24	9.879		
2,500.0	2,483.7	2,491.8	2,470.9	13.3	13.6	87.65	-252.5	-203.6	186.6	167.5	19.06	9.789		
2,600.0	2,582.9	2,591.6	2,569.6	13.9	14.1	87.59	-265.3	-210.8	193.0	173.1	19.88	9.707		
2,700.0	2,682.1	2,691.4	2,668.3	14.4	14.7	87.53	-278.2	-218.0	199.3	178.6	20.70	9.632		
2,800.0	2,781.2	2,791.2	2,767.0	15.0	15.3	87.48	-291.0	-225.3	205.7	184.2	21.52	9.562		
2,900.0	2,880.4	2,891.0	2,865.7	15.6	15.9	87.43	-303.8	-232.5	212.1	189.8	22.34	9.497		
3,000.0	2,979.6	2,990.8	2,964.4	16.1	16.5	87.38	-316.7	-239.8	218.5	195.3	23.15	9.436		
3,100.0	3,078.7	3,090.6	3,063.1	16.7	17.1	87.34	-329.5	-247.0	224.9	200.9	23.97	9.380		
3,200.0	3,177.9	3,190.4	3,161.8	17.3	17.7	87.30	-342.3	-254.2	231.3	206.5	24.79	9.327		
3,300.0	3,277.1	3,290.2	3,260.5	17.8	18.3	87.26	-355.1	-261.5	237.6	212.0	25.61	9.278		
3,400.0	3,376.2	3,390.0	3,359.3	18.4	18.9	87.22	-368.0	-268.7	244.0	217.6	26.43	9.232		
3,500.0	3,475.4	3,489.8	3,458.0	19.0	19.4	87.19	-380.8	-275.9	250.4	223.2	27.25	9.188		
3,600.0	3,574.6	3,589.6	3,556.7	19.6	20.0	87.16	-393.6	-283.2	256.8	228.7	28.07	9.147		
3,700.0	3,673.7	3,689.4	3,655.4	20.1	20.6	87.12	-406.5	-290.4	263.2	234.3	28.90	9.108		
3,800.0	3,772.9	3,789.2	3,754.1	20.7	21.2	87.09	-419.3	-297.7	269.6	239.8	29.72	9.071		
3,900.0	3,872.1	3,889.0	3,852.8	21.3	21.8	87.07	-432.1	-304.9	275.9	245.4	30.54	9.037		
4,000.0	3,971.2	3,988.8	3,951.5	21.8	22.4	87.04	-444.9	-312.1	282.3	251.0	31.36	9.004		
4,100.0	4,070.4	4,088.6	4,050.2	22.4	23.0	87.01	-457.8	-319.4	288.7	256.5	32.18	8.973		
4,200.0	4,169.6	4,188.4	4,148.9	23.0	23.6	86.99	-470.6	-326.6	295.1	262.1	33.00	8.943		
4,300.0	4,268.7	4,288.2	4,247.6	23.6	24.2	86.96	-483.4	-333.9	301.5	267.7	33.82	8.915		
4,400.0	4,367.9	4,388.0	4,346.3	24.1	24.8	86.94	-496.3	-341.1	307.9	273.2	34.64	8.888		
4,500.0	4,467.1	4,487.8	4,445.0	24.7	25.3	86.92	-509.1	-348.3	314.3	278.8	35.46	8.862		
4,600.0	4,566.2	4,587.6	4,543.7	25.3	25.9	86.90	-521.9	-355.6	320.6	284.4	36.28	8.837		
4,700.0	4,665.4	4,687.3	4,642.4	25.8	26.5	86.88	-534.7	-362.8	327.0	289.9	37.10	8.814		
4,800.0	4,764.6	4,787.1	4,741.1	26.4	27.1	86.86	-547.6	-370.0	333.4	295.5	37.92	8.791		
4,900.0	4,863.7	4,886.9	4,839.8	27.0	27.7	86.84	-560.4	-377.3	339.8	301.0	38.74	8.770		
5,000.0	4,963.1	4,990.3	4,942.2	27.5	28.3	86.72	-573.1	-384.5	346.0	306.4	39.57	8.743		
5,100.0	5,062.8	5,096.4	5,047.6	28.1	28.9	86.49	-583.0	-390.1	350.7	310.4	40.36	8.691		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Project:	Weld County, CO	TVD Reference:	21' KB @ 4920.0usft
Reference Site:	S7-T10N-R57W	MD Reference:	21' KB @ 4920.0usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.79 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design S7-T10N-R57W - HORSETAIL FED #07F-0639 - OH - PLAN #1													Offset Site Error:	0.0 usft
Survey Program: O-MWD+HDGM													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Distance		Total		Separation		Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Uncertainty Axis			
5,200.0	5,162.7	5,202.7	5,153.7	28.6	29.4	86.20	-589.6	-393.7	353.9	312.8	41.08		8.615	
5,300.0	5,262.7	5,309.2	5,260.1	29.0	29.9	-90.27	-592.7	-395.5	355.5	313.8	41.72		8.521	
5,400.0	5,362.6	5,411.7	5,362.6	29.4	30.4	-90.63	-593.0	-395.7	355.7	313.4	42.28		8.414	
5,500.0	5,460.9	5,512.4	5,463.1	29.7	30.7	-92.78	-588.5	-395.7	356.1	313.4	42.69		8.342	
5,600.0	5,555.2	5,615.6	5,564.2	29.9	31.0	-94.96	-567.9	-395.7	356.9	314.0	42.98		8.305	
5,700.0	5,643.1	5,721.3	5,662.7	30.2	31.3	-97.03	-530.4	-395.7	358.2	315.0	43.15		8.300	
5,800.0	5,722.6	5,829.3	5,755.7	30.4	31.5	-98.93	-475.6	-395.7	359.6	316.4	43.22		8.321	
5,900.0	5,791.7	5,939.5	5,839.7	30.6	31.6	-100.60	-404.4	-395.7	361.2	318.0	43.23		8.356	
6,000.0	5,848.5	6,051.9	5,911.3	30.8	31.8	-102.00	-318.0	-395.7	362.6	319.4	43.25		8.385	
6,100.0	5,891.9	6,165.9	5,967.4	31.1	31.9	-103.07	-218.9	-395.7	363.8	320.4	43.38		8.386	
6,200.0	5,920.6	6,281.3	6,005.2	31.5	32.2	-103.78	-110.1	-395.7	364.4	320.7	43.73		8.333	
6,300.0	5,934.0	6,397.4	6,022.8	32.0	32.5	-104.11	4.5	-395.7	364.5	320.2	44.37		8.215	
6,400.0	5,935.0	6,502.8	6,024.0	32.6	33.0	-104.15	109.9	-395.7	364.2	319.0	45.21		8.056	
6,500.0	5,935.0	6,602.8	6,024.0	33.4	33.7	-104.16	209.9	-395.7	363.8	317.6	46.20		7.876	
6,600.0	5,935.0	6,702.8	6,024.0	34.2	34.4	-104.17	309.9	-395.7	363.5	316.1	47.37		7.674	
6,700.0	5,935.0	6,802.8	6,024.0	35.2	35.4	-104.19	409.9	-395.7	363.1	314.4	48.71		7.456	
6,800.0	5,935.0	6,902.8	6,024.0	36.3	36.4	-104.20	509.9	-395.7	362.8	312.6	50.21		7.226	
6,900.0	5,935.0	7,002.8	6,024.0	37.5	37.5	-104.21	609.9	-395.7	362.5	310.6	51.85		6.990	
7,000.0	5,935.0	7,102.8	6,024.0	38.8	38.8	-104.23	709.9	-395.7	362.1	308.5	53.62		6.753	
7,100.0	5,935.0	7,202.8	6,024.0	40.2	40.1	-104.24	809.9	-395.7	361.8	306.2	55.52		6.516	
7,200.0	5,935.0	7,302.8	6,024.0	41.6	41.5	-104.26	909.9	-395.7	361.4	303.9	57.51		6.284	
7,300.0	5,935.0	7,402.8	6,024.0	43.1	43.0	-104.27	1,009.9	-395.7	361.1	301.5	59.61		6.057	
7,400.0	5,935.0	7,502.8	6,024.0	44.7	44.5	-104.28	1,109.9	-395.7	360.7	298.9	61.79		5.838	
7,500.0	5,935.0	7,602.8	6,024.0	46.3	46.1	-104.30	1,209.9	-395.7	360.4	296.3	64.04		5.627	
7,600.0	5,935.0	7,702.8	6,024.0	48.0	47.7	-104.31	1,309.9	-395.7	360.0	293.7	66.37		5.425	
7,700.0	5,935.0	7,802.8	6,024.0	49.7	49.4	-104.33	1,409.9	-395.7	359.7	290.9	68.75		5.231	
7,800.0	5,935.0	7,902.8	6,024.0	51.4	51.2	-104.34	1,509.9	-395.7	359.3	288.1	71.20		5.047	
7,900.0	5,935.0	8,002.8	6,024.0	53.2	52.9	-104.35	1,609.9	-395.7	359.0	285.3	73.69		4.871	
8,000.0	5,935.0	8,102.8	6,024.0	55.1	54.7	-104.37	1,709.9	-395.7	358.6	282.4	76.23		4.705	
8,100.0	5,935.0	8,202.8	6,024.0	56.9	56.6	-104.38	1,809.9	-395.7	358.3	279.5	78.81		4.546	
8,200.0	5,935.0	8,302.8	6,024.0	58.8	58.4	-104.40	1,909.9	-395.7	357.9	276.5	81.42		4.396	
8,300.0	5,935.0	8,402.8	6,024.0	60.7	60.3	-104.41	2,009.9	-395.7	357.6	273.5	84.07		4.253	
8,400.0	5,935.0	8,502.8	6,024.0	62.6	62.2	-104.43	2,109.9	-395.7	357.2	270.5	86.75		4.118	
8,500.0	5,935.0	8,602.8	6,024.0	64.5	64.1	-104.44	2,209.9	-395.7	356.9	267.4	89.46		3.989	
8,600.0	5,935.0	8,702.8	6,024.0	66.5	66.1	-104.45	2,309.9	-395.7	356.5	264.4	92.19		3.867	
8,700.0	5,935.0	8,802.8	6,024.0	68.5	68.0	-104.47	2,409.9	-395.7	356.2	261.3	94.95		3.752	
8,800.0	5,935.0	8,902.8	6,024.0	70.5	70.0	-104.48	2,509.9	-395.7	355.9	258.1	97.72		3.641	
8,900.0	5,935.0	9,002.8	6,024.0	72.5	72.0	-104.50	2,609.9	-395.7	355.5	255.0	100.52		3.537	
9,000.0	5,935.0	9,102.8	6,024.0	74.5	74.0	-104.51	2,709.9	-395.7	355.2	251.8	103.33		3.437	
9,100.0	5,935.0	9,202.8	6,024.0	76.5	76.0	-104.53	2,809.9	-395.7	354.8	248.7	106.16		3.342	
9,200.0	5,935.0	9,302.8	6,024.0	78.5	78.0	-104.54	2,909.9	-395.7	354.5	245.5	109.01		3.252	
9,300.0	5,935.0	9,402.8	6,024.0	80.6	80.1	-104.56	3,009.9	-395.7	354.1	242.3	111.86		3.166	
9,400.0	5,935.0	9,502.8	6,024.0	82.7	82.1	-104.57	3,109.9	-395.7	353.8	239.0	114.73		3.083	
9,500.0	5,935.0	9,602.8	6,024.0	84.7	84.2	-104.59	3,209.9	-395.7	353.4	235.8	117.62		3.005	
9,600.0	5,935.0	9,702.8	6,024.0	86.8	86.2	-104.60	3,309.9	-395.7	353.1	232.6	120.51		2.930	
9,700.0	5,935.0	9,802.8	6,024.0	88.9	88.3	-104.61	3,409.9	-395.7	352.7	229.3	123.41		2.858	
9,800.0	5,935.0	9,902.8	6,024.0	91.0	90.4	-104.63	3,509.9	-395.7	352.4	226.1	126.32		2.790	
9,900.0	5,935.0	10,002.8	6,024.0	93.1	92.4	-104.64	3,609.9	-395.7	352.0	222.8	129.24		2.724	
10,000.0	5,935.0	10,102.8	6,024.0	95.2	94.5	-104.66	3,709.9	-395.7	351.7	219.5	132.17		2.661	
10,100.0	5,935.0	10,202.8	6,024.0	97.3	96.6	-104.67	3,809.9	-395.7	351.3	216.2	135.11		2.600	
10,200.0	5,935.0	10,302.8	6,024.0	99.4	98.7	-104.69	3,909.9	-395.7	351.0	212.9	138.05		2.542	
10,300.0	5,935.0	10,402.8	6,024.0	101.5	100.8	-104.70	4,009.9	-395.7	350.6	209.6	141.00		2.487	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well HORSETAIL FED #07F-0640
Project:	Weld County, CO	TVD Reference:	21' KB @ 4920.0usft
Reference Site:	S7-T10N-R57W	MD Reference:	21' KB @ 4920.0usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	HORSETAIL FED #07F-0640	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.79 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design S7-T10N-R57W - HORSETAIL FED #07F-0639 - OH - PLAN #1													Offset Site Error:	0.0 usft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
10,400.0	5,935.0	10,502.8	6,024.0	103.6	103.0	-104.72	4,109.9	-395.7	350.3	206.3	143.96	2.433		
10,500.0	5,935.0	10,602.8	6,024.0	105.7	105.1	-104.73	4,209.9	-395.7	350.0	203.0	146.92	2.382		
10,600.0	5,935.0	10,702.8	6,024.0	107.9	107.2	-104.75	4,309.9	-395.7	349.6	199.7	149.89	2.332		
10,700.0	5,935.0	10,802.8	6,024.0	110.0	109.3	-104.76	4,409.9	-395.6	349.3	196.4	152.86	2.285		
10,800.0	5,935.0	10,902.8	6,024.0	112.1	111.4	-104.78	4,509.9	-395.6	348.9	193.1	155.84	2.239		
10,900.0	5,935.0	11,002.8	6,024.0	114.3	113.6	-104.79	4,609.9	-395.6	348.6	189.7	158.82	2.195		
11,000.0	5,935.0	11,102.8	6,024.0	116.4	115.7	-104.81	4,709.9	-395.6	348.2	186.4	161.81	2.152		
11,100.0	5,935.0	11,202.8	6,024.0	118.6	117.9	-104.82	4,809.9	-395.6	347.9	183.1	164.80	2.111		
11,200.0	5,935.0	11,302.8	6,024.0	120.7	120.0	-104.84	4,909.9	-395.6	347.5	179.7	167.79	2.071		
11,300.0	5,935.0	11,402.8	6,024.0	122.9	122.1	-104.85	5,009.9	-395.6	347.2	176.4	170.79	2.033		
11,400.0	5,935.0	11,502.8	6,024.0	125.0	124.3	-104.87	5,109.9	-395.6	346.8	173.0	173.79	1.996		
11,500.0	5,935.0	11,602.8	6,024.0	127.2	126.4	-104.88	5,209.9	-395.6	346.5	169.7	176.79	1.960		
11,600.0	5,935.0	11,702.8	6,024.0	129.3	128.6	-104.90	5,309.9	-395.6	346.1	166.3	179.80	1.925		
11,700.0	5,935.0	11,802.8	6,024.0	131.5	130.7	-104.91	5,409.9	-395.6	345.8	163.0	182.81	1.892		
11,800.0	5,935.0	11,902.8	6,024.0	133.7	132.9	-104.93	5,509.9	-395.6	345.4	159.6	185.82	1.859		
11,900.0	5,935.0	12,002.8	6,024.0	135.8	135.1	-104.95	5,609.9	-395.6	345.1	156.3	188.83	1.828		
12,000.0	5,935.0	12,102.8	6,024.0	138.0	137.2	-104.96	5,709.9	-395.6	344.8	152.9	191.85	1.797		
12,100.0	5,935.0	12,202.8	6,024.0	140.2	139.4	-104.98	5,809.9	-395.6	344.4	149.5	194.87	1.767		
12,200.0	5,935.0	12,302.8	6,024.0	142.3	141.5	-104.99	5,909.9	-395.6	344.1	146.2	197.89	1.739		
12,300.0	5,935.0	12,402.8	6,024.0	144.5	143.7	-105.01	6,009.9	-395.6	343.7	142.8	200.91	1.711		
12,400.0	5,935.0	12,502.8	6,024.0	146.7	145.9	-105.02	6,109.9	-395.6	343.4	139.4	203.93	1.684		
12,500.0	5,935.0	12,602.8	6,024.0	148.9	148.1	-105.04	6,209.9	-395.6	343.0	136.1	206.96	1.657		
12,600.0	5,935.0	12,702.8	6,024.0	151.0	150.2	-105.05	6,309.9	-395.6	342.7	132.7	209.99	1.632		
12,700.0	5,935.0	12,802.8	6,024.0	153.2	152.4	-105.07	6,409.9	-395.6	342.3	129.3	213.02	1.607		
12,800.0	5,935.0	12,902.8	6,024.0	155.4	154.6	-105.08	6,509.9	-395.6	342.0	125.9	216.05	1.583		
12,900.0	5,935.0	13,002.8	6,024.0	157.6	156.7	-105.10	6,609.9	-395.6	341.6	122.6	219.08	1.559		
13,000.0	5,935.0	13,102.8	6,024.0	159.7	158.9	-105.12	6,709.9	-395.6	341.3	119.2	222.11	1.537		
13,100.0	5,935.0	13,202.8	6,024.0	161.9	161.1	-105.13	6,809.9	-395.6	340.9	115.8	225.15	1.514		
13,200.0	5,935.0	13,302.8	6,024.0	164.1	163.3	-105.15	6,909.9	-395.6	340.6	112.4	228.19	1.493 Level 3		
13,300.0	5,935.0	13,402.8	6,024.0	166.3	165.5	-105.16	7,009.9	-395.6	340.3	109.0	231.22	1.472 Level 3		
13,400.0	5,935.0	13,502.8	6,024.0	168.5	167.6	-105.18	7,109.9	-395.6	339.9	105.6	234.26	1.451 Level 3		
13,500.0	5,935.0	13,602.8	6,024.0	170.7	169.8	-105.19	7,209.9	-395.6	339.6	102.3	237.30	1.431 Level 3		
13,600.0	5,935.0	13,702.8	6,024.0	172.9	172.0	-105.21	7,309.9	-395.6	339.2	98.9	240.34	1.411 Level 3		
13,614.6	5,935.0	13,716.3	6,024.0	173.2	172.3	-105.21	7,323.4	-395.6	339.2	98.4	240.77	1.409 Level 3		
13,617.5	5,935.0	13,716.3	6,024.0	173.3	172.3	-105.21	7,323.4	-395.6	339.2	98.4	240.82	1.408 Level 3, SF		

Cathedral Energy Services

Anticollision Report

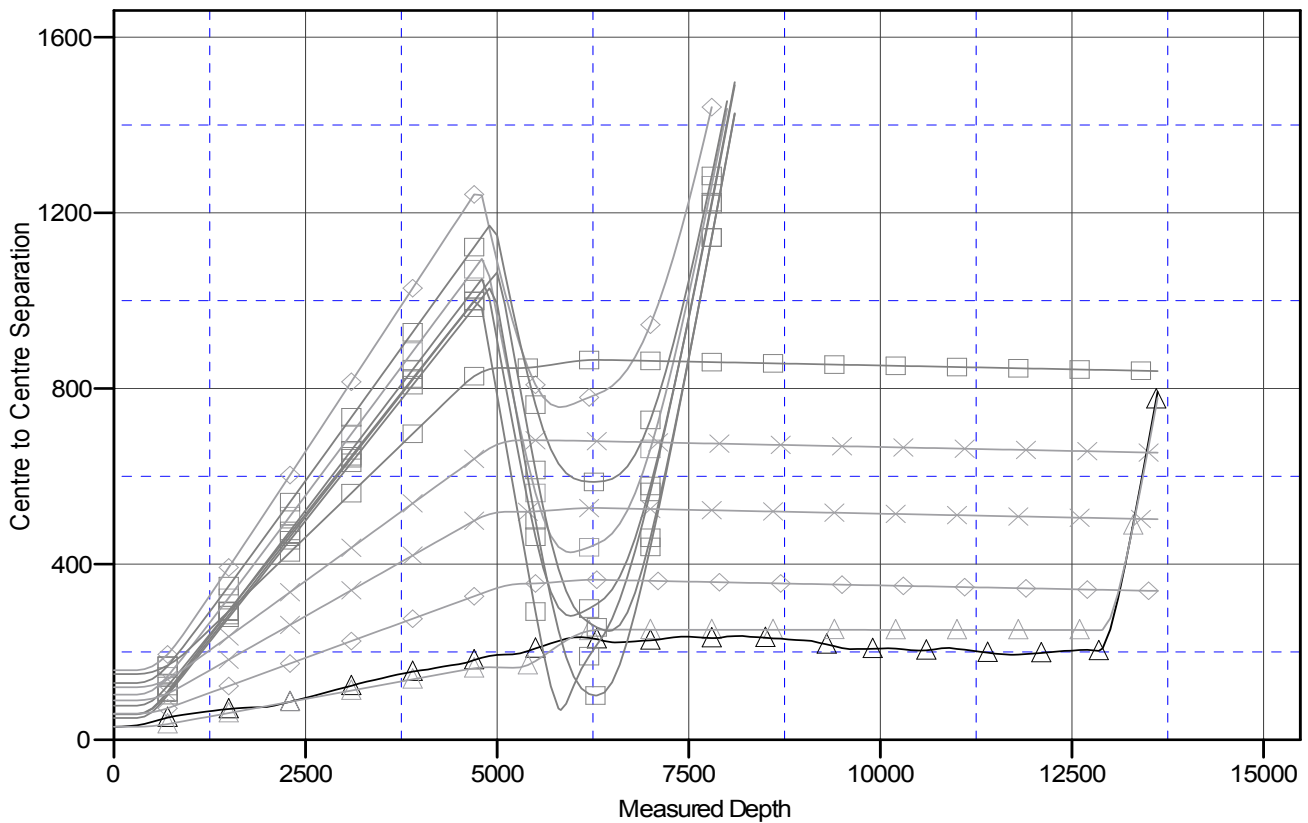
Company: Whiting Petroleum Corporation
Project: Weld County, CO
Reference Site: S7-T10N-R57W
Site Error: 0.0usft
Reference Well: HORSETAIL FED #07F-0640
Well Error: 0.0usft
Reference Wellbore: OH
Reference Design: PLAN #2

Local Co-ordinate Reference: Well HORSETAIL FED #07F-0640
TVD Reference: 21' KB @ 4920.0usft
MD Reference: 21' KB @ 4920.0usft
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.79 sigma
Database: USA EDM 5000 Multi Users DB
Offset TVD Reference: Offset Datum

Reference Depths are relative to 21' KB @ 4920.0usft
 Offset Depths are relative to Offset Datum
 Central Meridian is -105.500000 °

Coordinates are relative to: HORSETAIL FED #07F-0640
 Coordinate System is US State Plane 1983, Colorado Northern Zone
 Grid Convergence at Surface is: 1.10°

Ladder Plot



LEGEND

▲ HORSETAIL #07F-0608, OH, SURVEYS V0	▣ HORSETAIL #07F-1808, OH, PLAN#1 V0	✕ HORSETAIL FED #07F-0606, OH, PLAN#1 V0
▲ HORSETAIL #07F-0607, OH, PLAN#1 V0	▣ HORSETAIL #07F-1838, OH, PLAN#1 V0	✕ HORSETAIL FED #07F-0638, OH, PLAN#1 V0
◆ HORSETAIL #07F-1805, OH, PLAN#1 V0	▣ HORSETAIL #07F-1839, OH, PLAN#1 V0	◆ HORSETAIL FED #07F-0639, OH, PLAN#1 V0
▣ HORSETAIL #07F-1806, OH, PLAN#1 V0	▣ HORSETAIL #07F-1840, OH, PLAN#1 V0	
▣ HORSETAIL #07F-1807, OH, PLAN#1 V0	▣ HORSETAIL FED #07F-0605, OH, PLAN#1 V0	