



Whiting Petroleum Corp.

Weld County, CO

Sec 30-T10N-R57W

Horsetail #30G-3139

Hz

APD

Anticollision Report

13 October, 2015



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Reference	APD		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.00usft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,550.00 usft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	3.00 Sigma	Casing Method:	Not applied

Survey Tool Program		Date	10/13/2015		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	13,986.28	APD (Hz)	MWD+IFR1+MS+sag	Fixed:v2:crustal dec & 3-axis correction + sag	

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						
Sec 30-T10N-R57W						
Horsetail #30F-1947 - Hz - Hz	5,866.28	6,199.24	65.22	28.71	1.786	CC, ES, SF
Horsetail #30F-1948 - Hz - Hz	5,552.18	5,621.49	119.63	84.44	3.399	CC, ES, SF
Horsetail #30F-3106 - Hz - Hz	5,205.49	5,183.57	223.17	189.76	6.680	CC
Horsetail #30F-3106 - Hz - Hz	13,501.62	13,210.00	299.27	131.31	1.782	ES, SF
Horsetail #30F-3107 - Hz - Hz	4,351.22	4,351.60	44.70	13.18	1.418	Level 3, CC, ES, SF
Horsetail #30G-1909 - Hz - APD	679.37	692.95	94.86	90.39	21.208	CC, ES
Horsetail #30G-1909 - Hz - APD	5,600.00	6,211.14	377.37	338.58	9.728	SF
Horsetail #30G-1910 - Hz - APD	300.00	300.00	157.93	156.31	97.792	CC
Horsetail #30G-1910 - Hz - APD	400.00	402.80	158.55	156.29	70.146	ES
Horsetail #30G-1910 - Hz - APD	5,677.95	6,224.33	731.48	692.72	18.875	SF
Horsetail #30G-1911 - Hz - APD	300.00	300.00	215.70	214.08	133.562	CC, ES
Horsetail #30G-1911 - Hz - APD	5,598.48	6,200.40	1,069.52	1,030.96	27.736	SF
Horsetail #30G-1912 - Hz - APD	300.00	300.00	274.41	272.80	169.921	CC, ES
Horsetail #30G-1912 - Hz - APD	5,666.15	6,253.52	1,395.90	1,357.08	35.958	SF
Horsetail #30G-1942 - Hz - APD	550.50	561.09	128.37	124.96	37.613	CC
Horsetail #30G-1942 - Hz - APD	600.00	611.80	128.64	124.89	34.282	ES
Horsetail #30G-1942 - Hz - APD	5,847.66	6,239.32	573.99	534.75	14.628	SF
Horsetail #30G-1943 - Hz - APD	200.00	200.00	186.64	185.70	198.414	CC
Horsetail #30G-1943 - Hz - APD	300.00	300.00	186.64	185.02	115.569	ES
Horsetail #30G-1943 - Hz - APD	6,200.00	5,997.00	882.65	842.41	21.937	SF
Horsetail #30G-1944 - Hz - APD	300.00	300.00	244.98	243.36	151.694	CC, ES
Horsetail #30G-1944 - Hz - APD	6,400.00	5,807.10	1,252.70	1,212.25	30.965	SF
Horsetail #30G-3109 - Hz - APD	300.00	300.00	89.97	88.35	55.709	CC
Horsetail #30G-3109 - Hz - APD	400.00	402.41	90.33	88.02	39.069	ES
Horsetail #30G-3109 - Hz - APD	13,986.28	13,617.62	884.76	653.41	3.824	SF
Horsetail #30G-3110 - Hz - APD	300.00	300.00	149.95	148.33	92.849	CC, ES
Horsetail #30G-3110 - Hz - APD	13,986.28	13,682.96	1,187.60	948.23	4.961	SF
Horsetail #30G-3111 - Hz - APD	300.00	300.00	209.92	208.31	129.989	CC, ES
Horsetail #30G-3111 - Hz - APD	13,986.28	13,629.31	1,525.25	1,285.58	6.364	SF
Horsetail #30G-3112 - Hz - APD	300.00	300.00	269.90	268.29	167.128	CC, ES
Horsetail #30G-3112 - Hz - APD	4,500.00	4,255.96	1,525.55	1,496.71	52.905	SF
Horsetail #30G-3140 - Hz - APD	686.70	690.65	29.95	25.41	6.605	CC
Horsetail #30G-3140 - Hz - APD	700.00	703.95	29.98	25.36	6.498	ES
Horsetail #30G-3140 - Hz - APD	13,986.28	13,853.79	340.04	104.50	1.444	Level 3, SF
Horsetail #30G-3142 - Hz - APD	300.00	300.00	119.96	118.34	74.279	CC, ES
Horsetail #30G-3142 - Hz - APD	13,986.28	13,811.16	1,006.15	764.08	4.156	SF
Horsetail #30G-3143 - Hz - APD	300.00	300.00	179.94	178.32	111.419	CC, ES

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



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Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

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						
Sec 30-T10N-R57W						
Horsetail #30G-3143 - Hz - APD	13,986.28	13,903.39	1,332.28	1,088.83	5.473	SF
Horsetail #30G-3144 - Hz - APD	300.00	300.00	239.91	238.30	148.559	CC, ES
Horsetail #30G-3144 - Hz - APD	9,000.00	8,846.85	1,548.65	1,447.53	15.315	SF
Sec 31-T10N-R57W						
Maddy #1 - Wellbore #1 - Wellbore #1	13,423.95	5,768.10	34.19	-89.27	0.277	Level 1, CC, ES, SF
Maddy #2 - Wellbore #1 - Wellbore #1	13,122.12	5,772.10	65.92	-53.19	0.553	Level 1, CC, ES, SF

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 231-MWD+IFR1+MS+sag												Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	36.52	36.52	0.00	0.06	-86.83	56.60	-1,021.35	1,022.92				
100.00	100.00	132.35	132.35	0.13	0.21	-86.82	56.68	-1,021.69	1,023.28	1,022.93	0.35	2,930.704	
200.00	200.00	231.00	231.00	0.47	0.37	-86.82	56.85	-1,022.44	1,024.05	1,023.21	0.84	1,225.946	
300.00	300.00	325.13	325.12	0.81	0.68	-86.80	57.16	-1,023.49	1,025.16	1,023.67	1.49	687.489	
400.00	399.98	423.39	423.37	1.13	1.01	-8.79	57.72	-1,024.80	1,024.80	1,022.67	2.14	479.496	
500.00	499.84	526.03	526.00	1.46	1.31	-8.84	58.03	-1,026.11	1,020.93	1,018.16	2.77	368.478	
600.00	599.45	629.14	629.10	1.81	1.62	-8.91	58.52	-1,027.17	1,013.37	1,009.95	3.42	296.543	
700.00	698.70	735.27	735.22	2.16	1.94	-9.11	57.74	-1,027.73	1,001.81	997.73	4.09	245.229	
800.00	797.47	841.78	841.68	2.53	2.27	-9.52	54.32	-1,027.69	986.17	981.41	4.77	206.950	
900.00	895.87	949.72	949.43	2.93	2.62	-10.10	48.00	-1,026.77	967.58	962.13	5.45	177.425	
1,000.00	994.28	1,056.84	1,056.22	3.33	2.97	-10.80	39.84	-1,024.81	948.04	941.91	6.13	154.599	
1,100.00	1,092.68	1,149.00	1,147.95	3.73	3.27	-11.54	31.16	-1,022.94	928.41	921.64	6.76	137.259	
1,200.00	1,191.09	1,241.00	1,239.27	4.14	3.59	-12.45	20.16	-1,021.62	909.51	902.10	7.41	122.669	
1,300.00	1,289.49	1,333.02	1,330.31	4.56	3.93	-13.55	6.81	-1,020.79	891.46	883.38	8.08	110.276	
1,400.00	1,387.89	1,434.25	1,429.98	4.97	4.32	-15.00	-10.85	-1,019.75	873.80	864.99	8.81	99.203	
1,500.00	1,486.30	1,533.99	1,527.60	5.39	4.71	-16.69	-31.22	-1,018.09	856.27	846.73	9.54	89.754	
1,600.00	1,584.70	1,628.02	1,619.58	5.81	5.03	-18.37	-50.68	-1,016.26	839.24	829.03	10.21	82.219	
1,700.00	1,683.11	1,735.14	1,724.24	6.22	5.42	-20.40	-73.36	-1,013.89	822.88	811.93	10.94	75.184	
1,800.00	1,781.51	1,840.64	1,826.47	6.64	5.83	-22.73	-98.90	-1,008.79	805.37	793.66	11.71	68.763	
1,900.00	1,879.91	1,941.23	1,923.95	7.06	6.23	-25.04	-123.02	-1,003.12	788.30	775.84	12.47	63.235	
2,000.00	1,978.32	2,035.44	2,015.22	7.48	6.62	-27.31	-145.67	-997.21	771.92	758.69	13.24	58.316	
2,100.00	2,076.72	2,127.67	2,104.48	7.90	7.03	-29.64	-168.11	-991.42	756.97	742.94	14.03	53.952	
2,200.00	2,175.13	2,243.17	2,216.18	8.33	7.54	-32.70	-196.13	-982.50	742.19	727.29	14.90	49.809	
2,300.00	2,273.53	2,337.67	2,307.64	8.75	7.92	-35.28	-218.25	-973.85	727.45	711.77	15.68	46.400	
2,400.00	2,371.94	2,431.23	2,398.34	9.17	8.28	-37.88	-239.53	-965.24	714.04	697.59	16.45	43.395	
2,500.00	2,470.34	2,515.82	2,480.50	9.59	8.63	-40.25	-258.44	-958.32	702.99	685.77	17.21	40.839	
2,600.00	2,568.74	2,607.96	2,570.15	10.01	9.00	-42.82	-278.63	-951.78	694.25	676.25	18.00	38.573	
2,700.00	2,667.15	2,706.45	2,666.12	10.44	9.40	-45.59	-299.68	-944.74	686.87	668.06	18.81	36.519	
2,800.00	2,765.55	2,801.29	2,758.57	10.86	9.79	-48.30	-319.63	-937.78	680.82	661.21	19.61	34.723	
2,900.00	2,863.96	2,897.37	2,852.34	11.28	10.18	-51.05	-339.40	-930.77	676.23	655.82	20.41	33.133	
3,000.00	2,962.36	2,996.81	2,949.54	11.70	10.59	-53.87	-359.09	-923.69	672.97	651.75	21.22	31.711	
3,100.00	3,060.76	3,093.90	3,044.72	12.13	10.98	-56.57	-376.88	-916.52	670.17	648.15	22.02	30.437	
3,152.90	3,112.82	3,137.42	3,087.38	12.35	11.15	-57.78	-385.02	-913.60	669.71	647.31	22.40	29.895	
3,200.00	3,159.17	3,177.51	3,126.63	12.55	11.31	-58.89	-392.75	-911.17	670.05	647.30	22.75	29.459	
3,300.00	3,257.57	3,265.64	3,212.91	12.97	11.67	-61.30	-410.14	-906.52	672.73	649.25	23.48	28.653	
3,400.00	3,355.98	3,355.97	3,300.99	13.40	12.05	-63.88	-429.33	-900.88	677.56	653.34	24.22	27.977	

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
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Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 231-MWD+IFR1+MS+sag													Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor		
3,500.00	3,454.38	3,441.53	3,383.97	13.82	12.43	-66.43	-449.22	-894.51	685.01	660.09	24.92	27.486		
3,600.00	3,552.78	3,527.36	3,466.84	14.24	12.82	-69.02	-470.49	-887.72	695.31	669.70	25.61	27.146		
3,700.00	3,651.19	3,612.17	3,548.41	14.67	13.21	-71.58	-492.62	-880.78	708.44	682.16	26.28	26.957		
3,800.00	3,749.59	3,707.41	3,640.03	15.09	13.65	-74.32	-517.62	-873.57	723.74	696.73	27.01	26.796		
3,900.00	3,848.00	3,818.10	3,747.24	15.51	14.13	-77.20	-544.25	-866.61	739.20	711.36	27.84	26.551		
4,000.00	3,946.40	3,922.16	3,848.66	15.94	14.57	-79.65	-566.84	-861.16	754.27	725.67	28.60	26.369		
4,100.00	4,044.80	4,020.22	3,944.57	16.36	14.98	-81.78	-586.86	-856.81	769.54	740.23	29.31	26.251		
4,200.00	4,143.21	4,121.31	4,043.49	16.78	15.39	-83.88	-607.22	-852.51	785.64	755.60	30.04	26.152		
4,300.00	4,241.61	4,244.52	4,164.60	17.21	15.88	-86.27	-629.23	-847.26	800.58	769.68	30.91	25.904		
4,400.00	4,340.02	4,382.28	4,300.95	17.63	16.38	-88.80	-647.49	-840.29	811.73	779.93	31.80	25.524		
4,500.00	4,438.42	4,506.36	4,424.33	18.05	16.79	-90.95	-658.84	-833.91	819.81	787.23	32.58	25.160		
4,600.00	4,536.87	4,616.72	4,534.41	18.45	17.13	-92.69	-665.62	-829.94	825.91	792.63	33.28	24.817		
4,700.00	4,635.76	4,729.25	4,646.79	18.74	17.47	-94.17	-670.67	-827.21	830.95	797.08	33.87	24.533		
4,800.00	4,735.12	4,837.04	4,754.53	19.02	17.78	-95.20	-673.68	-825.95	834.52	800.09	34.43	24.236		
4,900.00	4,834.80	4,937.18	4,854.63	19.28	18.06	-95.88	-676.00	-824.96	837.47	802.50	34.97	23.948		
5,000.00	4,934.70	6,421.03	5,775.79	19.52	18.38	-7.95	164.38	-796.54	804.93	795.39	9.53	84.442		
5,100.00	5,034.69	6,420.58	5,775.80	19.75	18.38	-83.52	163.93	-796.55	705.13	695.58	9.56	73.793		
5,200.00	5,134.69	6,419.96	5,775.80	20.02	18.38	-84.17	163.30	-796.57	605.48	595.87	9.61	62.974		
5,300.00	5,234.69	6,419.32	5,775.80	20.29	18.38	-84.84	162.67	-796.59	505.97	496.24	9.73	51.992		
5,400.00	5,334.67	6,417.72	5,775.82	20.56	18.38	117.54	161.07	-796.63	406.73	396.77	9.96	40.822		
5,500.00	5,433.27	6,402.20	5,775.94	20.79	18.34	145.65	145.56	-797.13	309.47	299.08	10.39	29.798		
5,600.00	5,527.04	6,365.76	5,776.11	21.01	18.27	148.95	109.15	-798.70	218.16	206.60	11.56	18.874		
5,700.00	5,612.56	6,312.96	5,775.62	21.22	18.20	142.43	56.43	-801.53	137.50	121.82	15.68	8.768		
5,800.00	5,686.66	6,249.11	5,774.52	21.42	18.20	122.67	-7.24	-806.19	78.60	50.78	27.82	2.825		
5,866.28	5,728.14	6,199.24	5,773.67	21.54	18.23	98.01	-56.87	-811.00	65.22	28.71	36.52	1.786 CC, ES, SF		
5,900.00	5,746.64	6,172.34	5,772.60	21.62	18.26	84.11	-83.59	-813.86	68.33	31.52	36.81	1.856		
6,000.00	5,790.28	6,090.93	5,765.69	21.83	18.35	54.57	-164.13	-823.39	98.90	68.44	30.46	3.247		
6,100.00	5,815.98	6,015.98	5,748.59	22.08	18.45	39.58	-236.59	-830.63	138.57	112.14	26.43	5.242		
6,200.00	5,823.00	5,940.00	5,719.24	22.39	18.56	30.26	-306.50	-834.11	178.24	153.28	24.97	7.139		
6,300.00	5,823.00	5,879.00	5,687.21	22.79	18.64	25.61	-358.34	-835.72	225.76	199.71	26.05	8.666		
6,400.00	5,823.00	5,813.64	5,648.26	23.27	18.74	21.50	-410.79	-837.26	282.02	255.40	26.62	10.594		
6,500.00	5,823.00	5,757.00	5,611.97	23.84	18.83	18.68	-454.25	-838.49	343.81	316.06	27.75	12.389		
6,600.00	5,823.00	5,726.00	5,590.15	24.49	18.86	17.24	-476.25	-838.80	412.51	382.40	30.11	13.699		
6,700.00	5,823.00	5,680.00	5,554.81	25.22	18.91	15.21	-505.66	-838.57	487.54	456.61	30.93	15.763		
6,800.00	5,823.00	5,660.87	5,539.31	26.01	18.92	14.44	-516.86	-838.40	566.55	533.94	32.62	17.371		
6,900.00	5,823.00	5,633.98	5,516.91	26.86	18.94	13.50	-531.74	-838.42	649.01	615.48	33.53	19.355		
7,000.00	5,823.00	5,576.36	5,468.29	27.77	18.98	11.88	-562.67	-839.04	732.78	699.46	33.32	21.992		
7,100.00	5,823.00	5,542.00	5,439.37	28.73	19.00	10.97	-581.20	-838.52	816.65	782.90	33.75	24.194		
7,200.00	5,823.00	5,496.00	5,399.91	29.73	19.04	9.76	-604.75	-836.56	901.93	868.12	33.81	26.678		
7,300.00	5,823.00	5,496.00	5,399.91	30.76	19.04	9.76	-604.75	-836.56	988.78	953.96	34.82	28.397		
7,400.00	5,823.00	5,473.96	5,380.42	31.84	19.04	9.21	-614.97	-835.39	1,077.19	1,041.98	35.21	30.592		
7,500.00	5,823.00	5,450.00	5,358.74	32.94	19.05	8.64	-625.07	-834.04	1,167.19	1,131.69	35.50	32.878		
7,600.00	5,823.00	5,450.00	5,358.74	34.08	19.05	8.64	-625.07	-834.04	1,257.97	1,221.87	36.10	34.849		
7,700.00	5,823.00	5,450.00	5,358.74	35.24	19.05	8.64	-625.07	-834.04	1,350.05	1,313.46	36.59	36.896		
7,800.00	5,823.00	5,423.23	5,334.04	36.42	19.05	8.06	-635.27	-832.48	1,442.41	1,405.73	36.68	39.324		
7,900.00	5,823.00	5,404.00	5,316.06	37.62	19.05	7.67	-642.00	-831.36	1,535.74	1,498.89	36.85	41.681		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 207-MWD+IFR1+MS+sag													Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	39.78	39.78	0.00	0.06	-86.73	56.69	-991.21	992.83					
100.00	100.00	136.55	136.55	0.13	0.21	-86.73	56.68	-991.49	993.12	992.77	0.35	2,832.883		
200.00	200.00	232.64	232.63	0.47	0.41	-86.73	56.66	-992.10	993.75	992.87	0.88	1,126.619		
300.00	300.00	329.00	328.99	0.81	0.73	-86.74	56.64	-993.03	994.72	993.18	1.54	646.609		
400.00	399.98	427.86	427.84	1.13	1.05	-8.78	56.22	-994.32	994.27	992.09	2.18	455.387		
500.00	499.84	557.31	557.29	1.46	1.43	-8.91	55.39	-994.32	989.10	986.18	2.91	339.411		
600.00	599.45	688.15	688.04	1.81	1.83	-9.10	54.31	-989.98	977.12	973.40	3.72	262.539		
700.00	698.70	806.56	806.23	2.16	2.21	-9.41	52.11	-983.13	959.28	954.79	4.49	213.504		
800.00	797.47	926.30	925.53	2.53	2.60	-9.88	48.58	-973.52	935.83	930.55	5.29	177.025		
900.00	895.87	1,043.29	1,041.78	2.93	3.00	-10.44	43.18	-961.58	908.21	902.15	6.05	150.029		
1,000.00	994.28	1,155.32	1,152.75	3.33	3.40	-11.12	36.46	-947.79	878.54	871.78	6.76	129.941		
1,100.00	1,092.68	1,253.64	1,250.00	3.73	3.75	-11.78	30.34	-934.66	847.97	840.59	7.38	114.916		
1,200.00	1,191.09	1,358.66	1,353.71	4.14	4.13	-12.52	23.95	-919.44	816.37	808.33	8.04	101.547		
1,300.00	1,289.49	1,444.99	1,439.06	4.56	4.43	-13.09	19.84	-907.10	785.09	776.51	8.58	91.495		
1,400.00	1,387.89	1,536.38	1,529.49	4.97	4.74	-13.74	15.52	-894.65	754.55	745.39	9.16	82.379		
1,500.00	1,486.30	1,634.46	1,626.53	5.39	5.09	-14.53	10.43	-881.32	724.18	714.38	9.80	73.923		
1,600.00	1,584.70	1,732.85	1,723.79	5.81	5.46	-15.41	5.25	-867.43	693.41	682.97	10.44	66.403		
1,700.00	1,683.11	1,828.48	1,818.28	6.22	5.81	-16.33	0.35	-853.54	662.41	651.33	11.08	59.795		
1,800.00	1,781.51	1,921.11	1,909.82	6.64	6.14	-17.31	-4.40	-840.18	631.66	619.96	11.70	53.997		
1,900.00	1,879.91	2,014.50	2,002.17	7.06	6.46	-18.36	-8.91	-827.04	601.42	589.11	12.32	48.820		
2,000.00	1,978.32	2,110.87	2,097.50	7.48	6.80	-19.50	-12.98	-813.51	571.37	558.41	12.96	44.079		
2,100.00	2,076.72	2,206.67	2,192.23	7.90	7.15	-20.75	-16.92	-799.75	541.21	527.59	13.62	39.741		
2,200.00	2,175.13	2,299.40	2,283.94	8.33	7.48	-22.05	-20.38	-786.53	511.37	497.10	14.27	35.837		
2,300.00	2,273.53	2,394.49	2,378.06	8.75	7.82	-23.49	-23.51	-773.34	482.08	467.15	14.93	32.280		
2,400.00	2,371.94	2,490.61	2,473.17	9.17	8.18	-25.13	-26.61	-759.78	452.89	437.27	15.62	28.987		
2,500.00	2,470.34	2,585.98	2,567.45	9.59	8.54	-27.08	-30.31	-745.95	423.86	407.52	16.33	25.949		
2,600.00	2,568.74	2,679.17	2,659.48	10.01	8.89	-29.47	-35.40	-732.13	395.45	378.38	17.07	23.162		
2,700.00	2,667.15	2,772.84	2,751.96	10.44	9.24	-32.30	-41.05	-718.37	368.12	350.28	17.84	20.638		
2,800.00	2,765.55	2,866.11	2,844.09	10.86	9.57	-35.50	-46.57	-704.93	342.01	323.38	18.63	18.357		
2,900.00	2,863.96	2,959.09	2,935.98	11.28	9.91	-39.16	-52.18	-691.92	317.54	298.07	19.47	16.309		
3,000.00	2,962.36	3,053.18	3,029.09	11.70	10.24	-43.28	-57.38	-679.39	294.93	274.58	20.35	14.493		
3,100.00	3,060.76	3,146.54	3,121.63	12.13	10.57	-47.72	-61.75	-667.87	274.44	253.17	21.27	12.903		
3,200.00	3,159.17	3,241.21	3,215.61	12.55	10.90	-52.62	-65.58	-657.19	256.35	234.13	22.22	11.535		
3,300.00	3,257.57	3,337.00	3,310.75	12.97	11.23	-58.16	-69.26	-646.68	240.58	217.36	23.22	10.360		
3,400.00	3,355.98	3,431.94	3,405.01	13.40	11.57	-64.39	-73.30	-636.06	227.62	203.36	24.26	9.383		
3,500.00	3,454.38	3,527.86	3,500.19	13.82	11.91	-71.41	-77.63	-624.94	217.88	192.58	25.30	8.612		
3,600.00	3,552.78	3,621.20	3,592.86	14.24	12.24	-78.60	-82.08	-614.69	212.37	186.10	26.27	8.084		
3,667.55	3,619.26	3,684.72	3,656.02	14.53	12.45	-83.38	-85.24	-608.76	211.35	184.49	26.86	7.868		
3,700.00	3,651.19	3,716.22	3,687.38	14.67	12.56	-85.65	-86.79	-606.22	211.55	184.42	27.13	7.797		
3,800.00	3,749.59	3,817.45	3,788.40	15.09	12.87	-92.18	-89.83	-600.48	212.90	184.99	27.91	7.629		
3,900.00	3,848.00	3,916.08	3,886.93	15.51	13.18	-97.97	-91.30	-596.39	215.52	186.93	28.59	7.539		
4,000.00	3,946.40	4,014.28	3,985.05	15.94	13.47	-103.45	-92.46	-592.72	220.02	190.81	29.21	7.533		
4,100.00	4,044.80	4,113.00	4,083.72	16.36	13.77	-108.58	-93.22	-589.56	226.03	196.25	29.78	7.591		
4,200.00	4,143.21	4,212.37	4,183.05	16.78	14.07	-113.29	-93.70	-587.08	233.36	203.05	30.31	7.698		
4,300.00	4,241.61	4,312.48	4,283.16	17.21	14.36	-117.22	-93.78	-586.97	241.17	210.33	30.85	7.818		
4,400.00	4,340.02	4,412.08	4,382.76	17.63	14.64	-120.78	-93.48	-587.41	249.49	218.12	31.37	7.953		
4,500.00	4,438.42	4,509.51	4,480.19	18.05	14.92	-124.03	-93.04	-587.86	258.55	226.68	31.88	8.111		
4,600.00	4,536.87	4,606.84	4,577.52	18.45	15.20	-127.14	-93.03	-587.84	268.86	236.51	32.35	8.310		
4,700.00	4,635.76	4,704.92	4,675.60	18.74	15.49	-129.70	-93.24	-587.58	278.42	245.67	32.75	8.501		
4,800.00	4,735.12	4,803.83	4,774.50	19.02	15.78	-131.66	-93.44	-586.85	286.36	253.19	33.18	8.631		
4,900.00	4,834.80	4,903.19	4,873.86	19.28	16.07	-133.08	-93.52	-585.73	292.30	258.67	33.63	8.691		
5,000.00	4,934.70	5,004.97	4,975.64	19.52	16.37	-133.86	-93.93	-584.81	296.12	261.99	34.14	8.675		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 207-MWD+IFR1+MS+sag												Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor	
5,100.00	5,034.69	5,154.19	5,124.28	19.75	16.79	147.61	-84.26	-588.63	290.67	256.23	34.43	8.441	
5,200.00	5,134.69	5,305.67	5,269.67	20.02	17.13	145.54	-45.30	-602.78	263.56	230.16	33.41	7.890	
5,300.00	5,234.69	5,415.49	5,370.04	20.29	17.37	140.81	-1.91	-612.00	226.52	193.59	32.93	6.879	
5,400.00	5,334.67	5,533.99	5,467.03	20.56	17.63	-56.18	65.24	-619.79	177.98	146.74	31.23	5.698	
5,500.00	5,433.27	5,601.40	5,513.92	20.79	17.77	-83.22	113.50	-622.50	129.28	95.47	33.81	3.824	
5,552.18	5,483.03	5,621.49	5,526.43	20.90	17.81	-93.19	129.20	-623.24	119.63	84.44	35.19	3.399 CC, ES, SF	
5,600.00	5,527.04	5,632.21	5,532.81	21.01	17.83	-97.16	137.82	-623.65	128.45	94.44	34.01	3.777	
5,700.00	5,612.56	5,638.41	5,536.39	21.22	17.84	-91.18	142.86	-623.88	189.51	160.67	28.83	6.573	
5,800.00	5,686.66	5,634.00	5,533.85	21.42	17.83	-71.53	139.27	-623.71	274.29	247.48	26.81	10.229	
5,900.00	5,746.64	5,614.13	5,521.94	21.62	17.79	-46.55	123.39	-622.97	363.67	337.44	26.22	13.868	
6,000.00	5,790.28	5,592.27	5,508.00	21.83	17.75	-30.94	106.57	-622.19	451.12	424.23	26.89	16.779	
6,100.00	5,815.98	5,573.00	5,495.01	22.08	17.71	-22.36	92.35	-621.57	533.66	505.36	28.31	18.853	
6,200.00	5,823.00	5,542.00	5,472.94	22.39	17.65	-17.54	70.62	-620.24	609.33	579.88	29.45	20.687	
6,300.00	5,823.00	5,511.00	5,449.52	22.79	17.58	-16.89	50.41	-618.36	684.86	654.31	30.55	22.415	
6,400.00	5,823.00	5,481.00	5,425.67	23.27	17.52	-16.31	32.34	-616.32	763.98	732.57	31.41	24.323	
6,500.00	5,823.00	5,464.44	5,412.06	23.84	17.48	-16.00	22.98	-615.18	845.80	813.38	32.42	26.088	
6,600.00	5,823.00	5,450.00	5,399.92	24.49	17.45	-15.73	15.21	-614.21	930.06	896.81	33.25	27.974	
6,700.00	5,823.00	5,420.00	5,374.02	25.22	17.38	-15.18	0.22	-612.29	1,016.28	982.70	33.58	30.263	
6,800.00	5,823.00	5,420.00	5,374.02	26.01	17.38	-15.18	0.22	-612.29	1,104.03	1,069.65	34.39	32.106	
6,900.00	5,823.00	5,389.00	5,346.42	26.86	17.31	-14.66	-13.73	-610.06	1,193.14	1,158.60	34.54	34.541	
7,000.00	5,823.00	5,389.00	5,346.42	27.77	17.31	-14.66	-13.73	-610.06	1,283.31	1,248.19	35.12	36.541	
7,100.00	5,823.00	5,374.05	5,332.85	28.73	17.27	-14.44	-19.88	-608.81	1,374.52	1,339.12	35.40	38.825	
7,200.00	5,823.00	5,358.00	5,318.09	29.73	17.24	-14.22	-26.01	-607.40	1,466.67	1,431.04	35.63	41.164	



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 141-MWD+IFR1+MS+sag													Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	36.05	36.05	0.00	0.06	-89.67	6.10	-1,051.20	1,051.22					
100.00	100.00	130.65	130.65	0.13	0.20	-89.67	6.14	-1,051.62	1,051.67	1,051.33	0.34	3,093.088		
200.00	200.00	226.58	226.57	0.47	0.50	-89.65	6.46	-1,052.49	1,052.58	1,051.60	0.97	1,082.909		
300.00	300.00	326.00	325.99	0.81	0.80	-89.63	6.88	-1,053.54	1,053.63	1,052.02	1.61	654.061		
400.00	399.98	421.70	421.68	1.13	1.10	-11.63	7.16	-1,054.80	1,053.25	1,051.01	2.24	470.983		
500.00	499.84	539.01	538.98	1.46	1.46	-11.72	7.19	-1,055.33	1,048.52	1,045.60	2.92	358.549		
600.00	599.45	640.95	640.92	1.81	1.78	-11.88	6.71	-1,055.35	1,040.01	1,036.43	3.58	290.386		
700.00	698.70	746.23	746.20	2.16	2.11	-12.06	7.10	-1,054.47	1,027.24	1,022.98	4.26	241.185		
800.00	797.47	848.91	848.88	2.53	2.43	-12.28	7.83	-1,053.45	1,010.97	1,006.04	4.93	205.070		
900.00	895.87	945.65	945.60	2.93	2.73	-12.48	8.15	-1,052.13	992.25	986.69	5.57	178.195		
1,000.00	994.28	1,051.39	1,051.33	3.33	3.06	-12.67	9.18	-1,050.62	973.48	967.25	6.23	156.224		
1,100.00	1,092.68	1,159.81	1,159.68	3.73	3.41	-12.78	11.60	-1,047.94	953.65	946.74	6.91	138.085		
1,200.00	1,191.09	1,267.60	1,267.34	4.14	3.75	-12.81	15.34	-1,044.23	932.88	925.30	7.58	123.031		
1,300.00	1,289.49	1,372.16	1,371.71	4.56	4.09	-12.83	19.20	-1,039.25	910.79	902.54	8.24	110.471		
1,400.00	1,387.89	1,459.22	1,458.61	4.97	4.36	-12.81	23.00	-1,035.51	889.17	880.33	8.85	100.526		
1,500.00	1,486.30	1,551.30	1,550.60	5.39	4.65	-12.87	25.86	-1,032.77	868.83	859.36	9.47	91.777		
1,600.00	1,584.70	1,649.06	1,648.26	5.81	4.96	-12.91	29.10	-1,029.87	848.51	838.41	10.11	83.942		
1,700.00	1,683.11	1,739.08	1,738.22	6.22	5.25	-12.98	31.73	-1,027.50	828.55	817.82	10.73	77.236		
1,800.00	1,781.51	1,832.20	1,831.29	6.64	5.54	-13.08	34.13	-1,026.01	809.58	798.22	11.36	71.271		
1,900.00	1,879.91	1,947.90	1,946.92	7.06	5.90	-13.21	37.05	-1,023.49	790.12	778.07	12.05	65.584		
2,000.00	1,978.32	2,038.23	2,037.18	7.48	6.19	-13.31	39.41	-1,020.58	769.57	756.90	12.68	60.712		
2,100.00	2,076.72	2,136.60	2,135.47	7.90	6.50	-13.39	42.47	-1,018.00	749.61	736.28	13.33	56.248		
2,200.00	2,175.13	2,236.02	2,234.78	8.33	6.82	-13.43	46.14	-1,015.21	729.45	715.47	13.98	52.186		
2,300.00	2,273.53	2,330.72	2,329.38	8.75	7.12	-13.47	49.66	-1,012.75	709.50	694.88	14.62	48.527		
2,400.00	2,371.94	2,431.83	2,430.37	9.17	7.45	-13.48	53.80	-1,010.02	689.44	674.16	15.28	45.127		
2,500.00	2,470.34	2,528.28	2,526.69	9.59	7.76	-13.47	57.98	-1,007.33	669.29	653.36	15.93	42.016		
2,600.00	2,568.74	2,623.21	2,621.48	10.01	8.07	-13.42	62.54	-1,005.08	649.54	632.96	16.58	39.171		
2,700.00	2,667.15	2,721.10	2,719.23	10.44	8.39	-13.34	67.46	-1,003.10	630.11	612.88	17.24	36.555		
2,800.00	2,765.55	2,820.97	2,819.00	10.86	8.70	-13.36	71.33	-1,000.71	610.36	592.47	17.89	34.122		
2,900.00	2,863.96	2,918.10	2,916.04	11.28	9.01	-13.43	74.69	-998.42	590.64	572.11	18.54	31.864		
3,000.00	2,962.36	3,013.02	3,010.87	11.70	9.32	-13.48	78.19	-996.40	571.16	551.97	19.19	29.762		
3,100.00	3,060.76	3,113.52	3,111.27	12.13	9.64	-13.49	82.34	-994.75	552.14	532.29	19.85	27.819		
3,200.00	3,159.17	3,215.53	3,213.15	12.55	9.96	-13.45	86.94	-992.05	532.12	511.63	20.50	25.960		
3,300.00	3,257.57	3,313.38	3,310.84	12.97	10.28	-13.40	91.53	-989.19	511.83	490.68	21.15	24.199		
3,400.00	3,355.98	3,414.46	3,411.76	13.40	10.60	-13.33	96.32	-986.04	491.35	469.55	21.80	22.538		
3,500.00	3,454.38	3,512.21	3,509.34	13.82	10.92	-13.26	100.96	-982.57	470.45	448.00	22.45	20.953		
3,600.00	3,552.78	3,608.00	3,604.95	14.24	11.23	-13.11	106.05	-979.55	449.92	426.81	23.11	19.465		
3,700.00	3,651.19	3,704.30	3,701.08	14.67	11.54	-12.97	111.04	-976.88	429.77	406.00	23.77	18.081		
3,800.00	3,749.59	3,794.97	3,791.64	15.09	11.83	-12.90	115.16	-975.29	410.63	386.20	24.43	16.807		
3,900.00	3,848.00	3,897.19	3,893.76	15.51	12.15	-12.85	119.55	-973.89	391.87	366.79	25.08	15.627		
4,000.00	3,946.40	4,000.55	3,996.98	15.94	12.48	-12.77	124.23	-971.13	371.84	346.13	25.71	14.463		
4,100.00	4,044.80	4,100.06	4,096.34	16.36	12.80	-12.79	128.04	-967.45	350.79	324.44	26.35	13.313		
4,200.00	4,143.21	4,194.90	4,191.10	16.78	13.09	-13.13	129.90	-964.12	329.97	302.96	27.01	12.217		
4,300.00	4,241.61	4,287.10	4,283.28	17.21	13.38	-13.78	130.18	-962.15	310.55	282.86	27.69	11.216		
4,400.00	4,340.02	4,379.87	4,376.04	17.63	13.67	-14.69	129.52	-962.04	293.18	264.81	28.37	10.336		
4,500.00	4,438.42	4,475.36	4,471.52	18.05	13.97	-15.74	128.77	-963.25	277.27	248.23	29.04	9.548		
4,600.00	4,536.87	4,575.09	4,571.24	18.45	14.28	-16.82	128.37	-965.16	262.33	232.63	29.70	8.833		
4,700.00	4,635.76	4,676.01	4,672.15	18.74	14.59	-17.51	129.29	-966.07	249.00	218.70	30.29	8.219		
4,800.00	4,735.12	4,775.79	4,771.92	19.02	14.90	-18.06	130.07	-966.82	238.88	207.99	30.89	7.734		
4,900.00	4,834.80	4,876.93	4,873.06	19.28	15.21	-18.70	129.72	-967.06	231.71	200.24	31.47	7.363		
5,000.00	4,934.70	4,978.40	4,974.52	19.52	15.52	-19.30	128.72	-966.52	227.17	195.12	32.05	7.088		
5,100.00	5,034.69	5,081.73	5,077.75	19.75	15.84	-98.29	125.34	-964.50	224.75	192.12	32.63	6.888		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 141-MWD+IFR1+MS+sag													Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor		
5,200.00	5,134.69	5,178.61	5,173.46	20.02	16.13	-101.97	111.48	-960.48	223.18	189.82	33.37	6.689		
5,205.49	5,140.19	5,183.57	5,178.29	20.03	16.14	-102.25	110.39	-960.24	223.17	189.76	33.41	6.680 CC		
5,300.00	5,234.69	5,263.00	5,254.39	20.29	16.37	-108.00	88.08	-956.56	226.20	192.04	34.16	6.622		
5,400.00	5,334.67	5,349.39	5,334.28	20.56	16.61	62.75	55.47	-953.17	237.19	202.40	34.79	6.818		
5,500.00	5,433.27	5,424.33	5,400.14	20.79	16.81	55.98	19.88	-951.01	251.44	216.83	34.61	7.265		
5,600.00	5,527.04	5,495.87	5,457.53	21.01	17.02	50.76	-22.69	-950.02	266.67	233.03	33.64	7.927		
5,700.00	5,612.56	5,571.00	5,511.00	21.22	17.22	46.58	-75.36	-948.96	280.13	247.72	32.41	8.643		
5,800.00	5,686.66	5,633.00	5,548.22	21.42	17.42	43.96	-124.90	-949.69	292.68	262.35	30.33	9.651		
5,900.00	5,746.64	5,706.35	5,585.77	21.62	17.68	42.34	-187.80	-951.39	300.98	271.93	29.05	10.361		
6,000.00	5,790.28	5,778.71	5,613.24	21.83	17.97	41.28	-254.67	-951.02	304.18	276.20	27.98	10.871		
6,100.00	5,815.98	5,847.00	5,630.93	22.08	18.27	41.29	-320.59	-951.68	303.30	275.80	27.50	11.028		
6,200.00	5,823.00	5,916.24	5,641.32	22.39	18.61	42.43	-388.95	-953.90	298.17	270.02	28.15	10.592		
6,251.68	5,823.00	5,952.42	5,642.73	22.59	18.80	42.69	-425.07	-955.18	297.10	268.44	28.67	10.365		
6,300.00	5,823.00	5,994.41	5,642.51	22.79	19.03	42.74	-467.04	-956.57	297.71	268.60	29.11	10.229		
6,400.00	5,823.00	6,097.69	5,640.79	23.27	19.57	42.61	-570.27	-959.30	299.39	269.47	29.91	10.008		
6,500.00	5,823.00	6,200.80	5,640.29	23.84	20.14	42.52	-673.36	-961.09	299.56	268.75	30.81	9.722		
6,501.02	5,823.00	6,201.79	5,640.29	23.85	20.15	42.51	-674.35	-961.10	299.56	268.74	30.82	9.719		
6,600.00	5,823.00	6,300.42	5,638.92	24.49	20.83	42.18	-772.97	-961.93	299.82	268.06	31.76	9.441		
6,700.00	5,823.00	6,404.33	5,637.18	25.22	21.63	41.59	-876.86	-961.40	299.41	266.77	32.64	9.172		
6,800.00	5,823.00	6,500.94	5,635.27	26.01	22.44	40.82	-973.43	-959.64	298.41	264.87	33.54	8.898		
6,800.17	5,823.00	6,501.10	5,635.26	26.01	22.44	40.82	-973.59	-959.64	298.41	264.87	33.54	8.897		
6,900.00	5,823.00	6,595.56	5,631.89	26.86	23.29	40.03	-1,067.99	-958.97	299.38	264.89	34.49	8.679		
7,000.00	5,823.00	6,696.31	5,628.46	27.77	24.16	39.44	-1,168.67	-959.83	301.28	265.76	35.52	8.483		
7,100.00	5,823.00	6,796.60	5,627.64	28.73	24.99	39.56	-1,268.89	-963.30	302.85	265.92	36.93	8.200		
7,200.00	5,823.00	6,903.68	5,628.75	29.73	25.97	39.79	-1,375.92	-966.08	302.40	263.94	38.46	7.863		
7,219.87	5,823.00	6,921.00	5,628.96	29.93	26.14	39.84	-1,393.23	-966.56	302.31	263.51	38.80	7.791		
7,300.00	5,823.00	6,993.25	5,629.54	30.76	26.85	40.27	-1,465.37	-970.51	303.60	263.27	40.34	7.527		
7,400.00	5,823.00	7,096.11	5,631.00	31.84	27.85	41.27	-1,567.92	-978.30	306.20	263.71	42.48	7.208		
7,500.00	5,823.00	7,207.11	5,634.09	32.94	28.99	42.11	-1,678.73	-983.78	306.08	261.55	44.53	6.873		
7,600.00	5,823.00	7,313.07	5,636.13	34.08	30.14	42.02	-1,784.66	-983.34	303.03	256.95	46.08	6.577		
7,700.00	5,823.00	7,410.59	5,637.27	35.24	31.26	41.60	-1,882.16	-981.28	299.44	251.91	47.53	6.300		
7,800.00	5,823.00	7,505.95	5,636.93	36.42	32.38	41.03	-1,977.50	-979.54	297.20	248.28	48.92	6.075		
7,900.00	5,823.00	7,614.06	5,636.59	37.62	33.64	40.28	-2,085.57	-976.87	294.54	244.53	50.01	5.890		
8,000.00	5,823.00	7,714.03	5,636.58	38.84	34.81	39.32	-2,185.44	-972.48	290.47	239.48	51.00	5.696		
8,100.00	5,823.00	7,816.78	5,637.37	40.08	36.01	38.35	-2,288.07	-967.62	285.66	233.77	51.89	5.505		
8,200.00	5,823.00	7,918.01	5,638.47	41.33	37.20	37.41	-2,389.18	-962.89	280.71	227.92	52.79	5.317		
8,300.00	5,823.00	8,019.14	5,641.67	42.60	38.40	36.74	-2,490.16	-958.39	274.31	220.42	53.89	5.090		
8,400.00	5,823.00	8,115.41	5,644.50	43.88	39.56	36.35	-2,586.36	-955.94	269.24	213.94	55.30	4.869		
8,500.00	5,823.00	8,209.17	5,646.03	45.17	40.73	35.82	-2,680.07	-953.59	265.30	208.69	56.61	4.686		
8,600.00	5,823.00	8,305.67	5,645.29	46.47	41.92	35.23	-2,776.56	-952.68	264.21	206.40	57.80	4.571		
8,678.76	5,823.00	8,381.80	5,644.75	47.50	42.85	34.82	-2,852.69	-952.25	263.53	204.76	58.76	4.485		
8,700.00	5,823.00	8,401.40	5,644.52	47.78	43.08	34.75	-2,872.28	-952.42	263.59	204.52	59.07	4.462		
8,800.00	5,823.00	8,500.76	5,643.01	49.10	44.30	34.55	-2,971.62	-954.34	264.82	204.25	60.57	4.372		
8,900.00	5,823.00	8,598.46	5,641.31	50.43	45.53	34.24	-3,069.29	-955.65	265.89	203.94	61.96	4.292		
9,000.00	5,823.00	8,695.88	5,637.84	51.77	46.78	33.60	-3,166.64	-956.36	268.15	205.15	63.01	4.256		
9,100.00	5,823.00	8,799.00	5,633.87	53.11	48.06	32.75	-3,269.69	-956.20	270.21	206.50	63.71	4.241		
9,200.00	5,823.00	8,896.46	5,630.15	54.46	49.28	31.89	-3,367.07	-955.66	272.09	207.67	64.41	4.224		
9,300.00	5,823.00	8,997.31	5,626.06	55.81	50.54	31.06	-3,467.84	-955.53	274.45	209.37	65.08	4.217		
9,400.00	5,823.00	9,097.06	5,623.10	57.18	51.74	30.67	-3,567.53	-957.06	276.77	210.56	66.21	4.180		
9,500.00	5,823.00	9,195.63	5,621.59	58.54	52.94	30.85	-3,666.01	-960.95	279.09	211.05	68.04	4.102		
9,600.00	5,823.00	9,295.56	5,620.20	59.91	54.18	31.51	-3,765.71	-967.58	282.70	212.20	70.49	4.010		
9,700.00	5,823.00	9,398.22	5,621.65	61.29	55.45	32.58	-3,868.09	-974.89	284.21	210.74	73.46	3.869		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Sec 30-T10N-R57W - Horsetail #30F-3106 - Hz - Hz		Offset Site Error:		0.00 usft
Survey Program:		141-MWD+IFR1+MS+sag											Offset Well Error:		0.00 usft		
Reference		Offset		Semi Major Axis			Distance										
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre	+N/-S	+E/-W	Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning			
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)	(usft)					
9,800.00	5,823.00	9,492.10	5,622.00	62.67	56.65	33.62	-3,961.64	-982.73		287.38	210.83	76.54	3.754				
9,900.00	5,823.00	9,590.66	5,620.94	64.05	57.92	34.59	-4,059.82	-991.34		292.06	212.50	79.56	3.671				
10,000.00	5,823.00	9,694.29	5,619.34	65.44	59.22	35.25	-4,163.18	-998.59		296.20	214.04	82.16	3.605				
10,100.00	5,823.00	9,786.25	5,619.13	66.83	60.36	36.21	-4,254.77	-1,006.70		300.45	215.21	85.23	3.525				
10,200.00	5,823.00	9,885.25	5,618.89	68.22	61.59	37.83	-4,352.93	-1,019.55		307.28	218.04	89.25	3.443				
10,300.00	5,823.00	9,994.33	5,620.04	69.62	62.94	39.48	-4,461.26	-1,032.22		312.52	219.15	93.37	3.347				
10,400.00	5,823.00	10,097.76	5,621.75	71.02	64.25	40.62	-4,564.30	-1,040.97		315.43	218.59	96.84	3.257				
10,500.00	5,823.00	10,189.80	5,621.69	72.42	65.45	41.38	-4,656.04	-1,048.44		319.50	219.62	99.88	3.199				
10,600.00	5,823.00	10,295.69	5,620.95	73.83	66.81	42.06	-4,761.62	-1,056.32		323.65	220.85	102.80	3.148				
10,700.00	5,823.00	10,400.06	5,621.80	75.24	68.14	42.81	-4,865.75	-1,063.33		326.25	220.43	105.82	3.083				
10,800.00	5,823.00	10,498.42	5,622.63	76.65	69.39	43.34	-4,963.96	-1,068.66		327.99	219.39	108.60	3.020				
10,900.00	5,823.00	10,597.16	5,623.53	78.06	70.66	44.15	-5,062.41	-1,076.18		331.23	219.42	111.81	2.962				
11,000.00	5,823.00	10,694.75	5,624.64	79.47	71.93	44.88	-5,159.76	-1,082.96		333.92	218.98	114.94	2.905				
11,100.00	5,823.00	10,801.83	5,624.84	80.89	73.33	45.55	-5,266.58	-1,090.42		337.39	219.41	117.98	2.860				
11,200.00	5,823.00	10,902.12	5,626.87	82.31	74.64	46.19	-5,366.70	-1,095.77		338.40	217.36	121.04	2.796				
11,300.00	5,823.00	11,004.06	5,628.08	83.73	75.97	46.68	-5,468.51	-1,100.74		339.68	215.80	123.88	2.742				
11,400.00	5,823.00	11,093.18	5,629.46	85.15	77.12	47.33	-5,557.41	-1,106.69		342.08	215.05	127.04	2.693				
11,500.00	5,823.00	11,206.33	5,631.55	86.57	78.59	48.17	-5,670.29	-1,114.12		344.23	213.83	130.40	2.640				
11,600.00	5,823.00	11,304.75	5,632.89	87.99	79.89	48.60	-5,768.60	-1,118.37		345.07	211.82	133.25	2.590				
11,700.00	5,823.00	11,412.17	5,633.94	89.42	81.32	48.75	-5,875.99	-1,120.72		344.57	209.00	135.57	2.542				
11,800.00	5,823.00	11,514.14	5,635.54	90.85	82.66	48.84	-5,977.94	-1,121.68		342.75	204.90	137.85	2.486				
11,900.00	5,823.00	11,617.27	5,636.61	92.28	84.02	48.74	-6,081.06	-1,121.60		340.53	200.72	139.80	2.436				
12,000.00	5,823.00	11,721.54	5,638.85	93.70	85.39	48.68	-6,185.31	-1,120.64		336.93	195.15	141.78	2.376				
12,100.00	5,823.00	11,822.58	5,639.85	95.14	86.74	48.24	-6,286.29	-1,117.57		332.52	189.33	143.18	2.322				
12,200.00	5,823.00	11,924.48	5,640.09	96.57	88.08	47.53	-6,388.09	-1,113.28		327.76	183.69	144.07	2.275				
12,300.00	5,823.00	12,020.37	5,641.37	98.00	89.32	47.15	-6,483.93	-1,110.54		323.30	177.66	145.65	2.220				
12,400.00	5,823.00	12,121.27	5,643.42	99.43	90.63	46.96	-6,584.80	-1,108.83		319.22	171.81	147.41	2.166				
12,500.00	5,823.00	12,216.18	5,646.12	100.87	91.86	47.06	-6,679.67	-1,108.62		315.69	165.84	149.85	2.107				
12,566.55	5,823.00	12,274.65	5,646.92	101.82	92.62	47.13	-6,738.13	-1,109.51		314.84	163.27	151.57	2.077				
12,600.00	5,823.00	12,307.37	5,646.85	102.30	93.06	47.14	-6,770.84	-1,110.29		314.99	162.68	152.31	2.068				
12,700.00	5,823.00	12,416.76	5,648.22	103.74	94.52	47.16	-6,880.21	-1,111.13		313.20	158.88	154.32	2.030				
12,800.00	5,823.00	12,517.01	5,649.87	105.18	95.86	47.11	-6,980.44	-1,110.96		310.51	154.13	156.38	1.986				
12,900.00	5,823.00	12,614.89	5,650.61	106.62	97.17	46.82	-7,078.32	-1,109.77		307.66	149.64	158.02	1.947				
13,000.00	5,823.00	12,712.52	5,651.10	108.06	98.46	46.69	-7,175.94	-1,110.21		306.20	146.23	159.97	1.914				
13,100.00	5,823.00	12,808.48	5,650.34	109.50	99.74	46.31	-7,271.90	-1,109.91		305.09	143.69	161.40	1.890				
13,102.80	5,823.00	12,811.06	5,650.31	109.54	99.77	46.30	-7,274.48	-1,109.92		305.09	143.64	161.45	1.890				
13,200.00	5,823.00	12,910.68	5,649.25	110.94	101.09	46.06	-7,374.08	-1,111.18		305.31	142.32	162.99	1.873				
13,300.00	5,823.00	13,012.25	5,650.14	112.38	102.43	46.05	-7,475.64	-1,112.16		303.97	138.91	165.06	1.842				
13,400.00	5,823.00	13,115.39	5,650.33	113.82	103.81	45.77	-7,578.78	-1,111.93		302.26	135.72	166.54	1.815				
13,500.00	5,823.00	13,210.00	5,650.81	115.26	105.09	45.36	-7,673.37	-1,110.19		299.27	131.38	167.89	1.782				
13,501.62	5,823.00	13,210.00	5,650.81	115.29	105.09	45.36	-7,673.37	-1,110.19		299.27	131.31	167.95	1.782 ES, SF				
13,600.00	5,823.00	13,210.00	5,650.81	116.71	105.09	45.36	-7,673.37	-1,110.19		315.02	151.41	163.62	1.925				
13,700.00	5,823.00	13,210.00	5,650.81	118.15	105.09	45.36	-7,673.37	-1,110.19		359.05	210.58	148.47	2.418				
13,800.00	5,823.00	13,210.00	5,650.81	119.59	105.09	45.36	-7,673.37	-1,110.19		422.60	291.25	131.35	3.217				
13,900.00	5,823.00	13,210.00	5,650.81	121.04	105.09	45.36	-7,673.37	-1,110.19		498.27	381.65	116.62	4.273				
13,986.28	5,823.00	13,210.00	5,650.81	122.29	105.09	45.36	-7,673.37	-1,110.19		569.61	463.15	106.46	5.351				



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 140-MWD+IFR1+MS+sag													Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	38.53	38.53	0.00	0.06	-89.66	6.08	-1,021.16	1,021.18					
100.00	100.00	139.65	139.65	0.13	0.21	-89.66	6.06	-1,021.07	1,021.09	1,020.74	0.34	2,997.427		
200.00	200.00	238.11	238.11	0.47	0.54	-89.66	6.04	-1,021.00	1,021.01	1,020.01	1.01	1,015.454		
300.00	300.00	338.60	338.60	0.81	0.86	-89.67	5.90	-1,020.99	1,021.00	1,019.34	1.66	613.481		
400.00	399.98	440.73	440.72	1.13	1.19	-11.71	5.58	-1,020.80	1,019.11	1,016.79	2.32	439.536		
500.00	499.84	546.92	546.92	1.46	1.52	-11.81	5.48	-1,020.42	1,013.65	1,010.66	2.99	339.571		
600.00	599.45	672.39	672.35	1.81	1.93	-11.97	5.70	-1,017.80	1,003.06	999.28	3.77	265.870		
700.00	698.70	819.84	819.46	2.16	2.43	-12.03	9.70	-1,009.03	985.24	980.50	4.74	207.948		
800.00	797.47	941.91	940.91	2.53	2.83	-12.22	12.33	-996.98	960.21	954.66	5.55	173.095		
900.00	895.87	1,048.02	1,046.27	2.93	3.20	-12.29	15.33	-984.69	931.54	925.30	6.23	149.492		
1,000.00	994.28	1,147.26	1,144.72	3.33	3.54	-12.37	17.97	-972.51	902.17	895.32	6.85	131.718		
1,100.00	1,092.68	1,238.16	1,234.92	3.73	3.85	-12.48	19.86	-961.41	872.89	865.48	7.41	117.852		
1,200.00	1,191.09	1,339.79	1,335.75	4.14	4.19	-12.58	22.31	-948.98	843.58	835.55	8.03	105.060		
1,300.00	1,289.49	1,443.21	1,438.20	4.56	4.55	-12.65	25.41	-935.21	813.20	804.52	8.68	93.687		
1,400.00	1,387.89	1,530.08	1,524.29	4.97	4.85	-12.69	28.44	-923.93	783.15	773.91	9.24	84.738		
1,500.00	1,486.30	1,618.48	1,611.95	5.39	5.14	-12.72	31.57	-913.02	753.75	743.93	9.82	76.782		
1,600.00	1,584.70	1,707.50	1,700.43	5.81	5.44	-12.83	33.81	-903.49	725.88	715.47	10.41	69.761		
1,700.00	1,683.11	1,816.63	1,808.78	6.22	5.82	-12.96	36.65	-890.81	697.16	686.08	11.08	62.931		
1,800.00	1,781.51	1,904.74	1,896.10	6.64	6.13	-12.93	40.69	-879.71	667.53	655.85	11.68	57.156		
1,900.00	1,879.91	1,991.06	1,981.88	7.06	6.42	-12.90	44.46	-870.97	640.18	627.91	12.28	52.148		
2,000.00	1,978.32	2,092.06	2,082.28	7.48	6.77	-12.95	48.11	-860.48	612.64	599.72	12.92	47.403		
2,100.00	2,076.72	2,190.17	2,179.73	7.90	7.12	-12.99	51.69	-849.77	584.59	571.02	13.57	43.080		
2,200.00	2,175.13	2,282.59	2,271.52	8.33	7.44	-13.00	55.48	-839.68	556.55	542.35	14.20	39.204		
2,300.00	2,273.53	2,376.92	2,365.32	8.75	7.75	-13.12	58.25	-830.15	529.29	514.47	14.82	35.706		
2,400.00	2,371.94	2,474.56	2,462.41	9.17	8.09	-13.28	60.98	-820.15	501.91	486.45	15.46	32.465		
2,500.00	2,470.34	2,570.31	2,557.62	9.59	8.41	-13.59	62.60	-810.17	474.38	458.29	16.09	29.477		
2,600.00	2,568.74	2,672.52	2,659.22	10.01	8.76	-13.97	64.34	-799.12	446.50	429.77	16.73	26.694		
2,700.00	2,667.15	2,769.58	2,755.57	10.44	9.10	-14.42	65.66	-787.50	417.52	400.15	17.36	24.045		
2,800.00	2,765.55	2,865.28	2,850.56	10.86	9.44	-14.87	67.41	-776.01	388.51	370.51	18.00	21.585		
2,900.00	2,863.96	2,961.54	2,946.08	11.28	9.77	-15.22	70.18	-764.42	359.45	340.82	18.63	19.290		
3,000.00	2,962.36	3,055.00	3,038.83	11.70	10.09	-15.36	74.31	-753.68	330.84	311.57	19.28	17.162		
3,100.00	3,060.76	3,146.00	3,129.27	12.13	10.40	-15.57	78.03	-744.28	303.37	283.44	19.93	15.222		
3,200.00	3,159.17	3,248.41	3,231.00	12.55	10.75	-16.14	80.92	-732.96	275.28	254.74	20.54	13.402		
3,300.00	3,257.57	3,344.59	3,326.44	12.97	11.10	-16.80	83.74	-721.30	246.20	225.01	21.18	11.622		
3,400.00	3,355.98	3,442.61	3,423.59	13.40	11.45	-17.78	86.23	-708.53	216.31	194.50	21.81	9.918		
3,500.00	3,454.38	3,537.08	3,517.17	13.82	11.79	-19.01	88.75	-695.89	186.15	163.67	22.47	8.283		
3,600.00	3,552.78	3,629.74	3,609.11	14.24	12.11	-20.73	90.89	-684.48	157.16	133.99	23.18	6.781		
3,700.00	3,651.19	3,721.64	3,700.50	14.67	12.41	-22.82	93.43	-675.22	130.44	106.51	23.92	5.452		
3,800.00	3,749.59	3,813.14	3,791.82	15.09	12.69	-25.68	95.41	-670.06	108.26	83.55	24.71	4.381		
3,900.00	3,848.00	3,908.41	3,887.05	15.51	12.97	-30.61	95.64	-667.78	90.15	64.61	25.54	3.529		
4,000.00	3,946.40	4,005.57	3,984.21	15.94	13.25	-37.44	95.65	-667.64	75.17	48.68	26.49	2.837		
4,100.00	4,044.80	4,104.05	4,082.69	16.36	13.53	-46.86	95.93	-668.29	62.27	34.62	27.66	2.252		
4,200.00	4,143.21	4,202.64	4,181.27	16.78	13.82	-60.24	96.53	-669.00	51.66	22.53	29.13	1.773		
4,300.00	4,241.61	4,301.05	4,279.69	17.21	14.11	-79.63	96.50	-669.18	45.51	14.69	30.82	1.476 Level 3		
4,351.22	4,292.02	4,351.60	4,330.24	17.42	14.26	-90.85	96.57	-669.31	44.70	13.18	31.53	1.418 Level 3, CC, ES, SF		
4,400.00	4,340.02	4,399.91	4,378.55	17.63	14.40	-101.42	96.88	-669.54	45.35	13.38	31.97	1.418 Level 3		
4,500.00	4,438.42	4,498.46	4,477.09	18.05	14.69	-120.77	98.11	-670.01	50.60	18.34	32.26	1.568		
4,600.00	4,536.87	4,596.07	4,574.69	18.45	14.98	-135.23	98.64	-669.80	61.19	29.02	32.17	1.902		
4,700.00	4,635.76	4,695.18	4,673.80	18.74	15.27	-142.96	97.75	-670.11	72.97	40.72	32.25	2.263		
4,800.00	4,735.12	4,794.00	4,772.61	19.02	15.56	-147.16	96.96	-670.58	82.53	50.02	32.52	2.538		
4,900.00	4,834.80	4,893.56	4,872.16	19.28	15.86	-149.50	95.88	-670.47	90.04	57.13	32.91	2.736		
5,000.00	4,934.70	4,987.00	4,965.55	19.52	16.13	-149.87	93.03	-669.70	96.57	63.35	33.22	2.907		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 140-MWD+IFR1+MS+sag													Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor		
5,100.00	5,034.69	5,078.00	5,055.57	19.75	16.40	136.36	80.55	-668.53	108.06	74.52	33.54	3.222		
5,200.00	5,134.69	5,163.14	5,137.28	20.02	16.64	143.78	56.81	-668.21	130.07	96.57	33.50	3.883		
5,300.00	5,234.69	5,240.25	5,208.18	20.29	16.85	150.83	26.65	-668.96	163.45	130.74	32.72	4.996		
5,400.00	5,334.67	5,306.21	5,265.23	20.56	17.03	-24.16	-6.37	-670.01	208.26	177.16	31.10	6.697		
5,500.00	5,433.27	5,368.82	5,315.42	20.79	17.20	-19.55	-43.73	-669.23	252.59	223.63	28.97	8.720		
5,600.00	5,527.04	5,446.00	5,371.12	21.01	17.41	-16.36	-97.07	-669.04	290.97	263.09	27.88	10.435		
5,700.00	5,612.56	5,498.88	5,405.16	21.22	17.55	-14.59	-137.51	-669.92	320.78	296.33	24.46	13.117		
5,800.00	5,686.66	5,558.23	5,439.17	21.42	17.75	-13.31	-186.09	-671.49	342.69	321.28	21.41	16.006		
5,900.00	5,746.64	5,631.00	5,473.37	21.62	18.00	-12.40	-250.26	-673.74	357.09	337.63	19.46	18.349		
6,000.00	5,790.28	5,691.00	5,498.50	21.83	18.25	-12.29	-304.71	-674.68	359.92	343.44	16.48	21.842		
6,100.00	5,815.98	5,768.55	5,522.82	22.08	18.61	-12.55	-378.29	-676.41	354.06	338.89	15.18	23.330		
6,200.00	5,823.00	5,844.00	5,543.84	22.39	19.00	-13.52	-450.74	-677.91	334.12	319.98	14.14	23.622		
6,300.00	5,823.00	5,916.94	5,558.59	22.79	19.45	-14.66	-522.13	-676.47	315.65	302.27	13.39	23.579		
6,400.00	5,823.00	5,983.24	5,564.73	23.27	19.89	-15.40	-588.10	-675.27	307.55	294.69	12.86	23.915		
6,425.08	5,823.00	6,000.56	5,565.12	23.41	20.01	-15.48	-605.41	-675.30	307.12	294.22	12.90	23.812		
6,500.00	5,823.00	6,069.12	5,564.37	23.84	20.47	-15.61	-673.96	-675.70	308.14	294.65	13.48	22.853		
6,600.00	5,823.00	6,167.45	5,563.49	24.49	21.16	-16.17	-772.28	-674.28	309.93	295.30	14.63	21.180		
6,700.00	5,823.00	6,264.76	5,562.02	25.22	21.92	-16.80	-869.55	-672.19	312.55	296.68	15.87	19.694		
6,800.00	5,823.00	6,378.93	5,561.77	26.01	22.80	-17.43	-983.69	-670.74	313.77	296.30	17.47	17.963		
6,900.00	5,823.00	6,479.86	5,564.16	26.86	23.60	-17.94	-1,084.59	-670.60	312.16	293.36	18.80	16.606		
7,000.00	5,823.00	6,580.61	5,565.52	27.77	24.46	-18.32	-1,185.32	-671.17	310.38	290.27	20.11	15.432		
7,100.00	5,823.00	6,682.55	5,569.30	28.73	25.36	-18.62	-1,287.21	-672.45	308.02	286.58	21.45	14.363		
7,200.00	5,823.00	6,782.50	5,571.99	29.73	26.32	-18.70	-1,387.09	-674.84	305.33	282.68	22.65	13.479		
7,300.00	5,823.00	6,881.46	5,574.31	30.76	27.35	-18.72	-1,486.00	-677.49	302.89	279.06	23.83	12.711		
7,400.00	5,823.00	6,976.16	5,575.42	31.84	28.38	-18.52	-1,580.62	-680.86	301.28	276.49	24.80	12.151		
7,500.00	5,823.00	7,082.86	5,576.01	32.94	29.51	-18.23	-1,687.23	-684.75	300.27	274.27	26.00	11.549		
7,600.00	5,823.00	7,180.00	5,578.97	34.08	30.53	-18.71	-1,784.32	-685.02	297.93	270.48	27.45	10.853		
7,674.92	5,823.00	7,249.63	5,579.96	34.95	31.33	-18.99	-1,853.95	-685.23	297.32	268.88	28.45	10.452		
7,700.00	5,823.00	7,273.29	5,579.94	35.24	31.60	-19.01	-1,877.60	-685.56	297.39	268.64	28.75	10.346		
7,800.00	5,823.00	7,371.91	5,579.57	36.42	32.73	-19.15	-1,976.22	-686.62	298.04	267.96	30.08	9.909		
7,900.00	5,823.00	7,469.76	5,578.33	37.62	33.86	-19.23	-2,074.05	-687.71	299.51	268.15	31.36	9.550		
8,000.00	5,823.00	7,570.90	5,576.90	38.84	35.00	-19.19	-2,175.17	-689.43	300.94	268.31	32.63	9.222		
8,100.00	5,823.00	7,677.22	5,576.07	40.08	36.17	-19.08	-2,281.45	-691.86	301.60	267.64	33.96	8.880		
8,200.00	5,823.00	7,778.26	5,577.49	41.33	37.30	-19.11	-2,382.46	-694.17	300.17	264.88	35.29	8.505		
8,300.00	5,823.00	7,879.86	5,579.55	42.60	38.48	-19.56	-2,484.03	-694.38	298.85	261.86	36.98	8.080		
8,400.00	5,823.00	7,978.52	5,582.19	43.88	39.68	-20.28	-2,582.64	-693.31	297.38	258.52	38.86	7.652		
8,500.00	5,823.00	8,078.01	5,584.54	45.17	40.90	-20.96	-2,682.11	-692.44	296.17	255.40	40.77	7.265		
8,561.11	5,823.00	8,136.12	5,585.73	45.96	41.60	-21.45	-2,740.19	-691.34	295.85	253.89	41.96	7.050		
8,600.00	5,823.00	8,172.69	5,586.29	46.47	42.06	-21.80	-2,776.75	-690.32	295.99	253.23	42.77	6.921		
8,700.00	5,823.00	8,265.49	5,585.57	47.78	43.24	-22.37	-2,869.52	-688.67	298.11	253.58	44.53	6.695		
8,800.00	5,823.00	8,363.17	5,582.41	49.10	44.50	-22.44	-2,967.14	-688.91	301.77	255.81	45.95	6.567		
8,900.00	5,823.00	8,461.94	5,577.68	50.43	45.77	-21.96	-3,065.76	-691.66	305.90	259.02	46.88	6.526		
9,000.00	5,823.00	8,562.07	5,571.98	51.77	47.04	-21.26	-3,165.65	-695.45	310.52	262.94	47.58	6.526		
9,100.00	5,823.00	8,670.26	5,567.56	53.11	48.34	-20.66	-3,273.67	-699.40	313.76	265.24	48.52	6.466		
9,200.00	5,823.00	8,775.50	5,566.68	54.46	49.58	-20.48	-3,378.88	-702.21	314.28	264.48	49.80	6.310		
9,300.00	5,823.00	8,873.39	5,566.26	55.81	50.81	-20.36	-3,476.73	-704.71	314.49	263.49	51.00	6.166		
9,400.00	5,823.00	8,972.25	5,564.91	57.18	52.08	-20.12	-3,575.53	-707.52	315.47	263.37	52.10	6.055		
9,500.00	5,823.00	9,070.44	5,563.90	58.54	53.35	-20.24	-3,673.72	-708.43	316.80	263.24	53.56	5.915		
9,600.00	5,823.00	9,167.16	5,562.54	59.91	54.61	-20.54	-3,770.42	-708.07	318.94	263.74	55.20	5.778		
9,700.00	5,823.00	9,271.93	5,562.56	61.29	55.94	-21.48	-3,875.13	-704.53	320.84	263.06	57.77	5.553		
9,800.00	5,823.00	9,373.80	5,562.38	62.67	57.24	-21.86	-3,976.97	-704.15	321.87	262.19	59.68	5.393		
9,900.00	5,823.00	9,478.05	5,562.25	64.05	58.54	-21.75	-4,081.19	-706.81	321.78	260.74	61.04	5.272		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 140-MWD+IFR1+MS+sag													Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor		
10,000.00	5,823.00	9,579.10	5,562.01	65.44	59.80	-21.20	-4,182.10	-712.04	320.82	259.05	61.77	5.194		
10,100.00	5,823.00	9,677.66	5,561.60	66.83	61.04	-20.63	-4,280.52	-717.25	320.03	257.61	62.42	5.127		
10,200.00	5,823.00	9,778.55	5,561.06	68.22	62.32	-20.13	-4,381.30	-722.01	319.58	256.40	63.19	5.058		
10,300.00	5,823.00	9,884.67	5,560.42	69.62	63.65	-18.95	-4,484.04	-730.85	318.03	254.88	63.15	5.036		
10,400.00	5,823.00	9,988.14	5,561.81	71.02	64.93	-17.90	-4,590.14	-739.48	314.74	251.52	63.21	4.979		
10,500.00	5,823.00	10,078.48	5,562.52	72.42	66.08	-17.11	-4,680.24	-746.03	312.42	249.04	63.37	4.930		
10,600.00	5,823.00	10,180.28	5,562.21	73.83	67.40	-16.52	-4,781.89	-751.27	311.79	247.80	63.98	4.873		
10,700.00	5,823.00	10,278.78	5,562.98	75.24	68.67	-16.45	-4,880.35	-753.89	310.85	245.70	65.15	4.771		
10,752.88	5,823.00	10,329.57	5,563.15	75.98	69.33	-16.45	-4,931.13	-754.94	310.67	244.87	65.79	4.722		
10,800.00	5,823.00	10,374.98	5,563.03	76.65	69.92	-16.46	-4,976.53	-755.74	310.81	244.42	66.38	4.682		
10,900.00	5,823.00	10,472.58	5,563.07	78.06	71.21	-17.04	-5,074.12	-754.41	311.74	243.35	68.39	4.558		
11,000.00	5,823.00	10,570.81	5,563.41	79.47	72.51	-18.24	-5,172.22	-749.55	313.51	242.19	71.32	4.396		
11,100.00	5,823.00	10,671.89	5,564.19	80.89	73.82	-19.61	-5,273.14	-743.87	315.25	240.58	74.67	4.222		
11,200.00	5,823.00	10,776.30	5,564.83	82.31	75.19	-20.76	-5,377.44	-739.45	316.83	238.96	77.88	4.068		
11,300.00	5,823.00	10,879.26	5,565.19	83.73	76.53	-20.54	-5,480.33	-742.90	316.01	237.01	78.99	4.000		
11,332.43	5,823.00	10,909.95	5,565.24	84.19	76.93	-20.53	-5,511.01	-743.60	315.92	236.52	79.39	3.979		
11,400.00	5,823.00	10,976.90	5,565.56	85.15	77.81	-20.74	-5,577.96	-743.79	316.03	235.36	80.67	3.918		
11,500.00	5,823.00	11,072.47	5,566.18	86.57	79.10	-21.37	-5,673.51	-742.22	316.73	233.72	83.01	3.816		
11,600.00	5,823.00	11,173.27	5,564.74	87.99	80.45	-21.51	-5,774.29	-742.79	318.58	233.89	84.69	3.762		
11,700.00	5,823.00	11,271.27	5,562.53	89.42	81.73	-21.09	-5,872.20	-746.35	320.08	234.72	85.37	3.750		
11,800.00	5,823.00	11,377.69	5,560.81	90.85	83.12	-20.84	-5,978.56	-749.32	321.32	234.84	86.48	3.716		
11,900.00	5,823.00	11,475.21	5,560.00	92.28	84.42	-20.60	-6,076.03	-752.38	321.68	234.26	87.42	3.680		
12,000.00	5,823.00	11,571.79	5,557.54	93.70	85.72	-20.02	-6,172.47	-756.85	323.15	235.40	87.75	3.683		
12,100.00	5,823.00	11,678.54	5,556.11	95.14	87.13	-19.57	-6,279.11	-761.19	323.68	235.21	88.48	3.658		
12,167.07	5,823.00	11,744.89	5,555.84	96.10	87.99	-19.38	-6,345.42	-763.50	323.61	234.55	89.06	3.634		
12,200.00	5,823.00	11,777.29	5,555.70	96.57	88.42	-19.32	-6,377.81	-764.45	323.63	234.24	89.40	3.620		
12,300.00	5,823.00	11,875.53	5,555.58	98.00	89.72	-19.47	-6,476.05	-765.48	324.06	233.06	91.00	3.561		
12,400.00	5,823.00	11,973.30	5,555.07	99.43	91.04	-19.70	-6,573.81	-765.85	325.09	232.34	92.75	3.505		
12,500.00	5,823.00	12,075.07	5,554.40	100.87	92.38	-20.07	-6,675.58	-765.38	326.55	231.69	94.85	3.443		
12,600.00	5,823.00	12,182.73	5,555.56	102.30	93.75	-20.54	-6,783.23	-765.07	326.33	229.06	97.27	3.355		
12,700.00	5,823.00	12,284.00	5,558.33	103.74	95.07	-21.03	-6,884.46	-765.17	324.43	224.80	99.64	3.256		
12,800.00	5,823.00	12,381.72	5,560.28	105.18	96.40	-21.30	-6,982.16	-766.24	322.89	221.33	101.56	3.179		
12,900.00	5,823.00	12,481.00	5,560.78	106.62	97.74	-21.10	-7,081.37	-769.58	321.92	219.34	102.58	3.138		
12,988.64	5,823.00	12,566.66	5,560.52	107.89	98.88	-20.81	-7,166.97	-772.91	321.56	218.36	103.20	3.116		
13,000.00	5,823.00	12,577.72	5,560.46	108.06	99.03	-20.79	-7,178.02	-773.26	321.57	218.27	103.30	3.113		
13,100.00	5,823.00	12,675.93	5,559.07	109.50	100.34	-20.30	-7,276.12	-777.63	322.03	218.36	103.67	3.106		
13,200.00	5,823.00	12,779.49	5,558.93	110.94	101.73	-20.30	-7,379.64	-779.60	322.19	217.04	105.15	3.064		
13,300.00	5,823.00	12,880.79	5,560.68	112.38	103.06	-20.72	-7,480.93	-779.76	321.21	213.76	107.45	2.989		
13,400.00	5,823.00	12,978.70	5,561.47	113.82	104.37	-21.02	-7,578.83	-780.16	321.00	211.52	109.48	2.932		
13,492.83	5,823.00	13,071.00	5,562.77	115.16	105.61	-21.46	-7,671.12	-779.88	320.55	208.81	111.74	2.869		
13,500.00	5,823.00	13,071.00	5,562.77	115.26	105.61	-21.46	-7,671.12	-779.88	320.63	208.94	111.69	2.871		
13,600.00	5,823.00	13,071.00	5,562.77	116.71	105.61	-21.46	-7,671.12	-779.88	337.99	231.27	106.72	3.167		
13,700.00	5,823.00	13,071.00	5,562.77	118.15	105.61	-21.46	-7,671.12	-779.88	381.67	284.60	97.06	3.932		
13,800.00	5,823.00	13,071.00	5,562.77	119.59	105.61	-21.46	-7,671.12	-779.88	443.96	356.80	87.17	5.093		
13,900.00	5,823.00	13,071.00	5,562.77	121.04	105.61	-21.46	-7,671.12	-779.88	518.21	439.16	79.05	6.555		
13,986.28	5,823.00	13,071.00	5,562.77	122.29	105.61	-21.46	-7,671.12	-779.88	588.42	514.75	73.67	7.988		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	HZ	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	61.14	49.58	89.97	102.73					
100.00	100.00	100.00	100.00	0.13	0.13	61.14	49.58	89.97	102.73	102.46	0.27	385.683		
200.00	200.00	200.00	200.00	0.47	0.47	61.14	49.58	89.97	102.73	101.79	0.94	109.208		
300.00	300.00	300.00	300.00	0.81	0.81	61.14	49.58	89.97	102.73	101.11	1.61	63.610		
400.00	399.98	404.80	404.75	1.13	1.13	140.63	47.13	88.47	101.70	99.33	2.37	42.976		
500.00	499.84	509.04	508.63	1.46	1.47	145.25	39.82	84.03	99.02	95.85	3.17	31.252		
600.00	599.45	612.19	610.80	1.81	1.82	153.26	27.83	76.74	95.99	92.05	3.93	24.400		
679.37	678.26	692.95	690.18	2.09	2.11	162.08	15.16	69.05	94.86	90.39	4.47	21.208	CC, ES	
700.00	698.70	713.39	710.17	2.16	2.18	164.63	11.53	66.84	94.98	90.40	4.58	20.727		
800.00	797.47	811.06	805.69	2.53	2.58	176.59	-5.88	56.26	100.29	95.14	5.15	19.472		
900.00	895.87	908.52	901.02	2.93	3.00	-173.13	-23.26	45.69	111.73	105.88	5.85	19.083		
1,000.00	994.28	1,005.99	996.34	3.33	3.43	-164.91	-40.64	35.13	126.16	119.54	6.62	19.056		
1,100.00	1,092.68	1,103.45	1,091.66	3.73	3.86	-158.44	-58.01	24.57	142.65	135.24	7.42	19.236		
1,200.00	1,191.09	1,200.92	1,186.98	4.14	4.30	-153.33	-75.39	14.01	160.58	152.35	8.22	19.530		
1,300.00	1,289.49	1,298.38	1,282.30	4.56	4.74	-149.26	-92.77	3.45	179.50	170.47	9.03	19.877		
1,400.00	1,387.89	1,395.85	1,377.62	4.97	5.18	-145.97	-110.14	-7.11	199.14	189.30	9.84	20.241		
1,500.00	1,486.30	1,493.31	1,472.94	5.39	5.63	-143.27	-127.52	-17.67	219.31	208.66	10.65	20.599		
1,600.00	1,584.70	1,590.78	1,568.26	5.81	6.07	-141.02	-144.90	-28.24	239.86	228.41	11.45	20.944		
1,700.00	1,683.11	1,688.24	1,663.58	6.22	6.52	-139.13	-162.27	-38.80	260.72	248.46	12.26	21.268		
1,800.00	1,781.51	1,785.71	1,758.90	6.64	6.97	-137.52	-179.65	-49.36	281.81	268.75	13.06	21.571		
1,900.00	1,879.91	1,883.17	1,854.22	7.06	7.42	-136.14	-197.03	-59.92	303.08	289.21	13.87	21.852		
2,000.00	1,978.32	1,980.64	1,949.54	7.48	7.87	-134.93	-214.40	-70.48	324.51	309.83	14.67	22.113		
2,100.00	2,076.72	2,078.10	2,044.86	7.90	8.32	-133.87	-231.78	-81.04	346.05	330.57	15.48	22.355		
2,200.00	2,175.13	2,175.57	2,140.18	8.33	8.77	-132.94	-249.16	-91.61	367.69	351.40	16.28	22.579		
2,300.00	2,273.53	2,273.03	2,235.50	8.75	9.22	-132.11	-266.53	-102.17	389.41	372.32	17.09	22.786		
2,400.00	2,371.94	2,370.50	2,330.82	9.17	9.67	-131.37	-283.91	-112.73	411.21	393.31	17.90	22.979		
2,500.00	2,470.34	2,467.96	2,426.14	9.59	10.12	-130.71	-301.29	-123.29	433.06	414.36	18.70	23.157		
2,600.00	2,568.74	2,565.43	2,521.46	10.01	10.57	-130.10	-318.67	-133.85	454.96	435.46	19.51	23.324		
2,700.00	2,667.15	2,662.89	2,616.78	10.44	11.02	-129.55	-336.04	-144.41	476.91	456.60	20.31	23.479		
2,800.00	2,765.55	2,760.36	2,712.10	10.86	11.47	-129.06	-353.42	-154.98	498.89	477.78	21.12	23.624		
2,900.00	2,863.96	2,857.82	2,807.42	11.28	11.93	-128.60	-370.80	-165.54	520.91	498.99	21.92	23.759		
3,000.00	2,962.36	2,955.29	2,902.74	11.70	12.38	-128.18	-388.17	-176.10	542.96	520.23	22.73	23.887		
3,100.00	3,060.76	3,052.75	2,998.06	12.13	12.83	-127.79	-405.55	-186.66	565.03	541.50	23.54	24.006		
3,200.00	3,159.17	3,150.22	3,093.38	12.55	13.28	-127.43	-422.93	-197.22	587.13	562.78	24.34	24.118		
3,300.00	3,257.57	3,247.68	3,188.70	12.97	13.73	-127.10	-440.30	-207.78	609.24	584.09	25.15	24.223		
3,400.00	3,355.98	3,345.15	3,284.02	13.40	14.19	-126.79	-457.68	-218.34	631.38	605.42	25.96	24.323		
3,500.00	3,454.38	3,442.61	3,379.34	13.82	14.64	-126.50	-475.06	-228.91	653.53	626.76	26.77	24.417		
3,600.00	3,552.78	3,540.08	3,474.66	14.24	15.09	-126.23	-492.43	-239.47	675.69	648.12	27.57	24.506		
3,700.00	3,651.19	3,637.54	3,569.98	14.67	15.54	-125.98	-509.81	-250.03	697.87	669.49	28.38	24.590		
3,800.00	3,749.59	3,735.01	3,665.30	15.09	16.00	-125.74	-527.19	-260.59	720.06	690.87	29.19	24.670		
3,900.00	3,848.00	3,832.47	3,760.62	15.51	16.45	-125.52	-544.56	-271.15	742.26	712.27	30.00	24.746		
4,000.00	3,946.40	3,929.94	3,855.94	15.94	16.90	-125.31	-561.94	-281.71	764.47	733.67	30.80	24.818		
4,100.00	4,044.80	4,027.40	3,951.26	16.36	17.35	-125.11	-579.32	-292.28	786.69	755.08	31.61	24.887		
4,200.00	4,143.21	4,124.87	4,046.58	16.78	17.81	-124.93	-596.70	-302.84	808.92	776.50	32.42	24.952		
4,300.00	4,241.61	4,222.33	4,141.90	17.21	18.26	-124.75	-614.07	-313.40	831.16	797.93	33.23	25.014		
4,400.00	4,340.02	4,319.80	4,237.22	17.63	18.71	-124.58	-631.45	-323.96	853.40	819.37	34.04	25.074		
4,500.00	4,438.42	4,417.26	4,332.54	18.05	19.17	-124.42	-648.83	-334.52	875.66	840.81	34.84	25.130		
4,600.00	4,536.87	4,515.35	4,431.42	18.45	19.62	-124.39	-666.81	-345.45	897.76	862.11	35.65	25.184		
4,700.00	4,635.76	4,654.29	4,565.42	18.74	20.06	-124.57	-686.20	-357.24	915.91	879.45	36.47	25.117		
4,800.00	4,735.12	4,759.45	4,658.00	19.02	20.96	170.05	155.04	-365.95	881.25	860.46	20.79	42.389		
4,900.00	4,834.80	4,861.08	4,758.00	19.28	20.96	169.22	156.67	-365.95	795.05	772.47	22.59	35.202		
5,000.00	4,934.70	4,961.99	4,858.00	19.52	20.96	168.47	157.57	-365.95	710.47	685.84	24.63	28.847		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor		
5,100.00	5,034.69	6,262.19	5,538.00	19.75	20.97	90.00	157.78	-365.95	628.37	601.38	26.99	23.285		
5,200.00	5,134.69	6,262.19	5,538.00	20.02	20.97	90.00	157.78	-365.95	551.53	521.77	29.75	18.536		
5,300.00	5,234.69	6,262.19	5,538.00	20.29	20.97	90.00	157.78	-365.95	483.24	450.33	32.91	14.682		
5,400.00	5,334.67	6,261.17	5,538.00	20.56	20.96	-93.07	156.76	-365.95	427.65	391.53	36.12	11.841		
5,500.00	5,433.27	6,245.41	5,538.00	20.79	20.92	-95.10	141.00	-365.95	390.83	352.41	38.42	10.172		
5,600.00	5,527.04	6,211.14	5,538.00	21.01	20.83	-91.75	106.73	-365.94	377.37	338.58	38.79	9.728 SF		
5,608.04	5,534.27	6,207.61	5,538.00	21.03	20.82	-91.27	103.20	-365.94	377.30	338.58	38.73	9.743		
5,700.00	5,612.56	6,159.60	5,538.00	21.22	20.74	-84.20	55.19	-365.94	385.52	348.32	37.19	10.365		
5,800.00	5,686.66	6,092.70	5,538.00	21.42	20.67	-74.58	-11.71	-365.94	407.64	373.03	34.61	11.777		
5,900.00	5,746.64	6,012.89	5,538.00	21.62	20.65	-65.45	-91.52	-365.93	434.52	402.36	32.16	13.510		
6,000.00	5,790.28	5,924.99	5,538.00	21.83	20.70	-58.66	-179.42	-365.92	458.58	428.18	30.40	15.085		
6,100.00	5,815.98	5,861.18	5,534.10	22.08	20.77	-54.78	-243.07	-365.92	478.31	449.26	29.04	16.468		
6,200.00	5,823.00	5,800.00	5,523.08	22.39	20.85	-52.10	-303.21	-365.91	495.07	466.82	28.25	17.523		
6,300.00	5,823.00	5,750.00	5,508.89	22.79	20.92	-50.88	-351.14	-365.91	515.54	487.75	27.79	18.550		
6,400.00	5,823.00	5,686.07	5,484.17	23.27	21.01	-48.83	-410.05	-365.90	543.62	516.46	27.16	20.015		
6,500.00	5,823.00	5,636.70	5,460.25	23.84	21.08	-46.95	-453.23	-365.90	579.74	552.90	26.83	21.605		
6,600.00	5,823.00	5,600.00	5,439.88	24.49	21.13	-45.43	-483.74	-365.90	623.55	596.56	26.98	23.108		
6,700.00	5,823.00	5,550.00	5,408.78	25.22	21.20	-43.25	-522.86	-365.89	674.26	647.35	26.91	25.056		
6,800.00	5,823.00	5,518.45	5,387.28	26.01	21.23	-41.84	-545.94	-365.89	731.37	703.91	27.45	26.639		
6,900.00	5,823.00	5,500.00	5,374.06	26.86	21.25	-41.01	-558.82	-365.89	794.29	765.90	28.39	27.975		
7,000.00	5,823.00	5,450.00	5,336.07	27.77	21.29	-38.76	-591.29	-365.89	861.75	833.28	28.47	30.269		
7,100.00	5,823.00	5,450.00	5,336.07	28.73	21.29	-38.76	-591.29	-365.89	933.47	903.70	29.77	31.355		
7,200.00	5,823.00	5,400.00	5,295.13	29.73	21.31	-36.57	-619.97	-365.89	1,008.67	978.85	29.82	33.822		
7,300.00	5,823.00	5,400.00	5,295.13	30.76	21.31	-36.57	-619.97	-365.89	1,086.48	1,055.59	30.90	35.164		
7,400.00	5,823.00	5,379.13	5,277.27	31.84	21.32	-35.68	-630.75	-365.89	1,167.10	1,135.66	31.45	37.114		
7,500.00	5,823.00	5,350.00	5,251.64	32.94	21.32	-34.46	-644.59	-365.88	1,250.14	1,218.35	31.80	39.317		
7,600.00	5,823.00	5,350.00	5,251.64	34.08	21.32	-34.46	-644.59	-365.88	1,334.53	1,301.97	32.55	40.996		
7,700.00	5,823.00	5,350.00	5,251.64	35.24	21.32	-34.46	-644.59	-365.88	1,420.94	1,387.73	33.21	42.791		
7,800.00	5,823.00	5,326.21	5,230.15	36.42	21.32	-33.49	-654.82	-365.88	1,508.32	1,474.84	33.48	45.050		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	HZ	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	71.71	49.58	149.95	157.93					
100.00	100.00	100.00	100.00	0.13	0.13	71.71	49.58	149.95	157.93	157.66	0.27	592.941		
200.00	200.00	200.00	200.00	0.47	0.47	71.71	49.58	149.95	157.93	156.99	0.94	167.894		
300.00	300.00	300.00	300.00	0.81	0.81	71.71	49.58	149.95	157.93	156.31	1.61	97.792 CC		
400.00	399.98	402.80	402.77	1.13	1.12	150.60	47.77	149.56	158.55	156.29	2.26	70.146 ES		
500.00	499.84	505.20	505.03	1.46	1.43	153.23	42.39	148.42	160.63	157.73	2.90	55.351		
600.00	599.45	606.84	606.26	1.81	1.75	157.40	33.52	146.53	164.82	161.26	3.57	46.191		
700.00	698.70	707.34	705.97	2.16	2.09	162.77	21.30	143.93	172.05	167.80	4.25	40.490		
800.00	797.47	806.36	803.73	2.53	2.45	168.88	5.92	140.66	183.36	178.41	4.95	37.036		
900.00	895.87	903.44	899.13	2.93	2.84	175.00	-11.64	136.92	198.40	192.73	5.67	34.994		
1,000.00	994.28	1,000.11	994.10	3.33	3.23	-179.74	-29.30	133.17	215.43	209.03	6.40	33.668		
1,100.00	1,092.68	1,096.78	1,089.08	3.73	3.64	-175.25	-46.95	129.41	234.02	226.88	7.14	32.770		
1,200.00	1,191.09	1,193.46	1,184.05	4.14	4.05	-171.42	-64.61	125.65	253.83	245.94	7.89	32.166		
1,300.00	1,289.49	1,290.13	1,279.02	4.56	4.46	-168.15	-82.26	121.90	274.60	265.95	8.65	31.763		
1,400.00	1,387.89	1,386.81	1,374.00	4.97	4.88	-165.33	-99.92	118.14	296.11	286.71	9.40	31.496		
1,500.00	1,486.30	1,483.48	1,468.97	5.39	5.29	-162.90	-117.57	114.38	318.23	308.07	10.16	31.324		
1,600.00	1,584.70	1,580.16	1,563.95	5.81	5.71	-160.78	-135.23	110.63	340.83	329.92	10.92	31.217		
1,700.00	1,683.11	1,676.83	1,658.92	6.22	6.13	-158.92	-152.88	106.87	363.83	352.15	11.68	31.154		
1,800.00	1,781.51	1,773.50	1,753.90	6.64	6.56	-157.28	-170.54	103.12	387.15	374.71	12.44	31.124		
1,900.00	1,879.91	1,870.18	1,848.87	7.06	6.98	-155.82	-188.19	99.36	410.74	397.54	13.20	31.115		
2,000.00	1,978.32	1,966.85	1,943.84	7.48	7.40	-154.53	-205.85	95.60	434.55	420.59	13.96	31.123		
2,100.00	2,076.72	2,063.53	2,038.82	7.90	7.83	-153.36	-223.50	91.85	458.56	443.83	14.73	31.141		
2,200.00	2,175.13	2,160.20	2,133.79	8.33	8.25	-152.32	-241.16	88.09	482.72	467.23	15.49	31.167		
2,300.00	2,273.53	2,256.88	2,228.77	8.75	8.68	-151.37	-258.81	84.33	507.02	490.77	16.25	31.198		
2,400.00	2,371.94	2,353.55	2,323.74	9.17	9.10	-150.51	-276.47	80.58	531.45	514.43	17.02	31.232		
2,500.00	2,470.34	2,450.22	2,418.72	9.59	9.53	-149.72	-294.12	76.82	555.97	538.19	17.78	31.269		
2,600.00	2,568.74	2,546.90	2,513.69	10.01	9.95	-149.00	-311.78	73.07	580.59	562.04	18.55	31.306		
2,700.00	2,667.15	2,643.57	2,608.66	10.44	10.38	-148.34	-329.43	69.31	605.28	585.97	19.31	31.345		
2,800.00	2,765.55	2,740.25	2,703.64	10.86	10.81	-147.73	-347.09	65.55	630.05	609.97	20.08	31.383		
2,900.00	2,863.96	2,836.92	2,798.61	11.28	11.23	-147.17	-364.74	61.80	654.88	634.04	20.84	31.421		
3,000.00	2,962.36	2,933.60	2,893.59	11.70	11.66	-146.64	-382.39	58.04	679.76	658.15	21.61	31.459		
3,100.00	3,060.76	3,030.27	2,988.56	12.13	12.09	-146.16	-400.05	54.28	704.70	682.32	22.37	31.496		
3,200.00	3,159.17	3,126.94	3,083.54	12.55	12.51	-145.71	-417.70	50.53	729.67	706.53	23.14	31.532		
3,300.00	3,257.57	3,223.62	3,178.51	12.97	12.94	-145.28	-435.36	46.77	754.69	730.78	23.91	31.567		
3,400.00	3,355.98	3,320.29	3,273.48	13.40	13.37	-144.89	-453.01	43.02	779.74	755.07	24.67	31.601		
3,500.00	3,454.38	3,416.97	3,368.46	13.82	13.80	-144.52	-470.67	39.26	804.83	779.39	25.44	31.634		
3,600.00	3,552.78	3,513.64	3,463.43	14.24	14.22	-144.17	-488.32	35.50	829.95	803.74	26.21	31.666		
3,700.00	3,651.19	3,610.32	3,558.41	14.67	14.65	-143.84	-505.98	31.75	855.09	828.11	26.98	31.697		
3,800.00	3,749.59	3,706.99	3,653.38	15.09	15.08	-143.53	-523.63	27.99	880.26	852.52	27.74	31.727		
3,900.00	3,848.00	3,803.66	3,748.36	15.51	15.51	-143.24	-541.29	24.23	905.45	876.94	28.51	31.756		
4,000.00	3,946.40	3,900.34	3,843.33	15.94	15.93	-142.96	-558.94	20.48	930.66	901.38	29.28	31.784		
4,100.00	4,044.80	3,997.01	3,938.30	16.36	16.36	-142.70	-576.60	16.72	955.90	925.85	30.05	31.811		
4,200.00	4,143.21	4,093.69	4,033.28	16.78	16.79	-142.45	-594.25	12.97	981.14	950.33	30.82	31.837		
4,300.00	4,241.61	4,190.36	4,128.25	17.21	17.22	-142.21	-611.91	9.21	1,006.41	974.82	31.59	31.862		
4,400.00	4,340.02	4,287.04	4,223.23	17.63	17.65	-141.99	-629.56	5.45	1,031.69	999.34	32.35	31.887		
4,500.00	4,438.42	4,383.71	4,318.20	18.05	18.07	-141.78	-647.22	1.70	1,056.99	1,023.86	33.12	31.910		
4,600.00	4,536.87	4,499.71	4,432.38	18.45	18.51	-141.69	-667.23	-2.56	1,081.54	1,047.58	33.96	31.849		
4,700.00	4,635.76	4,627.50	4,558.97	18.74	18.84	-141.83	-684.22	-6.18	1,101.45	1,066.82	34.63	31.804		
4,800.00	4,735.12	4,757.20	4,688.12	19.02	19.16	-141.99	-695.80	-8.64	1,115.96	1,080.68	35.27	31.640		
4,900.00	4,834.80	6,313.03	5,606.00	19.28	20.81	168.53	158.97	-12.83	1,057.86	1,029.51	28.34	37.325		
5,000.00	4,934.70	6,313.95	5,606.00	19.52	20.81	168.10	159.90	-12.83	990.53	960.40	30.13	32.879		
5,100.00	5,034.69	6,314.15	5,606.00	19.75	20.81	89.82	160.10	-12.83	926.44	894.48	31.96	28.989		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor		
5,200.00	5,134.69	6,314.15	5,606.00	20.02	20.81	89.82	160.10	-12.83	868.35	834.54	33.82	25.679		
5,300.00	5,234.69	6,314.15	5,606.00	20.29	20.81	89.82	160.10	-12.83	818.40	782.78	35.62	22.978		
5,400.00	5,334.67	6,313.14	5,606.00	20.56	20.81	-92.65	159.09	-12.83	778.18	740.96	37.21	20.912		
5,500.00	5,433.27	6,297.38	5,606.00	20.79	20.74	-94.68	143.33	-12.78	749.87	711.55	38.32	19.568		
5,600.00	5,527.04	6,263.11	5,606.00	21.01	20.62	-93.86	109.05	-12.67	734.75	695.94	38.81	18.932		
5,677.95	5,594.57	6,224.33	5,606.00	21.17	20.49	-91.59	70.28	-12.54	731.48	692.72	38.75	18.875 SF		
5,700.00	5,612.56	6,211.57	5,606.00	21.22	20.45	-90.75	57.52	-12.50	731.71	693.03	38.68	18.917		
5,800.00	5,686.66	6,144.67	5,606.00	21.42	20.27	-86.24	-9.38	-12.29	737.65	699.48	38.17	19.327		
5,900.00	5,746.64	6,064.87	5,606.00	21.62	20.12	-81.40	-89.18	-12.03	748.39	710.86	37.53	19.940		
6,000.00	5,790.28	5,975.09	5,606.00	21.83	20.02	-77.25	-178.96	-11.74	759.81	722.76	37.05	20.508		
6,100.00	5,815.98	5,900.00	5,600.95	22.08	20.01	-74.43	-253.81	-11.50	770.29	733.55	36.74	20.965		
6,200.00	5,823.00	5,838.97	5,588.95	22.39	20.02	-72.45	-313.61	-11.30	780.12	743.56	36.56	21.338		
6,300.00	5,823.00	5,775.38	5,569.11	22.79	20.06	-71.10	-373.99	-11.11	792.54	756.13	36.41	21.770		
6,400.00	5,823.00	5,717.40	5,544.73	23.27	20.10	-69.46	-426.57	-10.94	810.15	773.99	36.16	22.407		
6,500.00	5,823.00	5,665.54	5,518.09	23.84	20.14	-67.71	-471.03	-10.80	833.59	797.75	35.84	23.258		
6,600.00	5,823.00	5,619.76	5,491.01	24.49	20.18	-65.97	-507.92	-10.68	863.29	827.79	35.50	24.318		
6,700.00	5,823.00	5,579.64	5,464.69	25.22	20.21	-64.32	-538.19	-10.58	899.44	864.26	35.18	25.570		
6,800.00	5,823.00	5,550.00	5,443.79	26.01	20.24	-63.04	-559.20	-10.51	941.96	907.00	34.96	26.947		
6,900.00	5,823.00	5,513.95	5,416.81	26.86	20.26	-61.44	-583.10	-10.43	990.44	955.75	34.69	28.553		
7,000.00	5,823.00	5,500.00	5,405.94	27.77	20.27	-60.81	-591.84	-10.41	1,044.73	1,010.03	34.70	30.108		
7,100.00	5,823.00	5,450.00	5,365.13	28.73	20.29	-58.50	-620.71	-10.31	1,103.92	1,069.61	34.31	32.173		
7,200.00	5,823.00	5,450.00	5,365.13	29.73	20.29	-58.50	-620.71	-10.31	1,167.44	1,132.89	34.55	33.789		
7,300.00	5,823.00	5,424.40	5,343.22	30.76	20.29	-57.30	-633.93	-10.27	1,235.05	1,200.55	34.50	35.799		
7,400.00	5,823.00	5,400.00	5,321.75	31.84	20.30	-56.16	-645.53	-10.23	1,306.28	1,271.80	34.48	37.884		
7,500.00	5,823.00	5,400.00	5,321.75	32.94	20.30	-56.16	-645.53	-10.23	1,380.47	1,345.73	34.74	39.737		
7,600.00	5,823.00	5,380.24	5,303.98	34.08	20.29	-55.24	-654.17	-10.21	1,457.29	1,422.51	34.78	41.894		
7,700.00	5,823.00	5,368.39	5,293.17	35.24	20.29	-54.69	-659.03	-10.19	1,536.49	1,501.58	34.91	44.008		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	HZ	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag												Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.00	76.72	49.56	209.92	215.70				
100.00	100.00	100.00	100.00	0.13	0.13	76.72	49.56	209.92	215.70	215.43	0.27	809.824	
200.00	200.00	200.00	200.00	0.47	0.47	76.72	49.56	209.92	215.70	214.75	0.94	229.305	
300.00	300.00	300.00	300.00	0.81	0.81	76.72	49.56	209.92	215.70	214.08	1.61	133.562 CC, ES	
400.00	399.98	400.48	400.46	1.13	1.11	155.37	47.82	210.20	217.16	214.92	2.24	96.994	
500.00	499.84	500.45	500.29	1.46	1.41	157.25	42.64	211.03	221.71	218.86	2.86	77.650	
600.00	599.45	599.44	598.89	1.81	1.73	160.18	34.12	212.38	229.81	226.30	3.51	65.471	
700.00	698.70	696.97	695.70	2.16	2.05	163.88	22.44	214.24	242.10	237.90	4.20	57.669	
800.00	797.47	792.61	790.18	2.53	2.40	168.03	7.84	216.56	259.24	254.32	4.92	52.718	
900.00	895.87	887.28	883.24	2.93	2.77	172.34	-9.37	219.30	280.41	274.77	5.65	49.666	
1,000.00	994.28	982.71	976.95	3.33	3.16	176.18	-27.16	222.13	303.14	296.78	6.36	47.650	
1,100.00	1,092.68	1,078.14	1,070.66	3.73	3.56	179.49	-44.95	224.97	327.03	319.95	7.08	46.198	
1,200.00	1,191.09	1,173.56	1,164.37	4.14	3.97	-177.64	-62.74	227.80	351.83	344.04	7.79	45.140	
1,300.00	1,289.49	1,268.99	1,258.09	4.56	4.38	-175.15	-80.54	230.63	377.38	368.87	8.51	44.336	
1,400.00	1,387.89	1,364.42	1,351.80	4.97	4.79	-172.97	-98.33	233.46	403.52	394.29	9.23	43.724	
1,500.00	1,486.30	1,459.85	1,445.51	5.39	5.20	-171.05	-116.12	236.29	430.15	420.20	9.95	43.248	
1,600.00	1,584.70	1,555.28	1,539.22	5.81	5.62	-169.35	-133.91	239.13	457.18	446.52	10.66	42.871	
1,700.00	1,683.11	1,650.70	1,632.93	6.22	6.03	-167.85	-151.71	241.96	484.55	473.17	11.38	42.568	
1,800.00	1,781.51	1,746.13	1,726.64	6.64	6.45	-166.50	-169.50	244.79	512.20	500.10	12.10	42.322	
1,900.00	1,879.91	1,841.56	1,820.36	7.06	6.87	-165.28	-187.29	247.62	540.09	527.27	12.82	42.120	
2,000.00	1,978.32	1,936.99	1,914.07	7.48	7.29	-164.19	-205.08	250.45	568.18	554.64	13.54	41.951	
2,100.00	2,076.72	2,032.42	2,007.78	7.90	7.71	-163.20	-222.88	253.29	596.45	582.18	14.27	41.809	
2,200.00	2,175.13	2,127.84	2,101.49	8.33	8.13	-162.29	-240.67	256.12	624.87	609.88	14.99	41.689	
2,300.00	2,273.53	2,223.27	2,195.20	8.75	8.55	-161.47	-258.46	258.95	653.42	637.71	15.71	41.586	
2,400.00	2,371.94	2,318.70	2,288.92	9.17	8.98	-160.71	-276.25	261.78	682.09	665.65	16.44	41.498	
2,500.00	2,470.34	2,414.13	2,382.63	9.59	9.40	-160.02	-294.05	264.61	710.85	693.69	17.16	41.421	
2,600.00	2,568.74	2,509.56	2,476.34	10.01	9.82	-159.38	-311.84	267.44	739.71	721.82	17.89	41.354	
2,700.00	2,667.15	2,604.98	2,570.05	10.44	10.24	-158.78	-329.63	270.28	768.64	750.03	18.61	41.295	
2,800.00	2,765.55	2,700.41	2,663.76	10.86	10.67	-158.23	-347.43	273.11	797.65	778.31	19.34	41.243	
2,900.00	2,863.96	2,795.84	2,757.48	11.28	11.09	-157.72	-365.22	275.94	826.72	806.65	20.07	41.197	
3,000.00	2,962.36	2,891.27	2,851.19	11.70	11.51	-157.24	-383.01	278.77	855.84	835.05	20.79	41.156	
3,100.00	3,060.76	2,986.70	2,944.90	12.13	11.94	-156.80	-400.80	281.60	885.02	863.49	21.52	41.120	
3,200.00	3,159.17	3,082.12	3,038.61	12.55	12.36	-156.38	-418.60	284.44	914.24	891.99	22.25	41.087	
3,300.00	3,257.57	3,177.55	3,132.32	12.97	12.78	-155.99	-436.39	287.27	943.50	920.52	22.98	41.057	
3,400.00	3,355.98	3,272.98	3,226.03	13.40	13.21	-155.62	-454.18	290.10	972.81	949.10	23.71	41.030	
3,500.00	3,454.38	3,368.41	3,319.75	13.82	13.63	-155.27	-471.97	292.93	1,002.14	977.70	24.44	41.005	
3,600.00	3,552.78	3,463.84	3,413.46	14.24	14.06	-154.94	-489.77	295.76	1,031.51	1,006.34	25.17	40.983	
3,700.00	3,651.19	3,559.27	3,507.17	14.67	14.48	-154.63	-507.56	298.60	1,060.91	1,035.01	25.90	40.962	
3,800.00	3,749.59	3,654.69	3,600.88	15.09	14.90	-154.34	-525.35	301.43	1,090.34	1,063.71	26.63	40.944	
3,900.00	3,848.00	3,750.12	3,694.59	15.51	15.33	-154.06	-543.14	304.26	1,119.78	1,092.42	27.36	40.926	
4,000.00	3,946.40	3,845.55	3,788.31	15.94	15.75	-153.80	-560.94	307.09	1,149.26	1,121.17	28.09	40.910	
4,100.00	4,044.80	3,940.98	3,882.02	16.36	16.18	-153.55	-578.73	309.92	1,178.75	1,149.93	28.82	40.895	
4,200.00	4,143.21	4,036.41	3,975.73	16.78	16.60	-153.31	-596.52	312.75	1,208.26	1,178.71	29.56	40.882	
4,300.00	4,241.61	4,131.83	4,069.44	17.21	17.03	-153.09	-614.32	315.59	1,237.80	1,207.51	30.29	40.869	
4,400.00	4,340.02	4,227.26	4,163.15	17.63	17.45	-152.87	-632.11	318.42	1,267.34	1,236.32	31.02	40.857	
4,500.00	4,438.42	4,322.69	4,256.87	18.05	17.88	-152.66	-649.90	321.25	1,296.91	1,265.16	31.75	40.846	
4,600.00	4,536.87	4,457.95	4,390.11	18.45	18.32	-152.55	-672.85	324.90	1,325.14	1,292.51	32.63	40.606	
4,700.00	4,635.76	4,607.23	4,538.23	18.74	18.71	-152.66	-691.01	327.79	1,347.34	1,313.95	33.39	40.349	
4,800.00	4,735.12	4,647.99	4,568.00	19.02	20.66	168.52	159.71	326.08	1,326.03	1,295.30	30.73	43.152	
4,900.00	4,834.80	4,749.65	4,668.00	19.28	20.67	168.20	161.38	326.07	1,274.54	1,242.37	32.17	39.622	
5,000.00	4,934.70	4,850.58	4,768.00	19.52	20.67	167.92	162.30	326.06	1,225.98	1,192.43	33.55	36.541	
5,100.00	5,034.69	4,950.79	4,868.00	19.75	20.67	89.74	162.51	326.06	1,180.85	1,145.99	34.86	33.870	

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Sec 30-T10N-R57W - Horsetail #30G-1911 - Hz - APD		Offset Site Error:		0.00 usft	
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:		0.00 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)	Minimum Separation (usft)	Separation Factor						
5,200.00	5,134.69	6,250.79	5,538.00	20.02	20.67	89.74	162.51	326.06	1,141.82	1,105.74	36.08	31.644						
5,300.00	5,234.69	6,250.79	5,538.00	20.29	20.67	89.74	162.51	326.06	1,110.45	1,073.30	37.15	29.890						
5,400.00	5,334.67	6,249.77	5,538.00	20.56	20.67	-92.07	161.50	326.07	1,087.43	1,049.42	38.00	28.616						
5,500.00	5,433.27	6,234.02	5,538.00	20.79	20.60	-92.76	145.74	326.14	1,073.75	1,035.27	38.48	27.905						
5,598.48	5,525.67	6,200.40	5,538.00	21.01	20.46	-91.54	112.12	326.29	1,069.52	1,030.96	38.56	27.736 SF						
5,600.00	5,527.04	6,199.74	5,538.00	21.01	20.45	-91.51	111.47	326.29	1,069.52	1,030.96	38.56	27.737						
5,700.00	5,612.56	6,148.21	5,538.00	21.22	20.29	-88.74	59.94	326.52	1,073.30	1,034.95	38.35	27.986						
5,800.00	5,686.66	6,081.31	5,538.00	21.42	20.09	-85.08	-6.96	326.82	1,082.59	1,044.63	37.96	28.522						
5,900.00	5,746.64	6,001.51	5,538.00	21.62	19.91	-81.29	-86.76	327.18	1,094.34	1,056.79	37.56	29.138						
6,000.00	5,790.28	5,911.73	5,538.00	21.83	19.81	-78.07	-176.54	327.58	1,105.62	1,068.29	37.32	29.622						
6,100.00	5,815.98	5,850.00	5,535.12	22.08	19.78	-76.08	-238.17	327.85	1,115.30	1,078.03	37.26	29.929						
6,200.00	5,823.00	5,784.74	5,524.22	22.39	19.78	-74.52	-302.47	328.14	1,123.92	1,086.57	37.34	30.097						
6,300.00	5,823.00	5,725.40	5,507.41	22.79	19.80	-73.72	-359.35	328.39	1,134.32	1,096.84	37.48	30.265						
6,400.00	5,823.00	5,670.52	5,486.19	23.27	19.84	-72.71	-409.93	328.62	1,148.65	1,111.05	37.60	30.550						
6,500.00	5,823.00	5,620.69	5,462.42	23.84	19.87	-71.58	-453.70	328.81	1,167.34	1,129.64	37.70	30.965						
6,600.00	5,823.00	5,576.03	5,437.65	24.49	19.91	-70.43	-490.84	328.98	1,190.75	1,152.97	37.78	31.522						
6,700.00	5,823.00	5,536.33	5,413.03	25.22	19.94	-69.29	-521.97	329.12	1,219.13	1,181.29	37.84	32.222						
6,800.00	5,823.00	5,500.00	5,388.48	26.01	19.97	-68.18	-548.74	329.24	1,252.59	1,214.71	37.88	33.069						
6,900.00	5,823.00	5,470.17	5,366.96	26.86	19.99	-67.21	-569.41	329.33	1,291.11	1,253.18	37.92	34.044						
7,000.00	5,823.00	5,450.00	5,351.76	27.77	20.00	-66.54	-582.66	329.39	1,334.59	1,296.59	38.01	35.115						
7,100.00	5,823.00	5,418.43	5,326.97	28.73	20.02	-65.46	-602.20	329.47	1,382.67	1,344.67	38.00	36.387						
7,200.00	5,823.00	5,400.00	5,311.97	29.73	20.03	-64.81	-612.90	329.52	1,435.22	1,397.16	38.06	37.710						
7,300.00	5,823.00	5,377.62	5,293.25	30.76	20.04	-64.02	-625.17	329.58	1,491.84	1,453.77	38.08	39.179						



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	79.60	49.54	269.90	274.41					
100.00	100.00	100.00	100.00	0.13	0.13	79.60	49.54	269.90	274.41	274.15	0.27	1,030.277		
200.00	200.00	200.00	200.00	0.47	0.47	79.60	49.54	269.90	274.41	273.47	0.94	291.727		
300.00	300.00	300.00	300.00	0.81	0.81	79.60	49.54	269.90	274.41	272.80	1.61	169.921 CC, ES		
400.00	399.98	397.24	397.23	1.13	1.10	158.04	48.07	270.65	276.52	274.28	2.24	123.527		
500.00	499.84	493.93	493.78	1.46	1.40	159.33	43.70	272.88	282.94	280.08	2.87	98.657		
600.00	599.45	589.52	589.02	1.81	1.70	161.34	36.52	276.54	293.96	290.42	3.54	83.087		
700.00	698.70	683.48	682.34	2.16	2.02	163.86	26.71	281.53	309.94	305.70	4.24	73.111		
800.00	797.47	775.35	773.17	2.53	2.35	166.69	14.48	287.76	331.27	326.30	4.96	66.740		
900.00	895.87	865.07	861.41	2.93	2.70	169.71	0.05	295.11	356.96	351.27	5.69	62.746		
1,000.00	994.28	956.75	951.12	3.33	3.08	172.72	-16.78	303.68	384.91	378.53	6.38	60.323		
1,100.00	1,092.68	1,050.66	1,042.97	3.73	3.49	175.43	-34.22	312.56	413.93	406.87	7.06	58.603		
1,200.00	1,191.09	1,144.57	1,134.82	4.14	3.90	177.79	-51.66	321.44	443.72	435.97	7.74	57.311		
1,300.00	1,289.49	1,238.48	1,226.67	4.56	4.31	179.86	-69.10	330.33	474.12	465.70	8.42	56.278		
1,400.00	1,387.89	1,332.39	1,318.51	4.97	4.73	-178.31	-86.54	339.21	505.04	495.93	9.11	55.456		
1,500.00	1,486.30	1,426.29	1,410.36	5.39	5.16	-176.70	-103.98	348.09	536.37	526.58	9.79	54.789		
1,600.00	1,584.70	1,520.20	1,502.21	5.81	5.58	-175.25	-121.42	356.97	568.06	557.58	10.47	54.237		
1,700.00	1,683.11	1,614.11	1,594.06	6.22	6.01	-173.96	-138.86	365.85	600.04	588.88	11.16	53.775		
1,800.00	1,781.51	1,708.02	1,685.90	6.64	6.44	-172.80	-156.30	374.74	632.27	620.42	11.84	53.382		
1,900.00	1,879.91	1,801.93	1,777.75	7.06	6.87	-171.75	-173.74	383.62	664.71	652.18	12.53	53.044		
2,000.00	1,978.32	1,895.84	1,869.60	7.48	7.30	-170.80	-191.18	392.50	697.34	684.12	13.22	52.750		
2,100.00	2,076.72	1,989.75	1,961.45	7.90	7.73	-169.93	-208.63	401.38	730.13	716.22	13.91	52.493		
2,200.00	2,175.13	2,083.66	2,053.30	8.33	8.16	-169.13	-226.07	410.26	763.05	748.45	14.60	52.266		
2,300.00	2,273.53	2,177.57	2,145.14	8.75	8.59	-168.40	-243.51	419.15	796.10	780.81	15.29	52.064		
2,400.00	2,371.94	2,271.48	2,236.99	9.17	9.02	-167.73	-260.95	428.03	829.26	813.27	15.98	51.883		
2,500.00	2,470.34	2,365.39	2,328.84	9.59	9.46	-167.11	-278.39	436.91	862.51	845.83	16.68	51.720		
2,600.00	2,568.74	2,459.30	2,420.69	10.01	9.89	-166.53	-295.83	445.79	895.84	878.47	17.37	51.572		
2,700.00	2,667.15	2,553.21	2,512.53	10.44	10.32	-166.00	-313.27	454.67	929.25	911.18	18.07	51.438		
2,800.00	2,765.55	2,647.12	2,604.38	10.86	10.76	-165.50	-330.71	463.56	962.72	943.96	18.76	51.315		
2,900.00	2,863.96	2,741.03	2,696.23	11.28	11.19	-165.04	-348.15	472.44	996.26	976.80	19.46	51.202		
3,000.00	2,962.36	2,834.94	2,788.08	11.70	11.63	-164.60	-365.59	481.32	1,029.85	1,009.70	20.15	51.098		
3,100.00	3,060.76	2,928.85	2,879.92	12.13	12.06	-164.20	-383.03	490.20	1,063.49	1,042.64	20.85	51.002		
3,200.00	3,159.17	3,022.76	2,971.77	12.55	12.50	-163.81	-400.47	499.08	1,097.18	1,075.63	21.55	50.913		
3,300.00	3,257.57	3,116.67	3,063.62	12.97	12.93	-163.45	-417.91	507.97	1,130.91	1,108.66	22.25	50.830		
3,400.00	3,355.98	3,210.58	3,155.47	13.40	13.37	-163.12	-435.35	516.85	1,164.67	1,141.72	22.95	50.753		
3,500.00	3,454.38	3,304.49	3,247.32	13.82	13.80	-162.80	-452.79	525.73	1,198.47	1,174.82	23.65	50.681		
3,600.00	3,552.78	3,398.40	3,339.16	14.24	14.24	-162.49	-470.23	534.61	1,232.30	1,207.95	24.35	50.613		
3,700.00	3,651.19	3,492.31	3,431.01	14.67	14.67	-162.21	-487.67	543.49	1,266.15	1,241.11	25.05	50.549		
3,800.00	3,749.59	3,586.22	3,522.86	15.09	15.11	-161.94	-505.12	552.38	1,300.04	1,274.29	25.75	50.489		
3,900.00	3,848.00	3,680.13	3,614.71	15.51	15.55	-161.68	-522.56	561.26	1,333.95	1,307.50	26.45	50.433		
4,000.00	3,946.40	3,774.04	3,706.55	15.94	15.98	-161.43	-540.00	570.14	1,367.88	1,340.73	27.15	50.379		
4,100.00	4,044.80	3,867.95	3,798.40	16.36	16.42	-161.20	-557.44	579.02	1,401.83	1,373.98	27.85	50.329		
4,200.00	4,143.21	3,961.86	3,890.25	16.78	16.85	-160.98	-574.88	587.90	1,435.81	1,407.25	28.56	50.281		
4,300.00	4,241.61	4,055.77	3,982.10	17.21	17.29	-160.77	-592.32	596.79	1,469.80	1,440.54	29.26	50.235		
4,400.00	4,340.02	4,149.68	4,073.95	17.63	17.73	-160.57	-609.76	605.67	1,503.80	1,473.84	29.96	50.191		
4,500.00	4,438.42	4,243.59	4,165.79	18.05	18.16	-160.37	-627.20	614.55	1,537.83	1,507.16	30.66	50.150		
5,000.00	4,934.70	6,336.62	5,606.00	19.52	20.96	167.93	162.82	651.62	1,546.15	1,511.93	34.22	45.187		
5,100.00	5,034.69	6,336.82	5,606.00	19.75	20.96	89.78	163.03	651.62	1,506.32	1,471.03	35.29	42.686		
5,200.00	5,134.69	6,336.82	5,606.00	20.02	20.96	89.78	163.03	651.62	1,471.30	1,435.01	36.29	40.538		
5,300.00	5,234.69	6,336.82	5,606.00	20.29	20.96	89.78	163.03	651.62	1,442.39	1,405.18	37.21	38.767		
5,400.00	5,334.67	6,335.81	5,606.00	20.56	20.96	-92.05	162.01	651.62	1,419.96	1,381.97	37.99	37.380		
5,500.00	5,433.27	6,320.05	5,606.00	20.79	20.90	-93.09	146.26	651.68	1,404.83	1,366.32	38.51	36.479		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design Sec 30-T10N-R57W - Horsetail #30G-1912 - Hz - APD												Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag												Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor	Warning
5,600.00	5,527.04	6,285.78	5,606.00	21.01	20.79	-92.62	111.98	651.81	1,397.21	1,358.44	38.77	36.040	
5,666.15	5,584.74	6,253.52	5,606.00	21.15	20.71	-91.61	79.72	651.93	1,395.90	1,357.08	38.82	35.958 SF	
5,700.00	5,612.56	6,234.24	5,606.00	21.22	20.67	-90.93	60.45	652.00	1,396.21	1,357.40	38.81	35.972	
5,800.00	5,686.66	6,167.35	5,606.00	21.42	20.54	-88.47	-6.45	652.26	1,400.10	1,361.37	38.73	36.152	
5,900.00	5,746.64	6,087.54	5,606.00	21.62	20.46	-85.80	-86.25	652.56	1,406.70	1,368.08	38.62	36.420	
6,000.00	5,790.28	5,997.76	5,606.00	21.83	20.46	-83.44	-176.03	652.90	1,413.83	1,375.21	38.62	36.605	
6,100.00	5,815.98	5,926.60	5,602.35	22.08	20.51	-81.84	-247.05	653.17	1,420.44	1,381.65	38.79	36.620	
6,200.00	5,823.00	5,859.30	5,590.10	22.39	20.58	-80.59	-313.18	653.42	1,426.77	1,387.73	39.04	36.544	
6,300.00	5,823.00	5,800.00	5,572.33	22.79	20.65	-79.89	-369.71	653.63	1,434.54	1,395.17	39.37	36.438	
6,400.00	5,823.00	5,736.95	5,546.52	23.27	20.72	-78.89	-427.19	653.85	1,445.22	1,405.50	39.72	36.387	
6,500.00	5,823.00	5,684.67	5,519.98	23.84	20.79	-77.86	-472.22	654.02	1,459.33	1,419.25	40.08	36.414	
6,600.00	5,823.00	5,638.48	5,492.88	24.49	20.84	-76.82	-509.60	654.16	1,477.29	1,436.86	40.43	36.540	
6,700.00	5,823.00	5,600.00	5,467.85	25.22	20.88	-75.86	-538.82	654.28	1,499.46	1,458.68	40.78	36.773	
6,800.00	5,823.00	5,550.00	5,432.23	26.01	20.92	-74.52	-573.87	654.41	1,526.14	1,485.08	41.06	37.170	



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	HZ	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag												Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	67.54	49.58	119.96	129.80				
100.00	100.00	100.00	100.00	0.13	0.13	67.54	49.58	119.96	129.80	129.53	0.27	487.333	
200.00	200.00	200.00	200.00	0.47	0.47	67.54	49.58	119.96	129.80	128.86	0.94	137.990	
300.00	300.00	300.00	300.00	0.81	0.81	67.54	49.58	119.96	129.80	128.19	1.61	80.374	
400.00	399.98	404.80	404.75	1.13	1.13	146.93	46.90	118.92	129.38	127.06	2.32	55.740	
500.00	499.84	508.95	508.53	1.46	1.46	151.08	38.93	115.84	128.56	125.52	3.05	42.197	
550.50	550.18	561.09	560.28	1.64	1.64	154.21	32.96	113.54	128.37	124.96	3.41	37.613 CC	
600.00	599.45	611.80	610.42	1.81	1.82	157.91	25.89	110.81	128.64	124.89	3.75	34.282 ES	
700.00	698.70	711.25	708.24	2.16	2.17	166.54	9.17	104.35	132.01	127.63	4.38	30.142	
800.00	797.47	808.77	804.06	2.53	2.54	174.76	-7.70	97.84	141.56	136.51	5.05	28.018	
900.00	895.87	905.99	899.60	2.93	2.94	-178.15	-24.51	91.35	155.86	150.08	5.78	26.958	
1,000.00	994.28	1,003.21	995.14	3.33	3.35	-172.28	-41.32	84.85	172.19	165.66	6.53	26.381	
1,100.00	1,092.68	1,100.43	1,090.67	3.73	3.76	-167.45	-58.13	78.36	190.01	182.72	7.29	26.074	
1,200.00	1,191.09	1,197.65	1,186.21	4.14	4.18	-163.46	-74.95	71.87	208.93	200.88	8.05	25.940	
1,300.00	1,289.49	1,294.87	1,281.74	4.56	4.60	-160.12	-91.76	65.38	228.69	219.86	8.83	25.912	
1,400.00	1,387.89	1,392.10	1,377.28	4.97	5.02	-157.32	-108.57	58.89	249.08	239.48	9.60	25.950	
1,500.00	1,486.30	1,489.32	1,472.82	5.39	5.44	-154.95	-125.38	52.39	269.96	259.59	10.37	26.025	
1,600.00	1,584.70	1,586.54	1,568.35	5.81	5.87	-152.91	-142.20	45.90	291.23	280.08	11.15	26.123	
1,700.00	1,683.11	1,683.76	1,663.89	6.22	6.29	-151.15	-159.01	39.41	312.80	300.87	11.92	26.232	
1,800.00	1,781.51	1,780.98	1,759.42	6.64	6.72	-149.61	-175.82	32.92	334.62	321.92	12.70	26.346	
1,900.00	1,879.91	1,878.20	1,854.96	7.06	7.14	-148.27	-192.63	26.43	356.64	343.16	13.48	26.461	
2,000.00	1,978.32	1,975.42	1,950.50	7.48	7.57	-147.08	-209.44	19.93	378.83	364.57	14.26	26.574	
2,100.00	2,076.72	2,072.64	2,046.03	7.90	8.00	-146.02	-226.26	13.44	401.15	386.12	15.03	26.683	
2,200.00	2,175.13	2,169.86	2,141.57	8.33	8.42	-145.07	-243.07	6.95	423.60	407.79	15.81	26.789	
2,300.00	2,273.53	2,267.09	2,237.10	8.75	8.85	-144.22	-259.88	0.46	446.14	429.55	16.59	26.889	
2,400.00	2,371.94	2,364.31	2,332.64	9.17	9.28	-143.45	-276.69	-6.03	468.77	451.40	17.37	26.986	
2,500.00	2,470.34	2,461.53	2,428.18	9.59	9.71	-142.75	-293.51	-12.53	491.47	473.32	18.15	27.077	
2,600.00	2,568.74	2,558.75	2,523.71	10.01	10.14	-142.11	-310.32	-19.02	514.24	495.31	18.93	27.164	
2,700.00	2,667.15	2,655.97	2,619.25	10.44	10.56	-141.53	-327.13	-25.51	537.06	517.35	19.71	27.246	
2,800.00	2,765.55	2,753.19	2,714.78	10.86	10.99	-140.99	-343.94	-32.00	559.93	539.44	20.49	27.324	
2,900.00	2,863.96	2,850.41	2,810.32	11.28	11.42	-140.50	-360.75	-38.49	582.84	561.57	21.27	27.398	
3,000.00	2,962.36	2,947.63	2,905.86	11.70	11.85	-140.04	-377.57	-44.99	605.79	583.74	22.05	27.468	
3,100.00	3,060.76	3,044.85	3,001.39	12.13	12.28	-139.62	-394.38	-51.48	628.78	605.94	22.84	27.535	
3,200.00	3,159.17	3,142.07	3,096.93	12.55	12.71	-139.22	-411.19	-57.97	651.79	628.18	23.62	27.598	
3,300.00	3,257.57	3,239.30	3,192.46	12.97	13.14	-138.86	-428.00	-64.46	674.83	650.44	24.40	27.658	
3,400.00	3,355.98	3,336.52	3,288.00	13.40	13.57	-138.51	-444.82	-70.95	697.90	672.72	25.18	27.715	
3,500.00	3,454.38	3,433.74	3,383.54	13.82	14.00	-138.19	-461.63	-77.45	720.99	695.03	25.96	27.770	
3,600.00	3,552.78	3,530.96	3,479.07	14.24	14.43	-137.89	-478.44	-83.94	744.10	717.35	26.75	27.821	
3,700.00	3,651.19	3,628.18	3,574.61	14.67	14.85	-137.61	-495.25	-90.43	767.23	739.70	27.53	27.871	
3,800.00	3,749.59	3,725.40	3,670.14	15.09	15.28	-137.34	-512.06	-96.92	790.37	762.06	28.31	27.918	
3,900.00	3,848.00	3,822.62	3,765.68	15.51	15.71	-137.09	-528.88	-103.41	813.53	784.44	29.09	27.962	
4,000.00	3,946.40	3,919.84	3,861.22	15.94	16.14	-136.85	-545.69	-109.91	836.70	806.83	29.88	28.005	
4,100.00	4,044.80	4,017.06	3,956.75	16.36	16.57	-136.63	-562.50	-116.40	859.89	829.23	30.66	28.046	
4,200.00	4,143.21	4,114.29	4,052.29	16.78	17.00	-136.42	-579.31	-122.89	883.09	851.64	31.44	28.085	
4,300.00	4,241.61	4,211.51	4,147.83	17.21	17.43	-136.21	-596.13	-129.38	906.30	874.07	32.23	28.123	
4,400.00	4,340.02	4,308.73	4,243.36	17.63	17.86	-136.02	-612.94	-135.87	929.52	896.51	33.01	28.159	
4,500.00	4,438.42	4,405.95	4,338.90	18.05	18.29	-135.84	-629.75	-142.37	952.74	918.95	33.79	28.193	
4,600.00	4,536.87	4,503.20	4,434.47	18.45	18.72	-135.78	-646.57	-148.86	975.81	941.26	34.55	28.241	
4,700.00	4,635.76	4,612.76	4,542.24	18.74	19.14	-135.78	-664.93	-155.95	996.64	961.39	35.25	28.274	
4,800.00	4,735.12	4,736.07	4,664.26	19.02	19.46	-135.73	-681.43	-162.32	1,012.94	977.04	35.90	28.214	
4,900.00	4,834.80	4,860.85	4,788.41	19.28	19.77	-135.69	-693.12	-166.84	1,024.32	987.80	36.52	28.048	
5,000.00	4,934.70	6,445.19	5,735.00	19.52	21.21	168.21	159.70	-173.30	981.31	955.45	25.86	37.949	

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design												Sec 30-T10N-R57W - Horsetail #30G-1942 - Hz - APD		Offset Site Error:		0.00 usft	
Survey Program: 0-MWD+IFR1+MS+sag												Offset Well Error:		0.00 usft			
Reference		Offset		Semi Major Axis			Distance							Warning			
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor					
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(°)	+N/-S (usft)	+E/-W (usft)	(usft)	(usft)	(usft)						
5,100.00	5,034.69	6,445.39	5,735.00	19.75	21.21	89.78	159.90	-173.30	902.23	874.55	27.68	32.597					
5,200.00	5,134.69	6,445.39	5,735.00	20.02	21.21	89.78	159.90	-173.30	827.02	797.33	29.69	27.857					
5,300.00	5,234.69	6,445.39	5,735.00	20.29	21.21	89.78	159.90	-173.30	757.56	725.66	31.90	23.750					
5,400.00	5,334.67	6,444.38	5,735.00	20.56	21.21	-93.86	158.89	-173.30	695.61	661.39	34.22	20.327					
5,500.00	5,433.27	6,428.62	5,735.00	20.79	21.15	-98.88	143.13	-173.24	644.27	607.89	36.38	17.711					
5,600.00	5,527.04	6,394.35	5,735.00	21.01	21.03	-100.14	108.86	-173.11	606.80	568.75	38.05	15.948					
5,700.00	5,612.56	6,342.81	5,735.00	21.22	20.89	-98.35	57.32	-172.91	584.25	545.22	39.02	14.971					
5,800.00	5,686.66	6,275.92	5,735.00	21.42	20.74	-94.47	-9.57	-172.66	574.88	535.60	39.29	14.634					
5,847.66	5,717.16	6,239.32	5,735.00	21.50	20.69	-92.24	-46.17	-172.52	573.99	534.75	39.24	14.628 SF					
5,900.00	5,746.64	6,196.11	5,735.00	21.62	20.63	-89.71	-89.38	-172.36	574.85	535.76	39.09	14.704					
6,000.00	5,790.28	6,106.33	5,735.00	21.83	20.59	-85.34	-179.16	-172.02	579.49	540.66	38.83	14.925					
6,100.00	5,815.98	6,023.36	5,728.61	22.08	20.62	-81.96	-261.79	-171.70	585.84	547.25	38.59	15.181					
6,200.00	5,823.00	5,943.79	5,710.24	22.39	20.68	-79.01	-339.13	-171.41	593.40	555.04	38.36	15.468					
6,300.00	5,823.00	5,870.22	5,682.96	22.79	20.75	-76.47	-407.39	-171.15	604.21	566.18	38.02	15.890					
6,400.00	5,823.00	5,800.00	5,648.21	23.27	20.82	-73.32	-468.35	-170.92	620.95	583.52	37.43	16.588					
6,500.00	5,823.00	5,750.00	5,618.62	23.84	20.87	-70.73	-508.63	-170.77	644.89	608.14	36.74	17.551					
6,600.00	5,823.00	5,700.00	5,585.31	24.49	20.91	-67.90	-545.89	-170.63	676.90	640.94	35.97	18.820					
6,700.00	5,823.00	5,661.70	5,557.46	25.22	20.94	-65.62	-572.18	-170.53	717.09	681.77	35.32	20.303					
6,800.00	5,823.00	5,627.38	5,530.93	26.01	20.96	-63.53	-593.94	-170.45	765.05	730.26	34.79	21.988					
6,900.00	5,823.00	5,600.00	5,508.77	26.86	20.97	-61.83	-610.01	-170.39	820.08	785.61	34.47	23.791					
7,000.00	5,823.00	5,572.94	5,486.07	27.77	20.98	-60.15	-624.74	-170.33	881.30	847.06	34.24	25.738					
7,100.00	5,823.00	5,550.00	5,466.25	28.73	20.98	-58.73	-636.28	-170.29	947.84	913.69	34.15	27.752					
7,200.00	5,823.00	5,532.33	5,450.64	29.73	20.98	-57.64	-644.57	-170.25	1,018.89	984.69	34.20	29.791					
7,300.00	5,823.00	5,500.00	5,421.41	30.76	20.98	-55.67	-658.35	-170.20	1,094.06	1,059.99	34.07	32.116					
7,400.00	5,823.00	5,500.00	5,421.41	31.84	20.98	-55.67	-658.35	-170.20	1,171.79	1,137.37	34.42	34.045					
7,500.00	5,823.00	5,500.00	5,421.41	32.94	20.98	-55.67	-658.35	-170.20	1,252.68	1,217.94	34.75	36.052					
7,600.00	5,823.00	5,476.78	5,399.90	34.08	20.97	-54.27	-667.12	-170.17	1,335.50	1,300.72	34.78	38.399					
7,700.00	5,823.00	5,450.00	5,374.66	35.24	20.95	-52.69	-676.03	-170.14	1,420.74	1,385.96	34.79	40.844					
7,800.00	5,823.00	5,450.00	5,374.66	36.42	20.95	-52.69	-676.03	-170.14	1,507.02	1,471.94	35.08	42.958					



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	HZ	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	74.60	49.57	179.94	186.64					
100.00	100.00	100.00	100.00	0.13	0.13	74.60	49.57	179.94	186.64	186.37	0.27	700.728		
200.00	200.00	200.00	200.00	0.47	0.47	74.60	49.57	179.94	186.64	185.70	0.94	198.414 CC		
300.00	300.00	300.00	300.00	0.81	0.81	74.60	49.57	179.94	186.64	185.02	1.61	115.569 ES		
400.00	399.98	402.12	402.10	1.13	1.12	153.36	47.75	179.81	187.62	185.37	2.25	83.430		
500.00	499.84	503.81	503.64	1.46	1.42	155.60	42.34	179.45	190.75	187.87	2.87	66.347		
600.00	599.45	604.63	604.06	1.81	1.75	159.12	33.42	178.85	196.58	193.05	3.53	55.651		
700.00	698.70	704.18	702.84	2.16	2.08	163.61	21.17	178.02	205.91	201.69	4.21	48.860		
800.00	797.47	802.05	799.48	2.53	2.43	168.70	5.79	176.99	219.59	214.67	4.92	44.600		
900.00	895.87	898.54	894.53	2.93	2.81	173.60	-10.84	175.87	237.00	231.35	5.65	41.971		
1,000.00	994.28	995.03	989.57	3.33	3.20	177.84	-27.47	174.74	255.94	249.57	6.37	40.204		
1,100.00	1,092.68	1,091.52	1,084.61	3.73	3.59	-178.51	-44.10	173.62	276.09	268.99	7.09	38.930		
1,200.00	1,191.09	1,188.01	1,179.64	4.14	3.99	-175.35	-60.73	172.50	297.19	289.37	7.82	37.997		
1,300.00	1,289.49	1,284.50	1,274.68	4.56	4.39	-172.61	-77.36	171.38	319.06	310.50	8.55	37.301		
1,400.00	1,387.89	1,380.99	1,369.72	4.97	4.80	-170.21	-93.99	170.26	341.55	332.26	9.29	36.775		
1,500.00	1,486.30	1,477.48	1,464.76	5.39	5.20	-168.11	-110.62	169.14	364.54	354.52	10.02	36.371		
1,600.00	1,584.70	1,573.97	1,559.80	5.81	5.61	-166.26	-127.25	168.02	387.95	377.19	10.76	36.056		
1,700.00	1,683.11	1,670.46	1,654.84	6.22	6.02	-164.62	-143.88	166.90	411.71	400.21	11.50	35.808		
1,800.00	1,781.51	1,766.95	1,749.88	6.64	6.43	-163.15	-160.51	165.78	435.75	423.51	12.24	35.610		
1,900.00	1,879.91	1,863.44	1,844.92	7.06	6.84	-161.84	-177.14	164.66	460.04	447.06	12.98	35.451		
2,000.00	1,978.32	1,959.93	1,939.96	7.48	7.25	-160.66	-193.77	163.54	484.53	470.81	13.72	35.321		
2,100.00	2,076.72	2,056.42	2,034.99	7.90	7.66	-159.59	-210.40	162.42	509.20	494.74	14.46	35.216		
2,200.00	2,175.13	2,152.90	2,130.03	8.33	8.07	-158.62	-227.03	161.30	534.02	518.82	15.20	35.128		
2,300.00	2,273.53	2,249.39	2,225.07	8.75	8.48	-157.74	-243.66	160.18	558.97	543.03	15.95	35.056		
2,400.00	2,371.94	2,345.88	2,320.11	9.17	8.90	-156.93	-260.29	159.06	584.04	567.35	16.69	34.996		
2,500.00	2,470.34	2,442.37	2,415.15	9.59	9.31	-156.19	-276.92	157.94	609.21	591.77	17.43	34.945		
2,600.00	2,568.74	2,538.86	2,510.19	10.01	9.72	-155.50	-293.54	156.82	634.47	616.29	18.18	34.903		
2,700.00	2,667.15	2,635.35	2,605.23	10.44	10.14	-154.87	-310.17	155.70	659.80	640.88	18.92	34.867		
2,800.00	2,765.55	2,731.84	2,700.27	10.86	10.55	-154.29	-326.80	154.58	685.21	665.54	19.67	34.836		
2,900.00	2,863.96	2,828.33	2,795.31	11.28	10.96	-153.74	-343.43	153.46	710.68	690.26	20.42	34.810		
3,000.00	2,962.36	2,924.82	2,890.34	11.70	11.38	-153.24	-360.06	152.34	736.20	715.04	21.16	34.788		
3,100.00	3,060.76	3,021.31	2,985.38	12.13	11.79	-152.76	-376.69	151.22	761.78	739.87	21.91	34.770		
3,200.00	3,159.17	3,117.80	3,080.42	12.55	12.21	-152.32	-393.32	150.09	787.40	764.74	22.66	34.754		
3,300.00	3,257.57	3,214.29	3,175.46	12.97	12.62	-151.91	-409.95	148.97	813.06	789.65	23.40	34.740		
3,400.00	3,355.98	3,310.78	3,270.50	13.40	13.04	-151.52	-426.58	147.85	838.76	814.60	24.15	34.728		
3,500.00	3,454.38	3,407.27	3,365.54	13.82	13.45	-151.15	-443.21	146.73	864.49	839.59	24.90	34.718		
3,600.00	3,552.78	3,503.76	3,460.58	14.24	13.86	-150.81	-459.84	145.61	890.25	864.60	25.65	34.709		
3,700.00	3,651.19	3,600.24	3,555.62	14.67	14.28	-150.48	-476.47	144.49	916.04	889.65	26.40	34.702		
3,800.00	3,749.59	3,696.73	3,650.66	15.09	14.69	-150.18	-493.10	143.37	941.86	914.72	27.15	34.696		
3,900.00	3,848.00	3,793.22	3,745.69	15.51	15.11	-149.89	-509.73	142.25	967.70	939.81	27.90	34.690		
4,000.00	3,946.40	3,889.71	3,840.73	15.94	15.52	-149.61	-526.36	141.13	993.57	964.92	28.64	34.686		
4,100.00	4,044.80	3,986.20	3,935.77	16.36	15.94	-149.35	-542.99	140.01	1,019.45	990.06	29.39	34.682		
4,200.00	4,143.21	4,082.69	4,030.81	16.78	16.35	-149.10	-559.62	138.89	1,045.36	1,015.21	30.14	34.679		
4,300.00	4,241.61	4,179.18	4,125.85	17.21	16.77	-148.86	-576.25	137.77	1,071.28	1,040.38	30.89	34.676		
4,400.00	4,340.02	4,275.67	4,220.89	17.63	17.18	-148.64	-592.88	136.65	1,097.22	1,065.57	31.64	34.674		
4,500.00	4,438.42	4,372.16	4,315.93	18.05	17.60	-148.42	-609.51	135.53	1,123.17	1,090.77	32.39	34.672		
4,600.00	4,536.87	4,468.70	4,411.01	18.45	18.02	-148.31	-626.15	134.41	1,148.93	1,115.81	33.12	34.688		
4,700.00	4,635.76	4,565.74	4,506.60	18.74	18.43	-148.29	-642.87	133.28	1,172.40	1,138.64	33.76	34.731		
4,800.00	4,735.12	4,663.33	4,602.72	19.02	18.85	-148.15	-659.69	132.15	1,193.01	1,158.62	34.39	34.693		
4,900.00	4,834.80	4,796.52	4,734.36	19.28	19.24	-147.85	-679.80	130.79	1,209.40	1,174.28	35.12	34.438		
5,000.00	4,934.70	4,933.50	4,870.58	19.52	19.57	-147.59	-694.09	129.83	1,219.86	1,184.07	35.79	34.080		
5,100.00	5,034.69	6,523.74	5,823.00	19.75	21.52	90.00	157.75	129.19	1,175.02	1,144.25	30.77	38.189		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor		
5,200.00	5,134.69	6,523.74	5,823.00	20.02	21.52	90.00	157.75	129.19	1,110.41	1,078.02	32.39	34.281		
5,300.00	5,234.69	6,523.74	5,823.00	20.29	21.52	90.00	157.75	129.19	1,051.35	1,017.29	34.06	30.870		
5,400.00	5,334.67	6,522.73	5,823.00	20.56	21.51	-93.14	156.74	129.19	998.87	963.16	35.70	27.976		
5,500.00	5,433.27	6,506.97	5,823.00	20.79	21.44	-97.51	140.98	129.19	954.83	917.69	37.15	25.705		
5,600.00	5,527.04	6,472.69	5,823.00	21.01	21.32	-99.34	106.70	129.20	921.19	882.92	38.27	24.070		
5,700.00	5,612.56	6,421.16	5,823.00	21.22	21.14	-99.06	55.17	129.20	898.37	859.36	39.01	23.027		
5,800.00	5,686.66	6,354.25	5,823.00	21.42	20.96	-97.32	-11.74	129.20	885.26	845.83	39.43	22.452		
5,900.00	5,746.64	6,274.44	5,823.00	21.62	20.79	-94.84	-91.55	129.20	879.60	839.97	39.63	22.197		
5,977.28	5,781.89	6,205.77	5,823.00	21.77	20.69	-92.91	-160.22	129.20	878.60	838.86	39.74	22.107		
6,000.00	5,790.28	6,184.65	5,823.00	21.83	20.68	-92.40	-181.33	129.20	878.67	838.89	39.78	22.089		
6,100.00	5,815.98	6,087.98	5,814.26	22.08	20.64	-90.08	-277.48	129.20	879.97	839.97	40.00	21.999		
6,200.00	5,823.00	5,997.00	5,789.96	22.39	20.65	-87.85	-365.03	129.20	882.65	842.41	40.23	21.937 SF		
6,300.00	5,823.00	5,915.18	5,755.39	22.79	20.69	-85.62	-439.10	129.20	887.33	846.90	40.43	21.946		
6,400.00	5,823.00	5,850.00	5,719.82	23.27	20.73	-83.34	-493.66	129.20	895.81	855.30	40.51	22.113		
6,500.00	5,823.00	5,787.75	5,679.74	23.84	20.77	-80.81	-541.25	129.20	909.60	869.15	40.45	22.485		
6,600.00	5,823.00	5,739.92	5,645.26	24.49	20.80	-78.65	-574.37	129.20	929.86	889.57	40.29	23.078		
6,700.00	5,823.00	5,700.00	5,614.25	25.22	20.82	-76.74	-599.49	129.20	957.15	917.09	40.06	23.893		
6,800.00	5,823.00	5,667.46	5,587.62	26.01	20.82	-75.13	-618.17	129.20	991.61	951.81	39.80	24.917		
6,900.00	5,823.00	5,650.00	5,572.85	26.86	20.83	-74.25	-627.50	129.20	1,033.12	993.51	39.61	26.084		
7,000.00	5,823.00	5,616.53	5,543.72	27.77	20.83	-72.52	-643.97	129.20	1,080.92	1,041.65	39.28	27.520		
7,100.00	5,823.00	5,600.00	5,528.96	28.73	20.83	-71.66	-651.40	129.20	1,134.76	1,095.68	39.08	29.034		
7,200.00	5,823.00	5,579.41	5,510.25	29.73	20.82	-70.59	-660.00	129.20	1,193.87	1,155.01	38.86	30.721		
7,300.00	5,823.00	5,550.00	5,482.98	30.76	20.81	-69.04	-670.99	129.20	1,257.89	1,219.31	38.57	32.611		
7,400.00	5,823.00	5,550.00	5,482.98	31.84	20.81	-69.04	-670.99	129.20	1,325.54	1,286.98	38.56	34.372		
7,500.00	5,823.00	5,550.00	5,482.98	32.94	20.81	-69.04	-670.99	129.20	1,397.09	1,358.53	38.56	36.231		
7,600.00	5,823.00	5,529.69	5,463.80	34.08	20.79	-67.97	-677.67	129.20	1,471.50	1,433.10	38.40	38.317		
7,700.00	5,823.00	5,520.57	5,455.10	35.24	20.78	-67.49	-680.43	129.20	1,548.70	1,510.35	38.35	40.382		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	78.33	49.55	239.91	244.98					
100.00	100.00	100.00	100.00	0.13	0.13	78.33	49.55	239.91	244.98	244.71	0.27	919.764		
200.00	200.00	200.00	200.00	0.47	0.47	78.33	49.55	239.91	244.98	244.04	0.94	260.435		
300.00	300.00	300.00	300.00	0.81	0.81	78.33	49.55	239.91	244.98	243.36	1.61	151.694 CC, ES		
400.00	399.98	399.03	399.01	1.13	1.11	156.87	47.92	240.43	246.77	244.53	2.24	110.315		
500.00	499.84	497.53	497.37	1.46	1.40	158.44	43.07	241.98	252.27	249.41	2.86	88.317		
600.00	599.45	594.97	594.45	1.81	1.72	160.88	35.09	244.51	261.85	258.33	3.52	74.459		
700.00	698.70	690.87	689.66	2.16	2.04	163.96	24.18	247.98	276.01	271.80	4.21	65.549		
800.00	797.47	784.76	782.45	2.53	2.37	167.41	10.56	252.31	295.27	290.33	4.93	59.851		
900.00	895.87	878.18	874.31	2.93	2.74	171.06	-5.59	257.44	318.65	313.00	5.65	56.355		
1,000.00	994.28	973.21	967.69	3.33	3.13	174.36	-22.47	262.81	343.42	337.06	6.35	54.052		
1,100.00	1,092.68	1,068.25	1,061.06	3.73	3.52	177.22	-39.36	268.18	369.14	362.09	7.05	52.340		
1,200.00	1,191.09	1,163.29	1,154.43	4.14	3.93	179.72	-56.24	273.54	395.64	387.89	7.75	51.056		
1,300.00	1,289.49	1,258.33	1,247.81	4.56	4.33	-178.09	-73.13	278.91	422.77	414.32	8.45	50.035		
1,400.00	1,387.89	1,353.37	1,341.18	4.97	4.74	-176.16	-90.01	284.28	450.41	441.26	9.15	49.231		
1,500.00	1,486.30	1,448.41	1,434.55	5.39	5.15	-174.46	-106.89	289.65	478.47	468.63	9.85	48.582		
1,600.00	1,584.70	1,543.45	1,527.92	5.81	5.56	-172.94	-123.78	295.01	506.90	496.35	10.55	48.048		
1,700.00	1,683.11	1,638.49	1,621.30	6.22	5.97	-171.58	-140.66	300.38	535.62	524.37	11.25	47.604		
1,800.00	1,781.51	1,733.53	1,714.67	6.64	6.39	-170.35	-157.55	305.75	564.59	552.64	11.95	47.229		
1,900.00	1,879.91	1,828.56	1,808.04	7.06	6.80	-169.25	-174.43	311.12	593.78	581.12	12.66	46.909		
2,000.00	1,978.32	1,923.60	1,901.42	7.48	7.22	-168.24	-191.32	316.48	623.16	609.79	13.36	46.634		
2,100.00	2,076.72	2,018.64	1,994.79	7.90	7.64	-167.33	-208.20	321.85	652.69	638.62	14.07	46.394		
2,200.00	2,175.13	2,113.68	2,088.16	8.33	8.06	-166.50	-225.08	327.22	682.37	667.59	14.77	46.184		
2,300.00	2,273.53	2,208.72	2,181.53	8.75	8.47	-165.73	-241.97	332.59	712.16	696.68	15.48	45.998		
2,400.00	2,371.94	2,303.76	2,274.91	9.17	8.89	-165.03	-258.85	337.95	742.07	725.88	16.19	45.834		
2,500.00	2,470.34	2,398.80	2,368.28	9.59	9.31	-164.38	-275.74	343.32	772.07	755.17	16.90	45.686		
2,600.00	2,568.74	2,493.84	2,461.65	10.01	9.73	-163.77	-292.62	348.69	802.15	784.54	17.61	45.553		
2,700.00	2,667.15	2,588.87	2,555.03	10.44	10.15	-163.22	-309.51	354.06	832.31	813.99	18.32	45.434		
2,800.00	2,765.55	2,683.91	2,648.40	10.86	10.57	-162.70	-326.39	359.42	862.54	843.51	19.03	45.325		
2,900.00	2,863.96	2,778.95	2,741.77	11.28	10.99	-162.21	-343.28	364.79	892.83	873.08	19.74	45.226		
3,000.00	2,962.36	2,873.99	2,835.14	11.70	11.41	-161.76	-360.16	370.16	923.17	902.71	20.45	45.135		
3,100.00	3,060.76	2,969.03	2,928.52	12.13	11.83	-161.33	-377.04	375.52	953.56	932.39	21.17	45.051		
3,200.00	3,159.17	3,064.07	3,021.89	12.55	12.25	-160.94	-393.93	380.89	983.99	962.11	21.88	44.974		
3,300.00	3,257.57	3,159.11	3,115.26	12.97	12.67	-160.56	-410.81	386.26	1,014.47	991.88	22.59	44.903		
3,400.00	3,355.98	3,254.15	3,208.64	13.40	13.09	-160.21	-427.70	391.63	1,044.98	1,021.68	23.31	44.837		
3,500.00	3,454.38	3,349.19	3,302.01	13.82	13.51	-159.88	-444.58	396.99	1,075.53	1,051.51	24.02	44.776		
3,600.00	3,552.78	3,444.22	3,395.38	14.24	13.93	-159.56	-461.47	402.36	1,106.11	1,081.37	24.73	44.719		
3,700.00	3,651.19	3,539.26	3,488.75	14.67	14.35	-159.26	-478.35	407.73	1,136.72	1,111.27	25.45	44.665		
3,800.00	3,749.59	3,634.30	3,582.13	15.09	14.77	-158.98	-495.24	413.10	1,167.35	1,141.19	26.16	44.615		
3,900.00	3,848.00	3,729.34	3,675.50	15.51	15.19	-158.72	-512.12	418.46	1,198.01	1,171.13	26.88	44.568		
4,000.00	3,946.40	3,824.38	3,768.87	15.94	15.61	-158.46	-529.00	423.83	1,228.69	1,201.09	27.60	44.524		
4,100.00	4,044.80	3,919.42	3,862.25	16.36	16.03	-158.22	-545.89	429.20	1,259.39	1,231.08	28.31	44.482		
4,200.00	4,143.21	4,014.46	3,955.62	16.78	16.45	-157.99	-562.77	434.57	1,290.11	1,261.08	29.03	44.442		
4,300.00	4,241.61	4,109.50	4,048.99	17.21	16.87	-157.77	-579.66	439.93	1,320.85	1,291.10	29.75	44.405		
4,400.00	4,340.02	4,204.53	4,142.36	17.63	17.29	-157.56	-596.54	445.30	1,351.61	1,321.14	30.46	44.370		
4,500.00	4,438.42	4,299.57	4,235.74	18.05	17.71	-157.36	-613.43	450.67	1,382.38	1,351.20	31.18	44.336		
4,600.00	4,536.87	4,394.68	4,329.17	18.45	18.14	-157.26	-630.32	456.04	1,412.95	1,381.07	31.88	44.325		
4,700.00	4,635.76	4,490.48	4,423.29	18.74	18.56	-157.25	-647.34	461.45	1,441.06	1,408.57	32.49	44.354		
4,800.00	4,735.12	4,613.65	4,544.44	19.02	19.04	-157.11	-668.52	468.18	1,465.74	1,432.50	33.24	44.093		
4,900.00	4,834.80	4,779.94	4,709.18	19.28	19.47	-156.91	-689.95	474.99	1,483.65	1,449.57	34.09	43.527		
5,000.00	4,934.70	4,848.80	4,735.00	19.52	21.34	168.05	160.63	477.73	1,458.16	1,425.42	32.75	44.530		
5,100.00	5,034.69	4,949.01	4,735.00	19.75	21.35	89.85	160.84	477.73	1,406.60	1,372.58	34.02	41.342		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Sec 30-T10N-R57W - Horsetail #30G-1944 - Hz - APD		Offset Site Error:		0.00 usft	
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:		0.00 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)	Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor						
5,200.00	5,134.69	6,449.01	5,735.00	20.02	21.35	89.85	160.84	477.73	1,359.58	1,324.31	35.27	38.546						
5,300.00	5,234.69	6,449.01	5,735.00	20.29	21.35	89.85	160.84	477.73	1,318.49	1,282.03	36.46	36.161						
5,400.00	5,334.67	6,447.99	5,735.00	20.56	21.34	-92.45	159.82	477.73	1,283.91	1,246.36	37.55	34.196						
5,500.00	5,433.27	6,432.24	5,735.00	20.79	21.28	-94.80	144.07	477.77	1,257.00	1,218.62	38.38	32.752						
5,600.00	5,527.04	6,397.96	5,735.00	21.01	21.15	-95.35	109.79	477.85	1,238.60	1,199.68	38.92	31.828						
5,700.00	5,612.56	6,346.43	5,735.00	21.22	20.99	-94.44	58.26	477.99	1,228.29	1,189.08	39.21	31.329						
5,800.00	5,686.66	6,279.53	5,735.00	21.42	20.82	-92.53	-8.64	478.16	1,224.62	1,185.32	39.29	31.165						
5,823.65	5,702.21	6,261.72	5,735.00	21.46	20.79	-92.00	-26.45	478.20	1,224.50	1,185.19	39.31	31.151						
5,900.00	5,746.64	6,199.72	5,735.00	21.62	20.67	-90.20	-88.45	478.36	1,225.50	1,186.19	39.31	31.176						
6,000.00	5,790.28	6,109.94	5,735.00	21.83	20.61	-88.03	-178.23	478.58	1,228.70	1,189.30	39.39	31.191						
6,100.00	5,815.98	6,026.20	5,729.24	22.08	20.60	-86.32	-261.68	478.80	1,232.73	1,193.15	39.58	31.143						
6,200.00	5,823.00	5,950.00	5,712.49	22.39	20.63	-84.87	-335.95	478.98	1,237.37	1,197.53	39.84	31.058						
6,300.00	5,823.00	5,872.32	5,684.45	22.79	20.69	-83.58	-408.32	479.17	1,243.57	1,203.42	40.15	30.972						
6,400.00	5,823.00	5,807.10	5,652.82	23.27	20.74	-82.14	-465.30	479.31	1,252.70	1,212.25	40.45	30.965 SF						
6,500.00	5,823.00	5,750.00	5,619.47	23.84	20.79	-80.64	-511.61	479.43	1,265.63	1,224.90	40.73	31.072						
6,600.00	5,823.00	5,700.00	5,586.25	24.49	20.83	-79.15	-548.96	479.52	1,283.07	1,242.10	40.97	31.317						
6,700.00	5,823.00	5,662.20	5,558.84	25.22	20.85	-77.94	-574.99	479.59	1,305.50	1,264.31	41.18	31.700						
6,800.00	5,823.00	5,627.60	5,532.17	26.01	20.87	-76.76	-597.01	479.65	1,333.19	1,291.83	41.36	32.237						
6,900.00	5,823.00	5,600.00	5,509.88	26.86	20.88	-75.79	-613.28	479.69	1,366.22	1,324.72	41.51	32.915						
7,000.00	5,823.00	5,572.75	5,487.05	27.77	20.89	-74.81	-628.16	479.72	1,404.50	1,362.89	41.61	33.751						
7,100.00	5,823.00	5,550.00	5,467.43	28.73	20.89	-73.97	-639.66	479.75	1,447.83	1,406.13	41.70	34.719						
7,200.00	5,823.00	5,531.85	5,451.42	29.73	20.89	-73.29	-648.20	479.78	1,495.93	1,454.16	41.77	35.811						
7,300.00	5,823.00	5,500.00	5,422.64	30.76	20.89	-72.08	-661.84	479.81	1,548.68	1,506.94	41.74	37.103						



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	HZ	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	90.00	0.00	89.97	89.97					
100.00	100.00	100.00	100.00	0.13	0.13	90.00	0.00	89.97	89.97	89.70	0.27	337.782		
200.00	200.00	200.00	200.00	0.47	0.47	90.00	0.00	89.97	89.97	89.03	0.94	95.645		
300.00	300.00	300.00	300.00	0.81	0.81	90.00	0.00	89.97	89.97	88.35	1.61	55.709 CC		
400.00	399.98	402.41	402.39	1.13	1.15	167.47	1.21	88.59	90.33	88.02	2.31	39.069 ES		
500.00	499.84	503.24	503.11	1.46	1.49	166.24	4.27	85.09	92.01	89.04	2.98	30.914		
600.00	599.45	603.10	602.86	1.81	1.82	165.49	7.46	81.44	96.94	93.31	3.63	26.690		
700.00	698.70	702.75	702.39	2.16	2.16	165.29	10.64	77.80	105.25	100.95	4.30	24.475		
800.00	797.47	802.06	801.58	2.53	2.49	165.54	13.82	74.18	116.92	111.94	4.98	23.499		
900.00	895.87	901.11	900.51	2.93	2.83	166.01	16.98	70.56	130.66	125.02	5.65	23.143		
1,000.00	994.28	1,000.15	999.43	3.33	3.17	166.41	20.14	66.95	144.44	138.13	6.31	22.901		
1,100.00	1,092.68	1,099.19	1,098.36	3.73	3.50	166.73	23.31	63.33	158.23	151.25	6.97	22.695		
1,200.00	1,191.09	1,198.23	1,197.28	4.14	3.84	167.01	26.47	59.72	172.01	164.38	7.64	22.519		
1,300.00	1,289.49	1,297.27	1,296.21	4.56	4.18	167.24	29.63	56.10	185.81	177.50	8.31	22.366		
1,400.00	1,387.89	1,396.32	1,395.13	4.97	4.52	167.44	32.80	52.48	199.60	190.62	8.98	22.234		
1,500.00	1,486.30	1,495.36	1,494.06	5.39	4.86	167.61	35.96	48.87	213.40	203.75	9.65	22.117		
1,600.00	1,584.70	1,594.40	1,592.99	5.81	5.20	167.77	39.12	45.25	227.19	216.87	10.32	22.014		
1,700.00	1,683.11	1,693.44	1,691.91	6.22	5.53	167.90	42.29	41.64	240.99	230.00	10.99	21.922		
1,800.00	1,781.51	1,792.48	1,790.84	6.64	5.87	168.02	45.45	38.02	254.79	243.13	11.67	21.840		
1,900.00	1,879.91	1,891.52	1,889.76	7.06	6.21	168.13	48.61	34.41	268.60	256.26	12.34	21.766		
2,000.00	1,978.32	1,990.57	1,988.69	7.48	6.55	168.23	51.78	30.79	282.40	269.38	13.01	21.699		
2,100.00	2,076.72	2,089.61	2,087.61	7.90	6.89	168.32	54.94	27.18	296.20	282.51	13.69	21.638		
2,200.00	2,175.13	2,188.65	2,186.54	8.33	7.23	168.40	58.11	23.56	310.01	295.64	14.36	21.582		
2,300.00	2,273.53	2,287.69	2,285.46	8.75	7.57	168.47	61.27	19.95	323.81	308.77	15.04	21.531		
2,400.00	2,371.94	2,386.73	2,384.39	9.17	7.90	168.54	64.43	16.33	337.62	321.90	15.71	21.485		
2,500.00	2,470.34	2,485.78	2,483.31	9.59	8.24	168.61	67.60	12.72	351.42	335.03	16.39	21.441		
2,600.00	2,568.74	2,584.82	2,582.24	10.01	8.58	168.66	70.76	9.10	365.23	348.16	17.07	21.402		
2,700.00	2,667.15	2,683.86	2,681.16	10.44	8.92	168.72	73.92	5.48	379.03	361.29	17.74	21.364		
2,800.00	2,765.55	2,782.90	2,780.09	10.86	9.26	168.77	77.09	1.87	392.84	374.42	18.42	21.330		
2,900.00	2,863.96	2,881.94	2,879.01	11.28	9.60	168.81	80.25	-1.75	406.65	387.55	19.09	21.298		
3,000.00	2,962.36	2,980.98	2,977.94	11.70	9.94	168.86	83.41	-5.36	420.45	400.68	19.77	21.268		
3,100.00	3,060.76	3,080.03	3,076.86	12.13	10.28	168.90	86.58	-8.98	434.26	413.81	20.45	21.239		
3,200.00	3,159.17	3,179.07	3,175.79	12.55	10.62	168.94	89.74	-12.59	448.07	426.94	21.12	21.213		
3,300.00	3,257.57	3,278.11	3,274.71	12.97	10.95	168.97	92.90	-16.21	461.87	440.08	21.80	21.188		
3,400.00	3,355.98	3,377.15	3,373.64	13.40	11.29	169.01	96.07	-19.82	475.68	453.21	22.48	21.165		
3,500.00	3,454.38	3,476.19	3,472.56	13.82	11.63	169.04	99.23	-23.44	489.49	466.34	23.15	21.142		
3,600.00	3,552.78	3,575.24	3,571.49	14.24	11.97	169.07	102.39	-27.05	503.30	479.47	23.83	21.122		
3,700.00	3,651.19	3,674.28	3,670.41	14.67	12.31	169.10	105.56	-30.67	517.11	492.60	24.51	21.102		
3,800.00	3,749.59	3,773.32	3,769.34	15.09	12.65	169.12	108.72	-34.28	530.91	505.73	25.18	21.083		
3,900.00	3,848.00	3,872.36	3,868.26	15.51	12.99	169.15	111.88	-37.90	544.72	518.86	25.86	21.065		
4,000.00	3,946.40	3,971.40	3,967.19	15.94	13.33	169.17	115.05	-41.52	558.53	531.99	26.54	21.048		
4,100.00	4,044.80	4,070.44	4,066.12	16.36	13.67	169.20	118.21	-45.13	572.34	545.13	27.21	21.032		
4,200.00	4,143.21	4,169.49	4,165.04	16.78	14.00	169.22	121.37	-48.75	586.15	558.26	27.89	21.016		
4,300.00	4,241.61	4,268.53	4,263.97	17.21	14.34	169.24	124.54	-52.36	599.96	571.39	28.57	21.002		
4,400.00	4,340.02	4,367.57	4,362.89	17.63	14.68	169.26	127.70	-55.98	613.76	584.52	29.24	20.988		
4,500.00	4,438.42	4,466.61	4,461.82	18.05	15.02	169.28	130.86	-59.59	627.57	597.65	29.92	20.974		
4,600.00	4,536.87	4,565.69	4,560.77	18.45	15.36	169.31	134.03	-63.21	641.14	610.56	30.58	20.963		
4,700.00	4,635.76	4,665.09	4,660.06	18.74	15.70	169.32	137.20	-66.84	651.97	620.78	31.19	20.903		
4,800.00	4,735.12	4,752.53	4,747.43	19.02	15.95	169.32	139.44	-69.40	660.15	628.48	31.67	20.846		
4,900.00	4,834.80	4,839.91	4,834.80	19.28	16.17	169.41	140.00	-70.03	667.10	634.98	32.12	20.772		
5,000.00	4,934.70	4,939.81	4,934.70	19.52	16.48	169.49	140.00	-70.03	671.38	638.70	32.68	20.542		
5,100.00	5,034.69	5,039.21	5,034.10	19.75	16.79	91.54	139.72	-70.03	672.36	639.09	33.27	20.208		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	HZ	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor		
5,200.00	5,134.69	5,134.15	5,128.18	20.02	17.04	92.53	128.00	-70.03	672.81	639.04	33.77	19.925		
5,300.00	5,234.69	5,222.16	5,212.17	20.29	17.27	94.74	102.06	-70.03	674.80	640.65	34.15	19.759		
5,400.00	5,334.67	5,300.00	5,281.90	20.56	17.47	-83.32	67.63	-70.03	680.07	645.69	34.38	19.779		
5,500.00	5,433.27	5,372.82	5,341.82	20.79	17.65	-79.83	26.35	-70.02	688.26	653.82	34.44	19.985		
5,600.00	5,527.04	5,442.93	5,393.54	21.01	17.81	-76.62	-20.92	-70.02	698.02	663.67	34.35	20.323		
5,700.00	5,612.56	5,511.12	5,437.31	21.22	17.95	-73.79	-73.14	-70.01	708.29	674.14	34.15	20.743		
5,800.00	5,686.66	5,577.91	5,473.22	21.42	18.10	-71.41	-129.40	-70.01	718.12	684.21	33.91	21.178		
5,900.00	5,746.64	5,650.00	5,503.56	21.62	18.27	-69.47	-194.73	-70.00	726.75	692.94	33.81	21.496		
6,000.00	5,790.28	5,708.81	5,521.45	21.83	18.43	-68.24	-250.71	-70.00	733.44	699.77	33.67	21.783		
6,100.00	5,815.98	5,773.53	5,533.70	22.08	18.64	-67.50	-314.22	-69.99	737.88	704.05	33.83	21.810		
6,200.00	5,823.00	5,840.49	5,538.00	22.39	18.90	-67.34	-381.00	-69.99	739.86	705.60	34.26	21.593		
6,300.00	5,823.00	5,936.81	5,538.00	22.79	19.36	-67.40	-477.32	-69.98	741.69	706.52	35.17	21.087		
6,400.00	5,823.00	6,036.79	5,538.00	23.27	19.93	-67.46	-577.30	-69.97	743.53	707.23	36.29	20.486		
6,500.00	5,823.00	6,136.77	5,538.00	23.84	20.60	-67.52	-677.28	-69.96	745.36	707.78	37.58	19.832		
6,600.00	5,823.00	6,236.75	5,538.00	24.49	21.35	-67.57	-777.26	-69.95	747.20	708.17	39.03	19.146		
6,700.00	5,823.00	6,336.73	5,538.00	25.22	22.17	-67.63	-877.24	-69.94	749.04	708.43	40.61	18.446		
6,800.00	5,823.00	6,436.71	5,538.00	26.01	23.06	-67.69	-977.22	-69.94	750.88	708.57	42.31	17.747		
6,900.00	5,823.00	6,536.69	5,538.00	26.86	24.01	-67.75	-1,077.20	-69.93	752.72	708.60	44.12	17.060		
7,000.00	5,823.00	6,636.67	5,538.00	27.77	25.01	-67.80	-1,177.18	-69.92	754.56	708.53	46.03	16.393		
7,100.00	5,823.00	6,736.65	5,538.00	28.73	26.05	-67.86	-1,277.16	-69.91	756.40	708.38	48.02	15.751		
7,200.00	5,823.00	6,836.63	5,538.00	29.73	27.13	-67.92	-1,377.14	-69.90	758.24	708.15	50.09	15.138		
7,300.00	5,823.00	6,936.61	5,538.00	30.76	28.25	-67.97	-1,477.12	-69.89	760.09	707.86	52.22	14.555		
7,400.00	5,823.00	7,036.59	5,538.00	31.84	29.40	-68.03	-1,577.10	-69.88	761.93	707.51	54.42	14.002		
7,500.00	5,823.00	7,136.57	5,538.00	32.94	30.58	-68.09	-1,677.08	-69.87	763.77	707.11	56.66	13.480		
7,600.00	5,823.00	7,236.55	5,538.00	34.08	31.78	-68.14	-1,777.06	-69.87	765.62	706.67	58.95	12.987		
7,700.00	5,823.00	7,336.53	5,538.00	35.24	33.00	-68.20	-1,877.04	-69.86	767.47	706.18	61.28	12.523		
7,800.00	5,823.00	7,436.51	5,538.00	36.42	34.24	-68.25	-1,977.02	-69.85	769.31	705.66	63.65	12.086		
7,900.00	5,823.00	7,536.49	5,538.00	37.62	35.50	-68.31	-2,077.00	-69.84	771.16	705.10	66.06	11.674		
8,000.00	5,823.00	7,636.47	5,538.00	38.84	36.78	-68.36	-2,176.98	-69.83	773.01	704.52	68.49	11.287		
8,100.00	5,823.00	7,736.45	5,538.00	40.08	38.07	-68.42	-2,276.96	-69.82	774.86	703.91	70.95	10.921		
8,200.00	5,823.00	7,836.43	5,538.00	41.33	39.37	-68.47	-2,376.94	-69.81	776.71	703.27	73.43	10.577		
8,300.00	5,823.00	7,936.41	5,538.00	42.60	40.69	-68.52	-2,476.92	-69.80	778.56	702.62	75.94	10.252		
8,400.00	5,823.00	8,036.39	5,538.00	43.88	42.01	-68.58	-2,576.90	-69.80	780.41	701.94	78.47	9.946		
8,500.00	5,823.00	8,136.37	5,538.00	45.17	43.35	-68.63	-2,676.88	-69.79	782.26	701.25	81.01	9.656		
8,600.00	5,823.00	8,236.35	5,538.00	46.47	44.69	-68.68	-2,776.86	-69.78	784.11	700.54	83.58	9.382		
8,700.00	5,823.00	8,336.33	5,538.00	47.78	46.04	-68.74	-2,876.84	-69.77	785.96	699.81	86.15	9.123		
8,800.00	5,823.00	8,436.31	5,538.00	49.10	47.40	-68.79	-2,976.82	-69.76	787.82	699.07	88.75	8.877		
8,900.00	5,823.00	8,536.29	5,538.00	50.43	48.77	-68.84	-3,076.80	-69.75	789.67	698.32	91.35	8.644		
9,000.00	5,823.00	8,636.27	5,538.00	51.77	50.14	-68.89	-3,176.79	-69.74	791.53	697.56	93.97	8.423		
9,100.00	5,823.00	8,736.25	5,538.00	53.11	51.51	-68.94	-3,276.77	-69.74	793.38	696.78	96.60	8.213		
9,200.00	5,823.00	8,836.23	5,538.00	54.46	52.89	-69.00	-3,376.75	-69.73	795.24	696.00	99.24	8.013		
9,300.00	5,823.00	8,936.22	5,538.00	55.81	54.28	-69.05	-3,476.73	-69.72	797.09	695.20	101.89	7.823		
9,400.00	5,823.00	9,036.20	5,538.00	57.18	55.67	-69.10	-3,576.71	-69.71	798.95	694.40	104.55	7.642		
9,500.00	5,823.00	9,136.18	5,538.00	58.54	57.07	-69.15	-3,676.69	-69.70	800.81	693.59	107.22	7.469		
9,600.00	5,823.00	9,236.16	5,538.00	59.91	58.46	-69.20	-3,776.67	-69.69	802.67	692.77	109.89	7.304		
9,700.00	5,823.00	9,336.14	5,538.00	61.29	59.87	-69.25	-3,876.65	-69.68	804.53	691.95	112.58	7.146		
9,800.00	5,823.00	9,436.12	5,538.00	62.67	61.27	-69.30	-3,976.63	-69.67	806.39	691.12	115.27	6.996		
9,900.00	5,823.00	9,536.10	5,538.00	64.05	62.68	-69.35	-4,076.61	-69.67	808.25	690.28	117.97	6.852		
10,000.00	5,823.00	9,636.08	5,538.00	65.44	64.09	-69.40	-4,176.59	-69.66	810.11	689.44	120.67	6.713		
10,100.00	5,823.00	9,736.06	5,538.00	66.83	65.50	-69.45	-4,276.57	-69.65	811.97	688.59	123.38	6.581		
10,200.00	5,823.00	9,836.04	5,538.00	68.22	66.92	-69.50	-4,376.55	-69.64	813.83	687.74	126.10	6.454		
10,300.00	5,823.00	9,936.02	5,538.00	69.62	68.34	-69.55	-4,476.53	-69.63	815.70	686.88	128.82	6.332		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	HZ	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor		
10,400.00	5,823.00	10,036.00	5,538.00	71.02	69.76	-69.59	-4,576.51	-69.62	817.56	686.02	131.54	6.215		
10,500.00	5,823.00	10,135.98	5,538.00	72.42	71.18	-69.64	-4,676.49	-69.61	819.42	685.15	134.27	6.103		
10,600.00	5,823.00	10,235.96	5,538.00	73.83	72.61	-69.69	-4,776.47	-69.60	821.29	684.28	137.01	5.994		
10,700.00	5,823.00	10,335.94	5,538.00	75.24	74.03	-69.74	-4,876.45	-69.60	823.15	683.40	139.75	5.890		
10,800.00	5,823.00	10,435.92	5,538.00	76.65	75.46	-69.79	-4,976.43	-69.59	825.02	682.52	142.50	5.790		
10,900.00	5,823.00	10,535.90	5,538.00	78.06	76.89	-69.83	-5,076.41	-69.58	826.89	681.64	145.24	5.693		
11,000.00	5,823.00	10,635.88	5,538.00	79.47	78.32	-69.88	-5,176.39	-69.57	828.75	680.76	148.00	5.600		
11,100.00	5,823.00	10,735.86	5,538.00	80.89	79.76	-69.93	-5,276.37	-69.56	830.62	679.87	150.75	5.510		
11,200.00	5,823.00	10,835.84	5,538.00	82.31	81.19	-69.98	-5,376.35	-69.55	832.49	678.98	153.51	5.423		
11,300.00	5,823.00	10,935.82	5,538.00	83.73	82.63	-70.02	-5,476.33	-69.54	834.36	678.08	156.28	5.339		
11,400.00	5,823.00	11,035.80	5,538.00	85.15	84.06	-70.07	-5,576.31	-69.54	836.23	677.18	159.04	5.258		
11,500.00	5,823.00	11,135.78	5,538.00	86.57	85.50	-70.12	-5,676.29	-69.53	838.10	676.28	161.81	5.179		
11,600.00	5,823.00	11,235.76	5,538.00	87.99	86.94	-70.16	-5,776.27	-69.52	839.97	675.38	164.59	5.103		
11,700.00	5,823.00	11,335.74	5,538.00	89.42	88.38	-70.21	-5,876.25	-69.51	841.84	674.47	167.36	5.030		
11,800.00	5,823.00	11,435.72	5,538.00	90.85	89.82	-70.25	-5,976.23	-69.50	843.71	673.57	170.14	4.959		
11,900.00	5,823.00	11,535.70	5,538.00	92.28	91.26	-70.30	-6,076.21	-69.49	845.58	672.66	172.92	4.890		
12,000.00	5,823.00	11,635.68	5,538.00	93.70	92.71	-70.34	-6,176.19	-69.48	847.45	671.74	175.71	4.823		
12,100.00	5,823.00	11,735.66	5,538.00	95.14	94.15	-70.39	-6,276.17	-69.47	849.33	670.83	178.50	4.758		
12,200.00	5,823.00	11,835.64	5,538.00	96.57	95.60	-70.43	-6,376.15	-69.47	851.20	669.91	181.29	4.695		
12,300.00	5,823.00	11,935.62	5,538.00	98.00	97.04	-70.48	-6,476.13	-69.46	853.07	669.00	184.08	4.634		
12,400.00	5,823.00	12,035.60	5,538.00	99.43	98.49	-70.52	-6,576.11	-69.45	854.95	668.08	186.87	4.575		
12,500.00	5,823.00	12,135.58	5,538.00	100.87	99.93	-70.57	-6,676.09	-69.44	856.82	667.15	189.67	4.517		
12,600.00	5,823.00	12,235.56	5,538.00	102.30	101.38	-70.61	-6,776.07	-69.43	858.70	666.23	192.47	4.462		
12,700.00	5,823.00	12,335.54	5,538.00	103.74	102.83	-70.66	-6,876.05	-69.42	860.57	665.31	195.27	4.407		
12,800.00	5,823.00	12,435.52	5,538.00	105.18	104.28	-70.70	-6,976.03	-69.41	862.45	664.38	198.07	4.354		
12,900.00	5,823.00	12,535.50	5,538.00	106.62	105.73	-70.74	-7,076.01	-69.40	864.33	663.45	200.88	4.303		
13,000.00	5,823.00	12,635.48	5,538.00	108.06	107.18	-70.79	-7,175.99	-69.40	866.21	662.52	203.69	4.253		
13,100.00	5,823.00	12,735.46	5,538.00	109.50	108.63	-70.83	-7,275.97	-69.39	868.08	661.59	206.49	4.204		
13,200.00	5,823.00	12,835.44	5,538.00	110.94	110.08	-70.87	-7,375.95	-69.38	869.96	660.66	209.31	4.156		
13,300.00	5,823.00	12,935.42	5,538.00	112.38	111.53	-70.92	-7,475.93	-69.37	871.84	659.72	212.12	4.110		
13,400.00	5,823.00	13,035.40	5,538.00	113.82	112.99	-70.96	-7,575.92	-69.36	873.72	658.79	214.93	4.065		
13,500.00	5,823.00	13,135.38	5,538.00	115.26	114.44	-71.00	-7,675.90	-69.35	875.60	657.85	217.75	4.021		
13,600.00	5,823.00	13,235.36	5,538.00	116.71	115.89	-71.04	-7,775.88	-69.34	877.48	656.91	220.57	3.978		
13,700.00	5,823.00	13,335.35	5,538.00	118.15	117.35	-71.09	-7,875.86	-69.33	879.36	655.97	223.39	3.936		
13,800.00	5,823.00	13,435.33	5,538.00	119.59	118.80	-71.13	-7,975.84	-69.33	881.24	655.03	226.21	3.896		
13,900.00	5,823.00	13,535.31	5,538.00	121.04	120.26	-71.17	-8,075.82	-69.32	883.13	654.09	229.04	3.856		
13,986.28	5,823.00	13,617.62	5,538.00	122.29	121.45	-71.20	-8,158.13	-69.31	884.76	653.41	231.35	3.824 SF		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag												Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.00	90.00	0.00	149.95	149.95				
100.00	100.00	100.00	100.00	0.13	0.13	90.00	0.00	149.95	149.95	149.68	0.27	562.971	
200.00	200.00	200.00	200.00	0.47	0.47	90.00	0.00	149.95	149.95	149.01	0.94	159.408	
300.00	300.00	300.00	300.00	0.81	0.81	90.00	0.00	149.95	149.95	148.33	1.61	92.849 CC, ES	
400.00	399.98	396.76	396.74	1.13	1.13	167.64	1.28	150.96	152.71	150.42	2.29	66.717	
500.00	499.84	495.90	495.81	1.46	1.47	166.93	4.30	153.37	160.27	157.32	2.95	54.292	
600.00	599.45	595.29	595.12	1.81	1.80	166.52	7.36	155.82	171.27	167.65	3.62	47.332	
700.00	698.70	694.24	694.00	2.16	2.13	166.40	10.42	158.25	185.64	181.35	4.29	43.276	
800.00	797.47	792.66	792.33	2.53	2.46	166.50	13.45	160.67	203.35	198.39	4.96	40.976	
900.00	895.87	890.67	890.27	2.93	2.79	166.78	16.47	163.08	223.13	217.50	5.63	39.663	
1,000.00	994.28	988.69	988.21	3.33	3.12	167.02	19.49	165.48	242.94	236.66	6.28	38.714	
1,100.00	1,092.68	1,086.70	1,086.15	3.73	3.45	167.23	22.52	167.89	262.75	255.82	6.93	37.920	
1,200.00	1,191.09	1,184.72	1,184.09	4.14	3.78	167.41	25.54	170.30	282.56	274.98	7.59	37.248	
1,300.00	1,289.49	1,282.73	1,282.02	4.56	4.12	167.56	28.56	172.71	302.38	294.13	8.25	36.673	
1,400.00	1,387.89	1,380.74	1,379.96	4.97	4.45	167.70	31.58	175.12	322.20	313.29	8.91	36.175	
1,500.00	1,486.30	1,478.76	1,477.90	5.39	4.78	167.81	34.61	177.53	342.02	332.45	9.57	35.742	
1,600.00	1,584.70	1,576.77	1,575.84	5.81	5.11	167.92	37.63	179.94	361.84	351.61	10.23	35.360	
1,700.00	1,683.11	1,674.78	1,673.77	6.22	5.44	168.02	40.65	182.35	381.66	370.76	10.90	35.022	
1,800.00	1,781.51	1,772.80	1,771.71	6.64	5.77	168.10	43.67	184.76	401.48	389.92	11.56	34.721	
1,900.00	1,879.91	1,870.81	1,869.65	7.06	6.11	168.18	46.69	187.17	421.31	409.08	12.23	34.450	
2,000.00	1,978.32	1,968.83	1,967.59	7.48	6.44	168.25	49.72	189.57	441.13	428.24	12.90	34.207	
2,100.00	2,076.72	2,066.84	2,065.52	7.90	6.77	168.32	52.74	191.98	460.96	447.39	13.56	33.986	
2,200.00	2,175.13	2,164.85	2,163.46	8.33	7.10	168.37	55.76	194.39	480.78	466.55	14.23	33.785	
2,300.00	2,273.53	2,262.87	2,261.40	8.75	7.43	168.43	58.78	196.80	500.61	485.71	14.90	33.601	
2,400.00	2,371.94	2,360.88	2,359.34	9.17	7.77	168.48	61.81	199.21	520.44	504.87	15.57	33.432	
2,500.00	2,470.34	2,458.90	2,457.27	9.59	8.10	168.53	64.83	201.62	540.26	524.03	16.24	33.277	
2,600.00	2,568.74	2,556.91	2,555.21	10.01	8.43	168.57	67.85	204.03	560.09	543.19	16.90	33.134	
2,700.00	2,667.15	2,654.92	2,653.15	10.44	8.76	168.61	70.87	206.44	579.92	562.35	17.57	33.001	
2,800.00	2,765.55	2,752.94	2,751.09	10.86	9.09	168.65	73.89	208.85	599.75	581.50	18.24	32.877	
2,900.00	2,863.96	2,850.95	2,849.03	11.28	9.43	168.68	76.92	211.26	619.57	600.66	18.91	32.762	
3,000.00	2,962.36	2,948.96	2,946.96	11.70	9.76	168.72	79.94	213.66	639.40	619.82	19.58	32.655	
3,100.00	3,060.76	3,046.98	3,044.90	12.13	10.09	168.75	82.96	216.07	659.23	638.98	20.25	32.555	
3,200.00	3,159.17	3,144.99	3,142.84	12.55	10.42	168.78	85.98	218.48	679.06	658.14	20.92	32.460	
3,300.00	3,257.57	3,243.01	3,240.78	12.97	10.76	168.81	89.01	220.89	698.89	677.30	21.59	32.372	
3,400.00	3,355.98	3,341.02	3,338.71	13.40	11.09	168.83	92.03	223.30	718.72	696.46	22.26	32.289	
3,500.00	3,454.38	3,439.03	3,436.65	13.82	11.42	168.86	95.05	225.71	738.55	715.62	22.93	32.210	
3,600.00	3,552.78	3,537.05	3,534.59	14.24	11.75	168.88	98.07	228.12	758.38	734.78	23.60	32.136	
3,700.00	3,651.19	3,635.06	3,632.53	14.67	12.08	168.90	101.09	230.53	778.21	753.94	24.27	32.066	
3,800.00	3,749.59	3,733.07	3,730.46	15.09	12.42	168.92	104.12	232.94	798.04	773.10	24.94	31.999	
3,900.00	3,848.00	3,831.09	3,828.40	15.51	12.75	168.94	107.14	235.35	817.86	792.26	25.61	31.936	
4,000.00	3,946.40	3,929.10	3,926.34	15.94	13.08	168.96	110.16	237.75	837.69	811.41	26.28	31.876	
4,100.00	4,044.80	4,027.12	4,024.28	16.36	13.41	168.98	113.18	240.16	857.52	830.57	26.95	31.819	
4,200.00	4,143.21	4,125.13	4,122.21	16.78	13.74	169.00	116.21	242.57	877.35	849.73	27.62	31.764	
4,300.00	4,241.61	4,223.14	4,220.15	17.21	14.08	169.02	119.23	244.98	897.18	868.89	28.29	31.712	
4,400.00	4,340.02	4,321.16	4,318.09	17.63	14.41	169.03	122.25	247.39	917.01	888.05	28.96	31.663	
4,500.00	4,438.42	4,419.17	4,416.03	18.05	14.74	169.05	125.27	249.80	936.84	907.21	29.63	31.615	
4,600.00	4,536.87	4,517.23	4,514.01	18.45	15.07	169.09	128.30	252.21	956.44	926.15	30.29	31.576	
4,700.00	4,635.76	4,615.79	4,612.49	18.74	15.41	169.13	131.34	254.63	973.32	942.43	30.89	31.510	
4,800.00	4,735.12	4,714.87	4,711.49	19.02	15.74	169.12	134.39	257.07	986.81	955.32	31.49	31.338	
4,900.00	4,834.80	4,824.78	4,821.33	19.28	16.08	169.07	137.45	259.50	996.70	964.58	32.13	31.026	
5,000.00	4,934.70	4,938.15	4,934.70	19.52	16.41	169.11	138.00	259.95	1,001.32	968.58	32.74	30.581	
5,100.00	5,034.69	5,038.15	5,034.69	19.75	16.73	91.13	138.00	259.95	1,002.29	968.94	33.35	30.057	

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	HZ	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor		
5,106.83	5,041.52	5,044.97	5,041.52	19.77	16.76	91.13	138.00	259.95	1,002.29	968.90	33.39	30.018		
5,200.00	5,134.69	5,136.19	5,132.67	20.02	17.03	91.25	135.82	259.95	1,002.34	968.41	33.93	29.542		
5,300.00	5,234.69	5,229.13	5,223.98	20.29	17.27	92.21	119.12	259.95	1,002.90	968.48	34.41	29.143		
5,400.00	5,334.67	5,314.15	5,303.71	20.56	17.50	-87.21	89.87	259.95	1,004.82	970.01	34.81	28.863		
5,500.00	5,433.27	5,394.04	5,373.36	20.79	17.70	-85.27	50.92	259.95	1,008.25	973.14	35.11	28.716		
5,600.00	5,527.04	5,470.97	5,434.07	21.01	17.89	-83.47	3.77	259.96	1,012.66	977.32	35.34	28.655		
5,700.00	5,612.56	5,550.00	5,488.50	21.22	18.06	-81.79	-53.41	259.96	1,017.59	982.03	35.55	28.620		
5,800.00	5,686.66	5,618.74	5,528.35	21.42	18.21	-80.46	-109.36	259.97	1,022.53	986.81	35.72	28.627		
5,900.00	5,746.64	5,690.60	5,561.77	21.62	18.37	-79.34	-172.92	259.97	1,027.11	991.16	35.96	28.564		
6,000.00	5,790.28	5,761.68	5,585.91	21.83	18.56	-78.53	-239.71	259.98	1,030.99	994.69	36.30	28.405		
6,100.00	5,815.98	5,832.31	5,600.68	22.08	18.79	-78.04	-308.72	259.99	1,033.90	997.14	36.76	28.124		
6,200.00	5,823.00	5,902.82	5,605.98	22.39	19.05	-77.90	-378.98	259.99	1,035.73	998.36	37.37	27.717		
6,300.00	5,823.00	6,001.12	5,606.00	22.79	19.51	-77.93	-477.29	260.00	1,037.67	999.36	38.31	27.083		
6,400.00	5,823.00	6,101.10	5,606.00	23.27	20.07	-77.95	-577.27	260.01	1,039.62	1,000.16	39.46	26.347		
6,500.00	5,823.00	6,201.08	5,606.00	23.84	20.73	-77.97	-677.25	260.02	1,041.56	1,000.78	40.78	25.543		
6,600.00	5,823.00	6,301.06	5,606.00	24.49	21.47	-78.00	-777.23	260.03	1,043.51	1,001.25	42.25	24.698		
6,700.00	5,823.00	6,401.04	5,606.00	25.22	22.29	-78.02	-877.21	260.04	1,045.45	1,001.58	43.87	23.832		
6,800.00	5,823.00	6,501.02	5,606.00	26.01	23.17	-78.04	-977.19	260.05	1,047.40	1,001.79	45.61	22.965		
6,900.00	5,823.00	6,601.01	5,606.00	26.86	24.11	-78.06	-1,077.17	260.06	1,049.34	1,001.88	47.46	22.110		
7,000.00	5,823.00	6,700.99	5,606.00	27.77	25.10	-78.09	-1,177.15	260.07	1,051.29	1,001.87	49.41	21.275		
7,100.00	5,823.00	6,800.97	5,606.00	28.73	26.13	-78.11	-1,277.13	260.07	1,053.23	1,001.78	51.46	20.469		
7,200.00	5,823.00	6,900.95	5,606.00	29.73	27.21	-78.13	-1,377.11	260.08	1,055.18	1,001.61	53.57	19.695		
7,300.00	5,823.00	7,000.93	5,606.00	30.76	28.32	-78.15	-1,477.09	260.09	1,057.13	1,001.36	55.76	18.957		
7,400.00	5,823.00	7,100.91	5,606.00	31.84	29.46	-78.17	-1,577.07	260.10	1,059.07	1,001.06	58.01	18.255		
7,500.00	5,823.00	7,200.89	5,606.00	32.94	30.63	-78.20	-1,677.05	260.11	1,061.02	1,000.70	60.32	17.590		
7,600.00	5,823.00	7,300.87	5,606.00	34.08	31.83	-78.22	-1,777.03	260.12	1,062.97	1,000.29	62.67	16.960		
7,700.00	5,823.00	7,400.85	5,606.00	35.24	33.05	-78.24	-1,877.01	260.13	1,064.92	999.84	65.07	16.365		
7,800.00	5,823.00	7,500.83	5,606.00	36.42	34.29	-78.26	-1,976.99	260.14	1,066.86	999.35	67.51	15.803		
7,900.00	5,823.00	7,600.81	5,606.00	37.62	35.54	-78.28	-2,076.97	260.15	1,068.81	998.83	69.98	15.273		
8,000.00	5,823.00	7,700.79	5,606.00	38.84	36.81	-78.31	-2,176.95	260.16	1,070.76	998.27	72.48	14.773		
8,100.00	5,823.00	7,800.77	5,606.00	40.08	38.10	-78.33	-2,276.93	260.17	1,072.71	997.69	75.01	14.300		
8,200.00	5,823.00	7,900.75	5,606.00	41.33	39.40	-78.35	-2,376.91	260.17	1,074.65	997.08	77.57	13.854		
8,300.00	5,823.00	8,000.73	5,606.00	42.60	40.71	-78.37	-2,476.89	260.18	1,076.60	996.45	80.15	13.432		
8,400.00	5,823.00	8,100.71	5,606.00	43.88	42.03	-78.39	-2,576.87	260.19	1,078.55	995.80	82.75	13.034		
8,500.00	5,823.00	8,200.69	5,606.00	45.17	43.37	-78.41	-2,676.85	260.20	1,080.50	995.13	85.37	12.656		
8,600.00	5,823.00	8,300.67	5,606.00	46.47	44.71	-78.43	-2,776.83	260.21	1,082.45	994.44	88.01	12.299		
8,700.00	5,823.00	8,400.65	5,606.00	47.78	46.05	-78.45	-2,876.81	260.22	1,084.39	993.73	90.66	11.961		
8,800.00	5,823.00	8,500.63	5,606.00	49.10	47.41	-78.48	-2,976.79	260.23	1,086.34	993.01	93.33	11.640		
8,900.00	5,823.00	8,600.61	5,606.00	50.43	48.77	-78.50	-3,076.77	260.24	1,088.29	992.28	96.01	11.335		
9,000.00	5,823.00	8,700.59	5,606.00	51.77	50.14	-78.52	-3,176.75	260.25	1,090.24	991.54	98.71	11.045		
9,100.00	5,823.00	8,800.57	5,606.00	53.11	51.52	-78.54	-3,276.73	260.26	1,092.19	990.78	101.41	10.770		
9,200.00	5,823.00	8,900.55	5,606.00	54.46	52.89	-78.56	-3,376.71	260.27	1,094.14	990.01	104.13	10.508		
9,300.00	5,823.00	9,000.53	5,606.00	55.81	54.28	-78.58	-3,476.69	260.27	1,096.09	989.24	106.85	10.258		
9,400.00	5,823.00	9,100.51	5,606.00	57.18	55.67	-78.60	-3,576.67	260.28	1,098.04	988.45	109.59	10.020		
9,500.00	5,823.00	9,200.49	5,606.00	58.54	57.06	-78.62	-3,676.65	260.29	1,099.99	987.66	112.33	9.792		
9,600.00	5,823.00	9,300.47	5,606.00	59.91	58.46	-78.64	-3,776.63	260.30	1,101.94	986.86	115.08	9.575		
9,700.00	5,823.00	9,400.45	5,606.00	61.29	59.86	-78.66	-3,876.61	260.31	1,103.89	986.05	117.84	9.368		
9,800.00	5,823.00	9,500.43	5,606.00	62.67	61.26	-78.68	-3,976.59	260.32	1,105.84	985.23	120.60	9.169		
9,900.00	5,823.00	9,600.41	5,606.00	64.05	62.67	-78.70	-4,076.57	260.33	1,107.79	984.41	123.38	8.979		
10,000.00	5,823.00	9,700.39	5,606.00	65.44	64.08	-78.72	-4,176.55	260.34	1,109.74	983.59	126.15	8.797		
10,100.00	5,823.00	9,800.37	5,606.00	66.83	65.49	-78.74	-4,276.53	260.35	1,111.69	982.75	128.94	8.622		
10,200.00	5,823.00	9,900.35	5,606.00	68.22	66.91	-78.76	-4,376.51	260.36	1,113.64	981.92	131.72	8.454		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	HZ	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor		
10,300.00	5,823.00	10,000.33	5,606.00	69.62	68.32	-78.78	-4,476.49	260.37	1,115.59	981.07	134.52	8.293		
10,400.00	5,823.00	10,100.31	5,606.00	71.02	69.74	-78.80	-4,576.48	260.37	1,117.54	980.23	137.32	8.138		
10,500.00	5,823.00	10,200.29	5,606.00	72.42	71.16	-78.82	-4,676.46	260.38	1,119.49	979.38	140.12	7.990		
10,600.00	5,823.00	10,300.27	5,606.00	73.83	72.59	-78.84	-4,776.44	260.39	1,121.45	978.52	142.93	7.846		
10,700.00	5,823.00	10,400.25	5,606.00	75.24	74.01	-78.86	-4,876.42	260.40	1,123.40	977.66	145.74	7.708		
10,800.00	5,823.00	10,500.23	5,606.00	76.65	75.44	-78.88	-4,976.40	260.41	1,125.35	976.80	148.55	7.576		
10,900.00	5,823.00	10,600.21	5,606.00	78.06	76.87	-78.90	-5,076.38	260.42	1,127.30	975.93	151.37	7.447		
11,000.00	5,823.00	10,700.19	5,606.00	79.47	78.30	-78.92	-5,176.36	260.43	1,129.25	975.06	154.19	7.324		
11,100.00	5,823.00	10,800.17	5,606.00	80.89	79.73	-78.94	-5,276.34	260.44	1,131.20	974.19	157.01	7.205		
11,200.00	5,823.00	10,900.15	5,606.00	82.31	81.17	-78.96	-5,376.32	260.45	1,133.16	973.32	159.84	7.089		
11,300.00	5,823.00	11,000.13	5,606.00	83.73	82.60	-78.98	-5,476.30	260.46	1,135.11	972.44	162.67	6.978		
11,400.00	5,823.00	11,100.12	5,606.00	85.15	84.04	-79.00	-5,576.28	260.47	1,137.06	971.56	165.50	6.870		
11,500.00	5,823.00	11,200.10	5,606.00	86.57	85.47	-79.01	-5,676.26	260.47	1,139.01	970.67	168.34	6.766		
11,600.00	5,823.00	11,300.08	5,606.00	87.99	86.91	-79.03	-5,776.24	260.48	1,140.97	969.79	171.18	6.665		
11,700.00	5,823.00	11,400.06	5,606.00	89.42	88.35	-79.05	-5,876.22	260.49	1,142.92	968.90	174.02	6.568		
11,800.00	5,823.00	11,500.04	5,606.00	90.85	89.79	-79.07	-5,976.20	260.50	1,144.87	968.01	176.86	6.473		
11,900.00	5,823.00	11,600.02	5,606.00	92.28	91.23	-79.09	-6,076.18	260.51	1,146.82	967.12	179.71	6.382		
12,000.00	5,823.00	11,700.00	5,606.00	93.70	92.68	-79.11	-6,176.16	260.52	1,148.78	966.22	182.55	6.293		
12,100.00	5,823.00	11,799.98	5,606.00	95.14	94.12	-79.13	-6,276.14	260.53	1,150.73	965.33	185.40	6.207		
12,200.00	5,823.00	11,899.96	5,606.00	96.57	95.56	-79.15	-6,376.12	260.54	1,152.68	964.43	188.25	6.123		
12,300.00	5,823.00	11,999.94	5,606.00	98.00	97.01	-79.17	-6,476.10	260.55	1,154.64	963.53	191.11	6.042		
12,400.00	5,823.00	12,099.92	5,606.00	99.43	98.45	-79.18	-6,576.08	260.56	1,156.59	962.63	193.96	5.963		
12,500.00	5,823.00	12,199.90	5,606.00	100.87	99.90	-79.20	-6,676.06	260.57	1,158.54	961.73	196.82	5.886		
12,600.00	5,823.00	12,299.88	5,606.00	102.30	101.35	-79.22	-6,776.04	260.58	1,160.50	960.82	199.68	5.812		
12,700.00	5,823.00	12,399.86	5,606.00	103.74	102.80	-79.24	-6,876.02	260.58	1,162.45	959.92	202.54	5.739		
12,800.00	5,823.00	12,499.84	5,606.00	105.18	104.24	-79.26	-6,976.00	260.59	1,164.41	959.01	205.40	5.669		
12,900.00	5,823.00	12,599.82	5,606.00	106.62	105.69	-79.28	-7,075.98	260.60	1,166.36	958.10	208.26	5.600		
13,000.00	5,823.00	12,699.80	5,606.00	108.06	107.14	-79.29	-7,175.96	260.61	1,168.31	957.19	211.12	5.534		
13,100.00	5,823.00	12,799.78	5,606.00	109.50	108.59	-79.31	-7,275.94	260.62	1,170.27	956.28	213.99	5.469		
13,200.00	5,823.00	12,899.76	5,606.00	110.94	110.04	-79.33	-7,375.92	260.63	1,172.22	955.37	216.86	5.406		
13,300.00	5,823.00	12,999.74	5,606.00	112.38	111.50	-79.35	-7,475.90	260.64	1,174.18	954.45	219.72	5.344		
13,400.00	5,823.00	13,099.72	5,606.00	113.82	112.95	-79.37	-7,575.88	260.65	1,176.13	953.54	222.59	5.284		
13,500.00	5,823.00	13,199.70	5,606.00	115.26	114.40	-79.38	-7,675.86	260.66	1,178.09	952.62	225.47	5.225		
13,600.00	5,823.00	13,299.68	5,606.00	116.71	115.85	-79.40	-7,775.84	260.67	1,180.04	951.70	228.34	5.168		
13,700.00	5,823.00	13,399.66	5,606.00	118.15	117.31	-79.42	-7,875.82	260.68	1,182.00	950.79	231.21	5.112		
13,800.00	5,823.00	13,499.64	5,606.00	119.59	118.76	-79.44	-7,975.80	260.68	1,183.95	949.87	234.08	5.058		
13,900.00	5,823.00	13,599.62	5,606.00	121.04	120.22	-79.45	-8,075.78	260.69	1,185.91	948.95	236.96	5.005		
13,986.28	5,823.00	13,682.96	5,606.00	122.29	121.43	-79.47	-8,159.12	260.70	1,187.60	948.23	239.37	4.961 SF		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	90.00	0.00	209.92	209.92					
100.00	100.00	100.00	100.00	0.13	0.13	90.00	0.00	209.92	209.92	209.66	0.27	788.159		
200.00	200.00	200.00	200.00	0.47	0.47	90.00	0.00	209.92	209.92	208.98	0.94	223.171		
300.00	300.00	300.00	300.00	0.81	0.81	90.00	0.00	209.92	209.92	208.31	1.61	129.989 CC, ES		
400.00	399.98	393.45	393.44	1.13	1.11	167.94	0.52	211.36	213.17	210.87	2.30	92.700		
500.00	499.84	486.32	486.19	1.46	1.42	167.76	2.05	215.62	222.87	219.83	3.04	73.302		
600.00	599.45	578.50	578.06	1.81	1.74	167.50	4.58	222.65	238.96	235.17	3.79	63.058		
700.00	698.70	676.32	675.44	2.16	2.07	167.30	7.72	231.38	259.70	255.29	4.41	58.838		
800.00	797.47	773.37	772.05	2.53	2.41	167.25	10.84	240.05	283.77	278.72	5.05	56.215		
900.00	895.87	869.90	868.15	2.93	2.74	167.38	13.94	248.67	309.86	304.19	5.68	54.601		
1,000.00	994.28	966.43	964.24	3.33	3.08	167.51	17.04	257.29	335.99	329.70	6.29	53.408		
1,100.00	1,092.68	1,062.95	1,060.33	3.73	3.43	167.61	20.14	265.91	362.12	355.21	6.91	52.381		
1,200.00	1,191.09	1,159.48	1,156.42	4.14	3.77	167.70	23.25	274.53	388.25	380.70	7.55	51.449		
1,300.00	1,289.49	1,256.00	1,252.51	4.56	4.11	167.78	26.35	283.15	414.38	406.19	8.18	50.637		
1,400.00	1,387.89	1,352.53	1,348.59	4.97	4.46	167.85	29.45	291.77	440.51	431.68	8.82	49.920		
1,500.00	1,486.30	1,449.05	1,444.68	5.39	4.80	167.92	32.55	300.39	466.64	457.17	9.47	49.282		
1,600.00	1,584.70	1,545.57	1,540.77	5.81	5.15	167.97	35.65	309.01	492.77	482.65	10.12	48.713		
1,700.00	1,683.11	1,642.10	1,636.86	6.22	5.50	168.02	38.75	317.63	518.90	508.13	10.76	48.203		
1,800.00	1,781.51	1,738.62	1,732.95	6.64	5.84	168.07	41.86	326.25	545.03	533.62	11.42	47.743		
1,900.00	1,879.91	1,835.15	1,829.04	7.06	6.19	168.11	44.96	334.87	571.16	559.09	12.07	47.327		
2,000.00	1,978.32	1,931.67	1,925.13	7.48	6.53	168.15	48.06	343.49	597.30	584.57	12.72	46.949		
2,100.00	2,076.72	2,028.20	2,021.22	7.90	6.88	168.18	51.16	352.11	623.43	610.05	13.38	46.604		
2,200.00	2,175.13	2,124.72	2,117.30	8.33	7.23	168.21	54.26	360.73	649.56	635.53	14.03	46.288		
2,300.00	2,273.53	2,221.25	2,213.39	8.75	7.57	168.24	57.36	369.35	675.69	661.00	14.69	45.998		
2,400.00	2,371.94	2,317.77	2,309.48	9.17	7.92	168.27	60.46	377.97	701.83	686.48	15.35	45.730		
2,500.00	2,470.34	2,414.29	2,405.57	9.59	8.27	168.29	63.57	386.59	727.96	711.95	16.00	45.483		
2,600.00	2,568.74	2,510.82	2,501.66	10.01	8.61	168.32	66.67	395.21	754.09	737.43	16.66	45.254		
2,700.00	2,667.15	2,607.34	2,597.75	10.44	8.96	168.34	69.77	403.82	780.23	762.90	17.32	45.041		
2,800.00	2,765.55	2,703.87	2,693.84	10.86	9.31	168.36	72.87	412.44	806.36	788.38	17.98	44.843		
2,900.00	2,863.96	2,800.39	2,789.93	11.28	9.65	168.38	75.97	421.06	832.49	813.85	18.64	44.658		
3,000.00	2,962.36	2,896.92	2,886.01	11.70	10.00	168.40	79.07	429.68	858.63	839.33	19.30	44.484		
3,100.00	3,060.76	2,993.44	2,982.10	12.13	10.35	168.41	82.18	438.30	884.76	864.80	19.96	44.322		
3,200.00	3,159.17	3,089.97	3,078.19	12.55	10.69	168.43	85.28	446.92	910.89	890.27	20.62	44.169		
3,300.00	3,257.57	3,186.49	3,174.28	12.97	11.04	168.45	88.38	455.54	937.03	915.74	21.28	44.025		
3,400.00	3,355.98	3,283.01	3,270.37	13.40	11.39	168.46	91.48	464.16	963.16	941.22	21.95	43.890		
3,500.00	3,454.38	3,379.54	3,366.46	13.82	11.74	168.47	94.58	472.78	989.30	966.69	22.61	43.761		
3,600.00	3,552.78	3,476.06	3,462.55	14.24	12.08	168.49	97.68	481.40	1,015.43	992.16	23.27	43.640		
3,700.00	3,651.19	3,572.59	3,558.64	14.67	12.43	168.50	100.78	490.02	1,041.56	1,017.63	23.93	43.525		
3,800.00	3,749.59	3,669.11	3,654.72	15.09	12.78	168.51	103.89	498.64	1,067.70	1,043.11	24.59	43.416		
3,900.00	3,848.00	3,765.64	3,750.81	15.51	13.12	168.52	106.99	507.26	1,093.83	1,068.58	25.25	43.313		
4,000.00	3,946.40	3,862.16	3,846.90	15.94	13.47	168.53	110.09	515.88	1,119.97	1,094.05	25.92	43.214		
4,100.00	4,044.80	3,958.69	3,942.99	16.36	13.82	168.54	113.19	524.50	1,146.10	1,119.52	26.58	43.120		
4,200.00	4,143.21	4,055.21	4,039.08	16.78	14.17	168.55	116.29	533.12	1,172.24	1,144.99	27.24	43.030		
4,300.00	4,241.61	4,151.73	4,135.17	17.21	14.51	168.56	119.39	541.74	1,198.37	1,170.46	27.90	42.945		
4,400.00	4,340.02	4,248.26	4,231.26	17.63	14.86	168.57	122.50	550.36	1,224.50	1,195.94	28.57	42.863		
4,500.00	4,438.42	4,344.78	4,327.35	18.05	15.21	168.58	125.60	558.98	1,250.64	1,221.41	29.23	42.785		
4,600.00	4,536.87	4,441.37	4,423.50	18.45	15.55	168.62	128.70	567.61	1,276.54	1,246.66	29.88	42.721		
4,700.00	4,635.76	4,538.63	4,520.31	18.74	15.90	168.70	131.83	576.29	1,299.77	1,269.30	30.47	42.651		
4,800.00	4,735.12	4,631.95	4,613.17	19.02	16.35	168.74	135.78	587.28	1,318.13	1,286.82	31.31	42.101		
4,900.00	4,834.80	4,733.64	4,714.80	19.28	16.77	168.83	137.00	590.68	1,327.75	1,295.66	32.09	41.370		
5,000.00	4,934.70	4,833.54	4,814.70	19.52	17.06	168.88	137.00	590.68	1,332.03	1,299.37	32.66	40.785		
5,100.00	5,034.69	5,052.84	5,034.00	19.75	17.36	90.90	136.73	590.68	1,333.00	1,299.76	33.24	40.103		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	HZ	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor		
5,200.00	5,134.69	5,147.27	5,127.58	20.02	17.60	91.40	125.13	590.68	1,333.25	1,299.48	33.78	39.474		
5,300.00	5,234.69	5,234.86	5,211.22	20.29	17.83	92.50	99.45	590.69	1,334.32	1,300.06	34.25	38.954		
5,400.00	5,334.67	5,312.52	5,280.86	20.56	18.03	-87.07	65.25	590.69	1,337.08	1,302.42	34.66	38.575		
5,500.00	5,433.27	5,385.06	5,340.66	20.79	18.21	-85.26	24.28	590.69	1,341.47	1,306.49	34.98	38.352		
5,600.00	5,527.04	5,450.00	5,388.90	21.01	18.37	-83.62	-19.13	590.70	1,346.88	1,311.67	35.21	38.249		
5,700.00	5,612.56	5,523.11	5,436.28	21.22	18.54	-81.99	-74.73	590.70	1,352.72	1,317.25	35.47	38.139		
5,800.00	5,686.66	5,589.82	5,472.34	21.42	18.72	-80.64	-130.80	590.71	1,358.52	1,322.81	35.71	38.045		
5,900.00	5,746.64	5,650.00	5,498.49	21.62	18.89	-79.57	-184.97	590.71	1,363.82	1,327.85	35.97	37.916		
6,000.00	5,790.28	5,720.60	5,520.96	21.83	19.12	-78.71	-251.84	590.72	1,368.21	1,331.82	36.39	37.598		
6,100.00	5,815.98	5,785.29	5,533.45	22.08	19.35	-78.19	-315.27	590.73	1,371.44	1,334.54	36.90	37.169		
6,200.00	5,823.00	5,854.22	5,538.00	22.39	19.64	-78.02	-384.00	590.73	1,373.39	1,335.84	37.55	36.571		
6,300.00	5,823.00	5,947.47	5,538.00	22.79	20.09	-78.04	-477.25	590.74	1,375.32	1,336.81	38.51	35.711		
6,400.00	5,823.00	6,047.45	5,538.00	23.27	20.66	-78.06	-577.23	590.75	1,377.27	1,337.58	39.68	34.706		
6,500.00	5,823.00	6,147.43	5,538.00	23.84	21.33	-78.07	-677.21	590.76	1,379.21	1,338.19	41.03	33.618		
6,600.00	5,823.00	6,247.41	5,538.00	24.49	22.07	-78.09	-777.19	590.77	1,381.16	1,338.64	42.52	32.480		
6,700.00	5,823.00	6,347.39	5,538.00	25.22	22.88	-78.11	-877.17	590.78	1,383.11	1,338.95	44.16	31.322		
6,800.00	5,823.00	6,447.37	5,538.00	26.01	23.76	-78.12	-977.15	590.79	1,385.05	1,339.14	45.92	30.165		
6,900.00	5,823.00	6,547.35	5,538.00	26.86	24.70	-78.14	-1,077.13	590.80	1,387.00	1,339.22	47.78	29.026		
7,000.00	5,823.00	6,647.34	5,538.00	27.77	25.68	-78.16	-1,177.11	590.81	1,388.95	1,339.20	49.75	27.918		
7,100.00	5,823.00	6,747.32	5,538.00	28.73	26.71	-78.17	-1,277.09	590.82	1,390.90	1,339.09	51.80	26.849		
7,200.00	5,823.00	6,847.30	5,538.00	29.73	27.78	-78.19	-1,377.07	590.83	1,392.84	1,338.91	53.93	25.825		
7,300.00	5,823.00	6,947.28	5,538.00	30.76	28.89	-78.21	-1,477.05	590.84	1,394.79	1,338.66	56.13	24.849		
7,400.00	5,823.00	7,047.26	5,538.00	31.84	30.03	-78.22	-1,577.03	590.85	1,396.74	1,338.35	58.39	23.921		
7,500.00	5,823.00	7,147.24	5,538.00	32.94	31.20	-78.24	-1,677.01	590.86	1,398.69	1,337.98	60.70	23.042		
7,600.00	5,823.00	7,247.22	5,538.00	34.08	32.39	-78.26	-1,776.99	590.87	1,400.63	1,337.57	63.06	22.211		
7,700.00	5,823.00	7,347.20	5,538.00	35.24	33.60	-78.27	-1,876.97	590.88	1,402.58	1,337.12	65.46	21.425		
7,800.00	5,823.00	7,447.18	5,538.00	36.42	34.83	-78.29	-1,976.95	590.89	1,404.53	1,336.62	67.91	20.684		
7,900.00	5,823.00	7,547.16	5,538.00	37.62	36.09	-78.31	-2,076.93	590.90	1,406.48	1,336.10	70.38	19.984		
8,000.00	5,823.00	7,647.14	5,538.00	38.84	37.35	-78.32	-2,176.91	590.91	1,408.43	1,335.54	72.89	19.323		
8,100.00	5,823.00	7,747.12	5,538.00	40.08	38.64	-78.34	-2,276.89	590.92	1,410.37	1,334.95	75.42	18.700		
8,200.00	5,823.00	7,847.10	5,538.00	41.33	39.93	-78.36	-2,376.87	590.93	1,412.32	1,334.34	77.98	18.111		
8,300.00	5,823.00	7,947.08	5,538.00	42.60	41.24	-78.37	-2,476.85	590.93	1,414.27	1,333.71	80.56	17.555		
8,400.00	5,823.00	8,047.06	5,538.00	43.88	42.56	-78.39	-2,576.83	590.94	1,416.22	1,333.06	83.16	17.029		
8,500.00	5,823.00	8,147.04	5,538.00	45.17	43.88	-78.40	-2,676.81	590.95	1,418.17	1,332.38	85.78	16.532		
8,600.00	5,823.00	8,247.02	5,538.00	46.47	45.22	-78.42	-2,776.79	590.96	1,420.12	1,331.69	88.42	16.060		
8,700.00	5,823.00	8,347.00	5,538.00	47.78	46.56	-78.44	-2,876.77	590.97	1,422.07	1,330.99	91.08	15.614		
8,800.00	5,823.00	8,446.98	5,538.00	49.10	47.92	-78.45	-2,976.75	590.98	1,424.01	1,330.27	93.75	15.190		
8,900.00	5,823.00	8,546.96	5,538.00	50.43	49.28	-78.47	-3,076.73	590.99	1,425.96	1,329.54	96.43	14.788		
9,000.00	5,823.00	8,646.94	5,538.00	51.77	50.64	-78.48	-3,176.71	591.00	1,427.91	1,328.79	99.12	14.406		
9,100.00	5,823.00	8,746.92	5,538.00	53.11	52.01	-78.50	-3,276.70	591.01	1,429.86	1,328.04	101.83	14.042		
9,200.00	5,823.00	8,846.90	5,538.00	54.46	53.39	-78.52	-3,376.68	591.02	1,431.81	1,327.27	104.54	13.696		
9,300.00	5,823.00	8,946.88	5,538.00	55.81	54.77	-78.53	-3,476.66	591.03	1,433.76	1,326.50	107.27	13.366		
9,400.00	5,823.00	9,046.86	5,538.00	57.18	56.16	-78.55	-3,576.64	591.04	1,435.71	1,325.71	110.00	13.052		
9,500.00	5,823.00	9,146.84	5,538.00	58.54	57.55	-78.56	-3,676.62	591.05	1,437.66	1,324.92	112.74	12.752		
9,600.00	5,823.00	9,246.82	5,538.00	59.91	58.94	-78.58	-3,776.60	591.06	1,439.61	1,324.12	115.49	12.465		
9,700.00	5,823.00	9,346.80	5,538.00	61.29	60.34	-78.60	-3,876.58	591.07	1,441.56	1,323.31	118.25	12.191		
9,800.00	5,823.00	9,446.78	5,538.00	62.67	61.74	-78.61	-3,976.56	591.08	1,443.51	1,322.50	121.01	11.929		
9,900.00	5,823.00	9,546.76	5,538.00	64.05	63.14	-78.63	-4,076.54	591.09	1,445.46	1,321.68	123.78	11.677		
10,000.00	5,823.00	9,646.74	5,538.00	65.44	64.55	-78.64	-4,176.52	591.10	1,447.41	1,320.86	126.56	11.437		
10,100.00	5,823.00	9,746.72	5,538.00	66.83	65.96	-78.66	-4,276.50	591.11	1,449.36	1,320.02	129.34	11.206		
10,200.00	5,823.00	9,846.70	5,538.00	68.22	67.38	-78.67	-4,376.48	591.12	1,451.31	1,319.19	132.13	10.984		
10,300.00	5,823.00	9,946.68	5,538.00	69.62	68.79	-78.69	-4,476.46	591.13	1,453.26	1,318.35	134.92	10.772		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor		
10,400.00	5,823.00	10,046.66	5,538.00	71.02	70.21	-78.70	-4,576.44	591.14	1,455.22	1,317.50	137.71	10.567		
10,500.00	5,823.00	10,146.64	5,538.00	72.42	71.63	-78.72	-4,676.42	591.15	1,457.17	1,316.65	140.51	10.370		
10,600.00	5,823.00	10,246.62	5,538.00	73.83	73.05	-78.73	-4,776.40	591.16	1,459.12	1,315.80	143.32	10.181		
10,700.00	5,823.00	10,346.60	5,538.00	75.24	74.47	-78.75	-4,876.38	591.17	1,461.07	1,314.94	146.13	9.999		
10,800.00	5,823.00	10,446.58	5,538.00	76.65	75.90	-78.76	-4,976.36	591.18	1,463.02	1,314.08	148.94	9.823		
10,900.00	5,823.00	10,546.56	5,538.00	78.06	77.33	-78.78	-5,076.34	591.18	1,464.97	1,313.22	151.75	9.654		
11,000.00	5,823.00	10,646.54	5,538.00	79.47	78.76	-78.79	-5,176.32	591.19	1,466.92	1,312.35	154.57	9.490		
11,100.00	5,823.00	10,746.52	5,538.00	80.89	80.19	-78.81	-5,276.30	591.20	1,468.87	1,311.48	157.39	9.333		
11,200.00	5,823.00	10,846.50	5,538.00	82.31	81.62	-78.82	-5,376.28	591.21	1,470.83	1,310.61	160.22	9.180		
11,300.00	5,823.00	10,946.48	5,538.00	83.73	83.05	-78.84	-5,476.26	591.22	1,472.78	1,309.73	163.04	9.033		
11,400.00	5,823.00	11,046.46	5,538.00	85.15	84.49	-78.85	-5,576.24	591.23	1,474.73	1,308.86	165.87	8.891		
11,500.00	5,823.00	11,146.44	5,538.00	86.57	85.92	-78.87	-5,676.22	591.24	1,476.68	1,307.97	168.71	8.753		
11,600.00	5,823.00	11,246.42	5,538.00	87.99	87.36	-78.88	-5,776.20	591.25	1,478.63	1,307.09	171.54	8.620		
11,700.00	5,823.00	11,346.41	5,538.00	89.42	88.80	-78.90	-5,876.18	591.26	1,480.59	1,306.21	174.38	8.491		
11,800.00	5,823.00	11,446.39	5,538.00	90.85	90.24	-78.91	-5,976.16	591.27	1,482.54	1,305.32	177.22	8.366		
11,900.00	5,823.00	11,546.37	5,538.00	92.28	91.68	-78.93	-6,076.14	591.28	1,484.49	1,304.43	180.06	8.244		
12,000.00	5,823.00	11,646.35	5,538.00	93.70	93.12	-78.94	-6,176.12	591.29	1,486.44	1,303.54	182.91	8.127		
12,100.00	5,823.00	11,746.33	5,538.00	95.14	94.56	-78.96	-6,276.10	591.30	1,488.40	1,302.64	185.75	8.013		
12,200.00	5,823.00	11,846.31	5,538.00	96.57	96.00	-78.97	-6,376.08	591.31	1,490.35	1,301.75	188.60	7.902		
12,300.00	5,823.00	11,946.29	5,538.00	98.00	97.45	-78.99	-6,476.06	591.32	1,492.30	1,300.85	191.45	7.795		
12,400.00	5,823.00	12,046.27	5,538.00	99.43	98.89	-79.00	-6,576.04	591.33	1,494.25	1,299.95	194.30	7.690		
12,500.00	5,823.00	12,146.25	5,538.00	100.87	100.34	-79.02	-6,676.02	591.34	1,496.21	1,299.05	197.15	7.589		
12,600.00	5,823.00	12,246.23	5,538.00	102.30	101.78	-79.03	-6,776.00	591.35	1,498.16	1,298.15	200.01	7.490		
12,700.00	5,823.00	12,346.21	5,538.00	103.74	103.23	-79.05	-6,875.98	591.36	1,500.11	1,297.25	202.86	7.395		
12,800.00	5,823.00	12,446.19	5,538.00	105.18	104.68	-79.06	-6,975.96	591.37	1,502.07	1,296.34	205.72	7.301		
12,900.00	5,823.00	12,546.17	5,538.00	106.62	106.13	-79.07	-7,075.94	591.38	1,504.02	1,295.44	208.58	7.211		
13,000.00	5,823.00	12,646.15	5,538.00	108.06	107.58	-79.09	-7,175.92	591.39	1,505.97	1,294.53	211.44	7.122		
13,100.00	5,823.00	12,746.13	5,538.00	109.50	109.02	-79.10	-7,275.90	591.40	1,507.93	1,293.62	214.30	7.036		
13,200.00	5,823.00	12,846.11	5,538.00	110.94	110.48	-79.12	-7,375.88	591.41	1,509.88	1,292.71	217.17	6.953		
13,300.00	5,823.00	12,946.09	5,538.00	112.38	111.93	-79.13	-7,475.86	591.42	1,511.83	1,291.80	220.03	6.871		
13,400.00	5,823.00	13,046.07	5,538.00	113.82	113.38	-79.15	-7,575.84	591.43	1,513.79	1,290.89	222.90	6.791		
13,500.00	5,823.00	13,146.05	5,538.00	115.26	114.83	-79.16	-7,675.82	591.44	1,515.74	1,289.98	225.76	6.714		
13,600.00	5,823.00	13,246.03	5,538.00	116.71	116.28	-79.17	-7,775.80	591.44	1,517.70	1,289.06	228.63	6.638		
13,700.00	5,823.00	13,346.01	5,538.00	118.15	117.73	-79.19	-7,875.78	591.45	1,519.65	1,288.15	231.50	6.564		
13,800.00	5,823.00	13,445.99	5,538.00	119.59	119.19	-79.20	-7,975.76	591.46	1,521.60	1,287.23	234.37	6.492		
13,900.00	5,823.00	13,545.97	5,538.00	121.04	120.64	-79.22	-8,075.75	591.47	1,523.56	1,286.32	237.24	6.422		
13,986.28	5,823.00	13,629.31	5,538.00	122.29	121.85	-79.23	-8,159.09	591.48	1,525.25	1,285.58	239.66	6.364 SF		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	HZ	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	90.00	0.00	269.90	269.90					
100.00	100.00	100.00	100.00	0.13	0.13	90.00	0.00	269.90	269.90	269.64	0.27	1,013.347		
200.00	200.00	200.00	200.00	0.47	0.47	90.00	0.00	269.90	269.90	268.96	0.94	286.934		
300.00	300.00	300.00	300.00	0.81	0.81	90.00	0.00	269.90	269.90	268.29	1.61	167.128 CC, ES		
400.00	399.98	391.47	391.46	1.13	1.10	167.99	0.31	271.33	273.17	270.88	2.29	119.125		
500.00	499.84	482.37	482.25	1.46	1.41	167.96	1.24	275.57	282.95	279.92	3.03	93.405		
600.00	599.45	572.14	571.73	1.81	1.71	167.92	2.75	282.52	299.16	295.38	3.78	79.056		
700.00	698.70	660.24	659.29	2.16	2.02	167.85	4.81	292.01	321.70	317.17	4.53	70.957		
800.00	797.47	747.55	745.74	2.53	2.33	167.77	7.42	303.97	350.38	345.13	5.25	66.798		
900.00	895.87	842.38	839.48	2.93	2.68	167.84	10.47	317.97	382.11	376.29	5.82	65.611		
1,000.00	994.28	937.21	933.21	3.33	3.04	167.90	13.52	331.98	413.87	407.48	6.39	64.721		
1,100.00	1,092.68	1,032.03	1,026.94	3.73	3.40	167.96	16.57	345.98	445.63	438.65	6.98	63.808		
1,200.00	1,191.09	1,126.85	1,120.68	4.14	3.77	168.01	19.62	359.99	477.39	469.82	7.58	63.008		
1,300.00	1,289.49	1,221.67	1,214.41	4.56	4.14	168.05	22.67	373.99	509.16	500.97	8.18	62.207		
1,400.00	1,387.89	1,316.49	1,308.14	4.97	4.51	168.09	25.72	388.00	540.92	532.12	8.80	61.470		
1,500.00	1,486.30	1,411.31	1,401.87	5.39	4.88	168.13	28.77	402.00	572.68	563.26	9.42	60.791		
1,600.00	1,584.70	1,506.13	1,495.60	5.81	5.25	168.16	31.82	416.01	604.44	594.39	10.05	60.167		
1,700.00	1,683.11	1,600.96	1,589.34	6.22	5.62	168.19	34.87	430.01	636.20	625.52	10.68	59.594		
1,800.00	1,781.51	1,695.78	1,683.07	6.64	6.00	168.21	37.92	444.02	667.96	656.65	11.31	59.068		
1,900.00	1,879.91	1,790.60	1,776.80	7.06	6.37	168.23	40.97	458.02	699.72	687.78	11.94	58.584		
2,000.00	1,978.32	1,885.42	1,870.53	7.48	6.74	168.25	44.01	472.03	731.49	718.90	12.58	58.138		
2,100.00	2,076.72	1,980.24	1,964.26	7.90	7.12	168.27	47.06	486.03	763.25	750.03	13.22	57.726		
2,200.00	2,175.13	2,075.06	2,058.00	8.33	7.49	168.29	50.11	500.04	795.01	781.15	13.86	57.345		
2,300.00	2,273.53	2,169.89	2,151.73	8.75	7.87	168.31	53.16	514.04	826.77	812.27	14.51	56.992		
2,400.00	2,371.94	2,264.71	2,245.46	9.17	8.24	168.32	56.21	528.05	858.53	843.38	15.15	56.664		
2,500.00	2,470.34	2,359.53	2,339.19	9.59	8.62	168.34	59.26	542.05	890.30	874.50	15.80	56.359		
2,600.00	2,568.74	2,454.35	2,432.92	10.01	8.99	168.35	62.31	556.06	922.06	905.62	16.44	56.074		
2,700.00	2,667.15	2,549.17	2,526.66	10.44	9.37	168.36	65.36	570.06	953.82	936.73	17.09	55.807		
2,800.00	2,765.55	2,643.99	2,620.39	10.86	9.74	168.37	68.41	584.07	985.58	967.84	17.74	55.558		
2,900.00	2,863.96	2,738.81	2,714.12	11.28	10.12	168.38	71.46	598.07	1,017.35	998.96	18.39	55.324		
3,000.00	2,962.36	2,833.64	2,807.85	11.70	10.49	168.39	74.51	612.08	1,049.11	1,030.07	19.04	55.104		
3,100.00	3,060.76	2,928.46	2,901.58	12.13	10.87	168.40	77.56	626.08	1,080.87	1,061.18	19.69	54.897		
3,200.00	3,159.17	3,023.28	2,995.31	12.55	11.25	168.41	80.61	640.09	1,112.63	1,092.29	20.34	54.702		
3,300.00	3,257.57	3,118.10	3,089.05	12.97	11.62	168.42	83.66	654.09	1,144.40	1,123.40	20.99	54.518		
3,400.00	3,355.98	3,212.92	3,182.78	13.40	12.00	168.43	86.71	668.10	1,176.16	1,154.52	21.64	54.343		
3,500.00	3,454.38	3,307.74	3,276.51	13.82	12.37	168.44	89.76	682.11	1,207.92	1,185.63	22.30	54.178		
3,600.00	3,552.78	3,402.56	3,370.24	14.24	12.75	168.44	92.81	696.11	1,239.68	1,216.74	22.95	54.022		
3,700.00	3,651.19	3,497.39	3,463.97	14.67	13.13	168.45	95.86	710.12	1,271.45	1,247.84	23.60	53.873		
3,800.00	3,749.59	3,592.21	3,557.71	15.09	13.50	168.46	98.91	724.12	1,303.21	1,278.95	24.25	53.731		
3,900.00	3,848.00	3,687.03	3,651.44	15.51	13.88	168.46	101.96	738.13	1,334.97	1,310.06	24.91	53.596		
4,000.00	3,946.40	3,781.85	3,745.17	15.94	14.25	168.47	105.01	752.13	1,366.73	1,341.17	25.56	53.468		
4,100.00	4,044.80	3,876.67	3,838.90	16.36	14.63	168.47	108.06	766.14	1,398.50	1,372.28	26.22	53.345		
4,200.00	4,143.21	3,971.49	3,932.63	16.78	15.01	168.48	111.11	780.14	1,430.26	1,403.39	26.87	53.227		
4,300.00	4,241.61	4,066.32	4,026.37	17.21	15.38	168.48	114.16	794.15	1,462.02	1,434.50	27.53	53.115		
4,400.00	4,340.02	4,161.14	4,120.10	17.63	15.76	168.49	117.21	808.15	1,493.78	1,465.60	28.18	53.008		
4,500.00	4,438.42	4,255.96	4,213.83	18.05	16.14	168.49	120.26	822.16	1,525.55	1,496.71	28.84	52.905 SF		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	90.02	-0.01	29.99	29.99					
100.00	100.00	100.00	100.00	0.13	0.13	90.02	-0.01	29.99	29.99	29.72	0.27	112.594		
200.00	200.00	200.00	200.00	0.47	0.47	90.02	-0.01	29.99	29.99	29.05	0.94	31.882		
300.00	300.00	300.00	300.00	0.81	0.81	90.02	-0.01	29.99	29.99	28.37	1.61	18.570		
400.00	399.98	401.03	401.01	1.13	1.14	167.89	0.42	28.26	29.99	27.66	2.32	12.904		
500.00	499.84	502.05	501.88	1.46	1.47	167.53	1.71	23.08	29.97	26.90	3.08	9.742		
600.00	599.45	603.07	602.51	1.81	1.82	166.93	3.86	14.45	29.96	26.10	3.85	7.772		
686.70	685.53	690.65	689.44	2.11	2.13	166.21	6.41	4.18	29.95	25.41	4.53	6.605 CC		
700.00	698.70	703.95	702.62	2.16	2.18	166.10	6.85	2.43	29.98	25.36	4.61	6.498 ES		
800.00	797.47	803.92	801.66	2.53	2.54	166.18	10.12	-10.74	32.12	26.89	5.23	6.141		
900.00	895.87	903.83	900.65	2.93	2.91	167.06	13.40	-23.91	36.36	30.49	5.87	6.198		
1,000.00	994.28	1,003.74	999.63	3.33	3.29	167.77	16.67	-37.07	40.64	34.13	6.51	6.242		
1,100.00	1,092.68	1,103.65	1,098.61	3.73	3.67	168.35	19.94	-50.24	44.92	37.76	7.16	6.273		
1,200.00	1,191.09	1,203.55	1,197.59	4.14	4.05	168.82	23.22	-63.40	49.20	41.38	7.82	6.294		
1,300.00	1,289.49	1,303.46	1,296.57	4.56	4.43	169.22	26.49	-76.57	53.49	45.01	8.48	6.308		
1,400.00	1,387.89	1,403.37	1,395.56	4.97	4.82	169.56	29.77	-89.73	57.77	48.63	9.14	6.318		
1,500.00	1,486.30	1,503.28	1,494.54	5.39	5.20	169.85	33.04	-102.90	62.06	52.25	9.81	6.325		
1,600.00	1,584.70	1,603.18	1,593.52	5.81	5.59	170.11	36.31	-116.06	66.35	55.87	10.48	6.330		
1,700.00	1,683.11	1,703.09	1,692.50	6.22	5.97	170.33	39.59	-129.23	70.65	59.49	11.16	6.333		
1,800.00	1,781.51	1,803.00	1,791.49	6.64	6.36	170.53	42.86	-142.39	74.94	63.11	11.83	6.335		
1,900.00	1,879.91	1,902.90	1,890.47	7.06	6.74	170.70	46.14	-155.56	79.24	66.73	12.51	6.336		
2,000.00	1,978.32	2,002.81	1,989.45	7.48	7.13	170.86	49.41	-168.72	83.53	70.35	13.18	6.336		
2,100.00	2,076.72	2,102.72	2,088.43	7.90	7.52	171.01	52.69	-181.89	87.83	73.96	13.86	6.336		
2,200.00	2,175.13	2,202.63	2,187.41	8.33	7.90	171.14	55.96	-195.05	92.12	77.58	14.54	6.336		
2,300.00	2,273.53	2,302.53	2,286.40	8.75	8.29	171.25	59.23	-208.22	96.42	81.20	15.22	6.335		
2,400.00	2,371.94	2,402.44	2,385.38	9.17	8.68	171.36	62.51	-221.38	100.72	84.82	15.90	6.335		
2,500.00	2,470.34	2,502.35	2,484.36	9.59	9.06	171.46	65.78	-234.55	105.01	88.43	16.58	6.334		
2,600.00	2,568.74	2,602.26	2,583.34	10.01	9.45	171.55	69.06	-247.71	109.31	92.05	17.26	6.333		
2,700.00	2,667.15	2,702.16	2,682.33	10.44	9.84	171.64	72.33	-260.88	113.61	95.66	17.94	6.331		
2,800.00	2,765.55	2,802.07	2,781.31	10.86	10.23	171.71	75.60	-274.04	117.91	99.28	18.63	6.330		
2,900.00	2,863.96	2,901.98	2,880.29	11.28	10.61	171.79	78.88	-287.21	122.20	102.90	19.31	6.329		
3,000.00	2,962.36	3,001.89	2,979.27	11.70	11.00	171.86	82.15	-300.37	126.50	106.51	19.99	6.328		
3,100.00	3,060.76	3,101.79	3,078.25	12.13	11.39	171.92	85.43	-313.54	130.80	110.13	20.67	6.327		
3,200.00	3,159.17	3,201.70	3,177.24	12.55	11.78	171.98	88.70	-326.70	135.10	113.74	21.36	6.325		
3,300.00	3,257.57	3,301.61	3,276.22	12.97	12.17	172.03	91.97	-339.87	139.40	117.36	22.04	6.324		
3,400.00	3,355.98	3,401.52	3,375.20	13.40	12.55	172.09	95.25	-353.03	143.70	120.97	22.73	6.323		
3,500.00	3,454.38	3,501.42	3,474.18	13.82	12.94	172.14	98.52	-366.20	148.00	124.59	23.41	6.322		
3,600.00	3,552.78	3,601.33	3,573.16	14.24	13.33	172.18	101.80	-379.36	152.29	128.20	24.09	6.321		
3,700.00	3,651.19	3,701.24	3,672.15	14.67	13.72	172.23	105.07	-392.53	156.59	131.82	24.78	6.320		
3,800.00	3,749.59	3,801.15	3,771.13	15.09	14.11	172.27	108.34	-405.69	160.89	135.43	25.46	6.319		
3,900.00	3,848.00	3,901.05	3,870.11	15.51	14.50	172.31	111.62	-418.86	165.19	139.04	26.15	6.318		
4,000.00	3,946.40	4,000.96	3,969.09	15.94	14.88	172.34	114.89	-432.02	169.49	142.66	26.83	6.316		
4,100.00	4,044.80	4,100.87	4,068.08	16.36	15.27	172.38	118.17	-445.19	173.79	146.27	27.52	6.315		
4,200.00	4,143.21	4,200.78	4,167.06	16.78	15.66	172.41	121.44	-458.35	178.09	149.89	28.20	6.314		
4,300.00	4,241.61	4,300.68	4,266.04	17.21	16.05	172.45	124.71	-471.52	182.39	153.50	28.89	6.313		
4,400.00	4,340.02	4,400.59	4,365.02	17.63	16.44	172.48	127.99	-484.68	186.69	157.12	29.57	6.313		
4,500.00	4,438.42	4,500.50	4,464.00	18.05	16.82	172.51	131.26	-497.85	190.99	160.73	30.26	6.312		
4,600.00	4,536.87	4,600.42	4,563.00	18.45	17.21	172.53	134.54	-511.02	195.05	164.12	30.93	6.306		
4,700.00	4,635.76	4,698.03	4,659.74	18.74	17.57	172.46	137.68	-523.67	196.55	165.03	31.52	6.296		
4,800.00	4,735.12	4,791.68	4,752.84	19.02	17.83	172.38	140.11	-533.43	197.18	165.18	32.00	6.162		
4,900.00	4,834.80	4,885.32	4,846.21	19.28	18.07	172.33	141.80	-540.24	197.57	165.13	32.45	6.089		
5,000.00	4,934.70	4,978.95	4,939.75	19.52	18.30	172.29	142.76	-544.08	197.73	164.88	32.85	6.018		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor		
5,100.00	5,034.69	5,073.90	5,034.69	19.75	18.54	94.28	142.99	-545.01	197.69	164.40	33.29	5.939		
5,200.00	5,134.69	5,173.90	5,134.69	20.02	18.82	94.28	142.99	-545.01	197.69	163.80	33.89	5.833		
5,208.12	5,142.81	5,182.02	5,142.81	20.04	18.84	94.28	142.99	-545.01	197.69	163.75	33.94	5.825		
5,300.00	5,234.69	5,273.35	5,234.14	20.29	19.10	94.39	142.60	-545.01	197.72	163.24	34.48	5.735		
5,400.00	5,334.67	5,369.01	5,328.85	20.56	19.34	-83.37	130.17	-545.06	198.97	164.07	34.90	5.702		
5,500.00	5,433.27	5,461.76	5,417.03	20.79	19.56	-79.08	101.80	-545.18	201.81	166.69	35.12	5.746		
5,600.00	5,527.04	5,550.00	5,495.00	21.01	19.77	-75.40	60.72	-545.34	205.60	170.59	35.01	5.873		
5,700.00	5,612.56	5,641.21	5,567.12	21.22	19.97	-72.18	5.07	-545.57	209.81	174.91	34.90	6.012		
5,800.00	5,686.66	5,728.68	5,626.17	21.42	20.15	-69.73	-59.32	-545.83	214.00	179.49	34.51	6.202		
5,900.00	5,746.64	5,815.13	5,673.14	21.62	20.34	-67.97	-131.78	-546.12	217.73	183.65	34.08	6.388		
6,000.00	5,790.28	5,900.00	5,707.00	21.83	20.55	-66.92	-209.50	-546.43	220.70	186.94	33.75	6.539		
6,100.00	5,815.98	5,986.35	5,728.04	22.08	20.80	-66.55	-293.14	-546.77	222.68	188.86	33.82	6.584		
6,200.00	5,823.00	6,071.81	5,735.00	22.39	21.10	-66.83	-378.23	-547.11	223.68	189.44	34.24	6.533		
6,300.00	5,823.00	6,171.80	5,735.00	22.79	21.53	-66.99	-478.21	-547.51	225.13	189.91	35.22	6.393		
6,400.00	5,823.00	6,271.79	5,735.00	23.27	22.05	-67.14	-578.20	-547.92	226.58	190.21	36.37	6.230		
6,500.00	5,823.00	6,371.78	5,735.00	23.84	22.66	-67.30	-678.19	-548.32	228.03	190.34	37.69	6.050		
6,600.00	5,823.00	6,471.76	5,735.00	24.49	23.35	-67.45	-778.17	-548.72	229.49	190.32	39.17	5.859		
6,700.00	5,823.00	6,571.75	5,735.00	25.22	24.11	-67.60	-878.16	-549.12	230.95	190.17	40.78	5.663		
6,800.00	5,823.00	6,671.74	5,735.00	26.01	24.94	-67.75	-978.15	-549.53	232.41	189.89	42.52	5.466		
6,900.00	5,823.00	6,771.73	5,735.00	26.86	25.83	-67.89	-1,078.13	-549.93	233.87	189.51	44.36	5.272		
7,000.00	5,823.00	6,871.71	5,735.00	27.77	26.78	-68.04	-1,178.12	-550.33	235.33	189.03	46.30	5.083		
7,100.00	5,823.00	6,971.70	5,735.00	28.73	27.77	-68.18	-1,278.11	-550.73	236.79	188.47	48.33	4.900		
7,200.00	5,823.00	7,071.69	5,735.00	29.73	28.80	-68.32	-1,378.09	-551.14	238.26	187.83	50.43	4.725		
7,300.00	5,823.00	7,171.68	5,735.00	30.76	29.87	-68.46	-1,478.08	-551.54	239.72	187.13	52.60	4.558		
7,400.00	5,823.00	7,271.66	5,735.00	31.84	30.97	-68.60	-1,578.07	-551.94	241.19	186.36	54.83	4.399		
7,500.00	5,823.00	7,371.65	5,735.00	32.94	32.10	-68.73	-1,678.05	-552.34	242.66	185.55	57.11	4.249		
7,600.00	5,823.00	7,471.64	5,735.00	34.08	33.26	-68.87	-1,778.04	-552.75	244.13	184.69	59.44	4.107		
7,700.00	5,823.00	7,571.63	5,735.00	35.24	34.45	-69.00	-1,878.03	-553.15	245.60	183.79	61.81	3.973		
7,800.00	5,823.00	7,671.61	5,735.00	36.42	35.65	-69.13	-1,978.01	-553.55	247.08	182.85	64.22	3.847		
7,900.00	5,823.00	7,771.60	5,735.00	37.62	36.88	-69.26	-2,078.00	-553.95	248.55	181.88	66.67	3.728		
8,000.00	5,823.00	7,871.59	5,735.00	38.84	38.12	-69.39	-2,177.99	-554.36	250.03	180.88	69.14	3.616		
8,100.00	5,823.00	7,971.58	5,735.00	40.08	39.38	-69.52	-2,277.97	-554.76	251.50	179.85	71.65	3.510		
8,200.00	5,823.00	8,071.56	5,735.00	41.33	40.65	-69.64	-2,377.96	-555.16	252.98	178.80	74.18	3.410		
8,300.00	5,823.00	8,171.55	5,735.00	42.60	41.93	-69.76	-2,477.95	-555.57	254.46	177.73	76.73	3.316		
8,400.00	5,823.00	8,271.54	5,735.00	43.88	43.23	-69.89	-2,577.93	-555.97	255.94	176.63	79.31	3.227		
8,500.00	5,823.00	8,371.53	5,735.00	45.17	44.54	-70.01	-2,677.92	-556.37	257.42	175.52	81.90	3.143		
8,600.00	5,823.00	8,471.51	5,735.00	46.47	45.86	-70.13	-2,777.91	-556.77	258.90	174.39	84.52	3.063		
8,700.00	5,823.00	8,571.50	5,735.00	47.78	47.19	-70.24	-2,877.90	-557.18	260.39	173.24	87.15	2.988		
8,800.00	5,823.00	8,671.49	5,735.00	49.10	48.52	-70.36	-2,977.88	-557.58	261.87	172.08	89.79	2.916		
8,900.00	5,823.00	8,771.48	5,735.00	50.43	49.86	-70.48	-3,077.87	-557.98	263.36	170.91	92.45	2.849		
9,000.00	5,823.00	8,871.46	5,735.00	51.77	51.21	-70.59	-3,177.86	-558.38	264.85	169.72	95.12	2.784		
9,100.00	5,823.00	8,971.45	5,735.00	53.11	52.57	-70.70	-3,277.84	-558.79	266.33	168.53	97.81	2.723		
9,200.00	5,823.00	9,071.44	5,735.00	54.46	53.93	-70.82	-3,377.83	-559.19	267.82	167.32	100.50	2.665		
9,300.00	5,823.00	9,171.43	5,735.00	55.81	55.30	-70.93	-3,477.82	-559.59	269.31	166.11	103.21	2.609		
9,400.00	5,823.00	9,271.41	5,735.00	57.18	56.68	-71.03	-3,577.80	-559.99	270.80	164.88	105.92	2.557		
9,500.00	5,823.00	9,371.40	5,735.00	58.54	58.05	-71.14	-3,677.79	-560.40	272.30	163.65	108.65	2.506		
9,600.00	5,823.00	9,471.39	5,735.00	59.91	59.44	-71.25	-3,777.78	-560.80	273.79	162.41	111.38	2.458		
9,700.00	5,823.00	9,571.38	5,735.00	61.29	60.82	-71.35	-3,877.76	-561.20	275.28	161.16	114.13	2.412		
9,800.00	5,823.00	9,671.37	5,735.00	62.67	62.21	-71.46	-3,977.75	-561.60	276.78	159.90	116.88	2.368		
9,900.00	5,823.00	9,771.35	5,735.00	64.05	63.61	-71.56	-4,077.74	-562.01	278.27	158.64	119.63	2.326		
10,000.00	5,823.00	9,871.34	5,735.00	65.44	65.01	-71.66	-4,177.72	-562.41	279.77	157.37	122.40	2.286		
10,100.00	5,823.00	9,971.33	5,735.00	66.83	66.41	-71.77	-4,277.71	-562.81	281.27	156.10	125.17	2.247		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	HZ	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor		
10,200.00	5,823.00	10,071.32	5,735.00	68.22	67.81	-71.87	-4,377.70	-563.21	282.77	154.82	127.95	2.210		
10,300.00	5,823.00	10,171.30	5,735.00	69.62	69.22	-71.96	-4,477.68	-563.62	284.27	153.54	130.73	2.174		
10,400.00	5,823.00	10,271.29	5,735.00	71.02	70.63	-72.06	-4,577.67	-564.02	285.77	152.25	133.52	2.140		
10,500.00	5,823.00	10,371.28	5,735.00	72.42	72.04	-72.16	-4,677.66	-564.42	287.27	150.95	136.31	2.107		
10,600.00	5,823.00	10,471.27	5,735.00	73.83	73.45	-72.25	-4,777.64	-564.83	288.77	149.66	139.11	2.076		
10,700.00	5,823.00	10,571.25	5,735.00	75.24	74.87	-72.35	-4,877.63	-565.23	290.27	148.36	141.92	2.045		
10,800.00	5,823.00	10,671.24	5,735.00	76.65	76.28	-72.44	-4,977.62	-565.63	291.78	147.05	144.73	2.016		
10,900.00	5,823.00	10,771.23	5,735.00	78.06	77.70	-72.54	-5,077.60	-566.03	293.28	145.74	147.54	1.988		
11,000.00	5,823.00	10,871.22	5,735.00	79.47	79.13	-72.63	-5,177.59	-566.44	294.78	144.43	150.36	1.961		
11,100.00	5,823.00	10,971.20	5,735.00	80.89	80.55	-72.72	-5,277.58	-566.84	296.29	143.11	153.18	1.934		
11,200.00	5,823.00	11,071.19	5,735.00	82.31	81.98	-72.81	-5,377.56	-567.24	297.80	141.80	156.00	1.909		
11,300.00	5,823.00	11,171.18	5,735.00	83.73	83.40	-72.90	-5,477.55	-567.64	299.30	140.47	158.83	1.884		
11,400.00	5,823.00	11,271.17	5,735.00	85.15	84.83	-72.99	-5,577.54	-568.05	300.81	139.15	161.66	1.861		
11,500.00	5,823.00	11,371.15	5,735.00	86.57	86.26	-73.07	-5,677.52	-568.45	302.32	137.82	164.50	1.838		
11,600.00	5,823.00	11,471.14	5,735.00	87.99	87.69	-73.16	-5,777.51	-568.85	303.83	136.49	167.34	1.816		
11,700.00	5,823.00	11,571.13	5,735.00	89.42	89.12	-73.25	-5,877.50	-569.25	305.34	135.16	170.18	1.794		
11,800.00	5,823.00	11,671.12	5,735.00	90.85	90.56	-73.33	-5,977.48	-569.66	306.85	133.83	173.02	1.773		
11,900.00	5,823.00	11,771.10	5,735.00	92.28	91.99	-73.42	-6,077.47	-570.06	308.36	132.49	175.87	1.753		
12,000.00	5,823.00	11,871.09	5,735.00	93.70	93.43	-73.50	-6,177.46	-570.46	309.87	131.15	178.72	1.734		
12,100.00	5,823.00	11,971.08	5,735.00	95.14	94.87	-73.58	-6,277.44	-570.86	311.39	129.81	181.57	1.715		
12,200.00	5,823.00	12,071.07	5,735.00	96.57	96.30	-73.66	-6,377.43	-571.27	312.90	128.47	184.43	1.697		
12,300.00	5,823.00	12,171.05	5,735.00	98.00	97.74	-73.74	-6,477.42	-571.67	314.41	127.12	187.29	1.679		
12,400.00	5,823.00	12,271.04	5,735.00	99.43	99.18	-73.82	-6,577.40	-572.07	315.93	125.78	190.15	1.661		
12,500.00	5,823.00	12,371.03	5,735.00	100.87	100.62	-73.90	-6,677.39	-572.48	317.44	124.43	193.01	1.645		
12,600.00	5,823.00	12,471.02	5,735.00	102.30	102.07	-73.98	-6,777.38	-572.88	318.96	123.08	195.88	1.628		
12,700.00	5,823.00	12,571.00	5,735.00	103.74	103.51	-74.06	-6,877.37	-573.28	320.47	121.73	198.74	1.613		
12,800.00	5,823.00	12,670.99	5,735.00	105.18	104.95	-74.14	-6,977.35	-573.68	321.99	120.38	201.61	1.597		
12,900.00	5,823.00	12,770.98	5,735.00	106.62	106.40	-74.21	-7,077.34	-574.09	323.51	119.02	204.48	1.582		
13,000.00	5,823.00	12,870.97	5,735.00	108.06	107.84	-74.29	-7,177.33	-574.49	325.03	117.67	207.36	1.567		
13,100.00	5,823.00	12,970.95	5,735.00	109.50	109.29	-74.36	-7,277.31	-574.89	326.55	116.31	210.23	1.553		
13,200.00	5,823.00	13,070.94	5,735.00	110.94	110.73	-74.44	-7,377.30	-575.29	328.06	114.95	213.11	1.539		
13,300.00	5,823.00	13,170.93	5,735.00	112.38	112.18	-74.51	-7,477.29	-575.70	329.58	113.60	215.99	1.526		
13,400.00	5,823.00	13,270.92	5,735.00	113.82	113.63	-74.58	-7,577.27	-576.10	331.10	112.24	218.87	1.513		
13,500.00	5,823.00	13,370.90	5,735.00	115.26	115.07	-74.66	-7,677.26	-576.50	332.62	110.87	221.75	1.500 Level 3		
13,600.00	5,823.00	13,470.89	5,735.00	116.71	116.52	-74.73	-7,777.25	-576.90	334.15	109.51	224.63	1.488 Level 3		
13,700.00	5,823.00	13,570.88	5,735.00	118.15	117.97	-74.80	-7,877.23	-577.31	335.67	108.15	227.52	1.475 Level 3		
13,800.00	5,823.00	13,670.87	5,735.00	119.59	119.42	-74.87	-7,977.22	-577.71	337.19	106.78	230.41	1.463 Level 3		
13,900.00	5,823.00	13,770.86	5,735.00	121.04	120.87	-74.94	-8,077.21	-578.11	338.71	105.42	233.29	1.452 Level 3		
13,986.28	5,823.00	13,853.79	5,735.00	122.29	122.07	-75.00	-8,160.14	-578.45	340.04	104.50	235.55	1.444 Level 3, SF		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	HZ	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	90.00	0.00	119.96	119.96					
100.00	100.00	100.00	100.00	0.13	0.13	90.00	0.00	119.96	119.96	119.69	0.27	450.377		
200.00	200.00	200.00	200.00	0.47	0.47	90.00	0.00	119.96	119.96	119.02	0.94	127.526		
300.00	300.00	300.00	300.00	0.81	0.81	90.00	0.00	119.96	119.96	118.34	1.61	74.279 CC, ES		
400.00	399.98	401.66	401.64	1.13	1.15	167.39	1.65	119.24	120.97	118.68	2.29	52.874		
500.00	499.84	501.67	501.58	1.46	1.49	166.30	5.11	117.75	124.64	121.69	2.95	42.307		
600.00	599.45	601.40	601.24	1.81	1.83	165.63	8.57	116.26	131.73	128.11	3.62	36.426		
700.00	698.70	700.85	700.61	2.16	2.16	165.38	12.02	114.77	142.19	137.89	4.29	33.123		
800.00	797.47	799.88	799.58	2.53	2.49	165.47	15.45	113.28	156.00	151.03	4.97	31.374		
900.00	895.87	898.61	898.23	2.93	2.83	165.77	18.88	111.81	171.88	166.24	5.64	30.452		
1,000.00	994.28	997.33	996.89	3.33	3.16	166.03	22.30	110.33	187.80	181.49	6.30	29.785		
1,100.00	1,092.68	1,096.06	1,095.54	3.73	3.50	166.25	25.72	108.85	203.71	196.74	6.97	29.232		
1,200.00	1,191.09	1,194.78	1,194.19	4.14	3.83	166.44	29.15	107.37	219.63	211.99	7.63	28.767		
1,300.00	1,289.49	1,293.50	1,292.84	4.56	4.16	166.60	32.57	105.90	235.55	227.24	8.30	28.372		
1,400.00	1,387.89	1,392.22	1,391.50	4.97	4.50	166.75	35.99	104.42	251.47	242.50	8.97	28.031		
1,500.00	1,486.30	1,490.95	1,490.15	5.39	4.83	166.87	39.42	102.94	267.39	257.75	9.64	27.735		
1,600.00	1,584.70	1,589.67	1,588.80	5.81	5.17	166.98	42.84	101.46	283.31	273.00	10.31	27.475		
1,700.00	1,683.11	1,688.39	1,687.45	6.22	5.50	167.08	46.26	99.99	299.24	288.25	10.98	27.245		
1,800.00	1,781.51	1,787.11	1,786.10	6.64	5.83	167.17	49.69	98.51	315.16	303.51	11.66	27.041		
1,900.00	1,879.91	1,885.84	1,884.76	7.06	6.17	167.25	53.11	97.03	331.09	318.76	12.33	26.858		
2,000.00	1,978.32	1,984.56	1,983.41	7.48	6.50	167.33	56.53	95.55	347.02	334.01	13.00	26.693		
2,100.00	2,076.72	2,083.28	2,082.06	7.90	6.84	167.39	59.96	94.07	362.94	349.27	13.67	26.544		
2,200.00	2,175.13	2,182.00	2,180.71	8.33	7.17	167.45	63.38	92.60	378.87	364.52	14.35	26.408		
2,300.00	2,273.53	2,280.73	2,279.37	8.75	7.50	167.51	66.80	91.12	394.80	379.78	15.02	26.284		
2,400.00	2,371.94	2,379.45	2,378.02	9.17	7.84	167.56	70.23	89.64	410.73	395.03	15.69	26.171		
2,500.00	2,470.34	2,478.17	2,476.67	9.59	8.17	167.61	73.65	88.16	426.65	410.29	16.37	26.066		
2,600.00	2,568.74	2,576.90	2,575.32	10.01	8.51	167.66	77.07	86.69	442.58	425.54	17.04	25.970		
2,700.00	2,667.15	2,675.62	2,673.97	10.44	8.84	167.70	80.50	85.21	458.51	440.79	17.72	25.880		
2,800.00	2,765.55	2,774.34	2,772.63	10.86	9.18	167.74	83.92	83.73	474.44	456.05	18.39	25.797		
2,900.00	2,863.96	2,873.06	2,871.28	11.28	9.51	167.77	87.34	82.25	490.37	471.30	19.07	25.720		
3,000.00	2,962.36	2,971.79	2,969.93	11.70	9.85	167.81	90.76	80.78	506.30	486.56	19.74	25.648		
3,100.00	3,060.76	3,070.51	3,068.58	12.13	10.18	167.84	94.19	79.30	522.23	501.81	20.41	25.581		
3,200.00	3,159.17	3,169.23	3,167.24	12.55	10.51	167.87	97.61	77.82	538.16	517.07	21.09	25.518		
3,300.00	3,257.57	3,267.95	3,265.89	12.97	10.85	167.90	101.03	76.34	554.09	532.32	21.76	25.458		
3,400.00	3,355.98	3,366.68	3,364.54	13.40	11.18	167.92	104.46	74.87	570.02	547.58	22.44	25.402		
3,500.00	3,454.38	3,465.40	3,463.19	13.82	11.52	167.95	107.88	73.39	585.95	562.83	23.11	25.350		
3,600.00	3,552.78	3,564.12	3,561.84	14.24	11.85	167.97	111.30	71.91	601.88	578.09	23.79	25.300		
3,700.00	3,651.19	3,662.84	3,660.50	14.67	12.19	167.99	114.73	70.43	617.81	593.34	24.46	25.253		
3,800.00	3,749.59	3,761.57	3,759.15	15.09	12.52	168.02	118.15	68.95	633.74	608.60	25.14	25.208		
3,900.00	3,848.00	3,860.29	3,857.80	15.51	12.86	168.04	121.57	67.48	649.67	623.85	25.82	25.166		
4,000.00	3,946.40	3,959.01	3,956.45	15.94	13.19	168.06	125.00	66.00	665.60	639.11	26.49	25.126		
4,100.00	4,044.80	4,057.74	4,055.11	16.36	13.52	168.07	128.42	64.52	681.53	654.37	27.17	25.088		
4,200.00	4,143.21	4,156.46	4,153.76	16.78	13.86	168.09	131.84	63.04	697.46	669.62	27.84	25.051		
4,300.00	4,241.61	4,255.18	4,252.41	17.21	14.19	168.11	135.27	61.57	713.39	684.88	28.52	25.016		
4,400.00	4,340.02	4,349.71	4,346.88	17.63	14.49	168.15	138.27	60.27	729.45	700.31	29.15	25.025		
4,500.00	4,438.42	4,441.26	4,438.42	18.05	14.76	168.35	139.00	59.96	746.54	716.81	29.73	25.110		
4,600.00	4,536.87	4,539.70	4,536.87	18.45	15.06	168.64	139.00	59.96	763.75	733.39	30.36	25.156		
4,700.00	4,635.76	4,638.60	4,635.76	18.74	15.39	168.91	139.00	59.96	778.25	747.30	30.96	25.141		
4,800.00	4,735.12	4,737.95	4,735.12	19.02	15.72	169.11	139.00	59.96	789.37	757.82	31.55	25.020		
4,900.00	4,834.80	4,837.64	4,834.80	19.28	16.05	169.25	139.00	59.96	797.07	764.93	32.14	24.796		
5,000.00	4,934.70	4,937.54	4,934.70	19.52	16.39	169.32	139.00	59.96	801.36	768.62	32.74	24.477		
5,100.00	5,034.69	5,037.53	5,034.69	19.75	16.72	91.34	139.00	59.96	802.32	768.98	33.35	24.060		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	HZ	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor		
5,200.00	5,134.69	5,137.53	5,134.69	20.02	17.05	91.34	139.00	59.96	802.32	768.34	33.98	23.612		
5,208.06	5,142.75	5,145.59	5,142.75	20.04	17.08	91.34	139.00	59.96	802.32	768.29	34.03	23.577		
5,300.00	5,234.69	5,236.67	5,233.83	20.29	17.38	91.37	138.62	59.96	802.33	767.74	34.60	23.190		
5,400.00	5,334.67	5,330.94	5,327.19	20.56	17.62	-88.95	126.55	60.01	802.78	767.69	35.09	22.881		
5,500.00	5,433.27	5,422.46	5,414.33	20.79	17.86	-87.86	98.94	60.13	803.93	768.46	35.47	22.665		
5,600.00	5,527.04	5,512.00	5,493.63	21.01	18.08	-86.84	57.60	60.30	805.65	769.86	35.79	22.509		
5,700.00	5,612.56	5,600.00	5,563.55	21.22	18.27	-85.94	4.34	60.53	807.80	771.72	36.08	22.387		
5,800.00	5,686.66	5,686.67	5,622.69	21.42	18.44	-85.17	-58.88	60.80	810.21	773.83	36.38	22.269		
5,900.00	5,746.64	5,772.53	5,670.17	21.62	18.57	-84.55	-130.30	61.11	812.72	775.99	36.74	22.124		
6,000.00	5,790.28	5,857.86	5,705.10	21.83	18.71	-84.12	-208.05	61.44	815.20	778.02	37.18	21.927		
6,100.00	5,815.98	5,943.01	5,726.86	22.08	18.92	-83.87	-290.27	61.79	817.53	779.79	37.74	21.662		
6,200.00	5,823.00	6,028.31	5,734.95	22.39	19.23	-83.83	-375.09	62.15	819.64	781.22	38.42	21.333		
6,300.00	5,823.00	6,127.11	5,735.00	22.79	19.68	-83.85	-473.89	62.57	822.03	782.67	39.36	20.886		
6,400.00	5,823.00	6,227.08	5,735.00	23.27	20.23	-83.87	-573.86	63.00	824.42	783.93	40.49	20.361		
6,500.00	5,823.00	6,327.05	5,735.00	23.84	20.87	-83.89	-673.83	63.43	826.82	785.02	41.80	19.782		
6,600.00	5,823.00	6,427.02	5,735.00	24.49	21.60	-83.91	-773.80	63.85	829.21	785.95	43.26	19.168		
6,700.00	5,823.00	6,526.99	5,735.00	25.22	22.40	-83.92	-873.77	64.28	831.60	786.73	44.87	18.534		
6,800.00	5,823.00	6,626.97	5,735.00	26.01	23.26	-83.94	-973.74	64.71	833.99	787.39	46.61	17.895		
6,900.00	5,823.00	6,726.94	5,735.00	26.86	24.18	-83.96	-1,073.71	65.13	836.39	787.93	48.46	17.261		
7,000.00	5,823.00	6,826.91	5,735.00	27.77	25.16	-83.98	-1,173.68	65.56	838.78	788.37	50.41	16.639		
7,100.00	5,823.00	6,926.88	5,735.00	28.73	26.18	-83.99	-1,273.65	65.99	841.17	788.72	52.46	16.036		
7,200.00	5,823.00	7,026.85	5,735.00	29.73	27.24	-84.01	-1,373.62	66.41	843.57	788.99	54.58	15.455		
7,300.00	5,823.00	7,126.82	5,735.00	30.76	28.34	-84.03	-1,473.59	66.84	845.96	789.18	56.78	14.900		
7,400.00	5,823.00	7,226.79	5,735.00	31.84	29.47	-84.04	-1,573.56	67.27	848.36	789.32	59.04	14.370		
7,500.00	5,823.00	7,326.76	5,735.00	32.94	30.63	-84.06	-1,673.53	67.70	850.75	789.39	61.36	13.866		
7,600.00	5,823.00	7,426.73	5,735.00	34.08	31.82	-84.08	-1,773.50	68.12	853.14	789.42	63.72	13.388		
7,700.00	5,823.00	7,526.70	5,735.00	35.24	33.03	-84.09	-1,873.47	68.55	855.54	789.40	66.14	12.936		
7,800.00	5,823.00	7,626.68	5,735.00	36.42	34.26	-84.11	-1,973.44	68.98	857.93	789.34	68.59	12.508		
7,900.00	5,823.00	7,726.65	5,735.00	37.62	35.51	-84.13	-2,073.41	69.40	860.32	789.25	71.08	12.104		
8,000.00	5,823.00	7,826.62	5,735.00	38.84	36.78	-84.14	-2,173.38	69.83	862.72	789.12	73.60	11.722		
8,100.00	5,823.00	7,926.59	5,735.00	40.08	38.06	-84.16	-2,273.35	70.26	865.11	788.96	76.15	11.361		
8,200.00	5,823.00	8,026.56	5,735.00	41.33	39.35	-84.18	-2,373.32	70.68	867.51	788.78	78.73	11.019		
8,300.00	5,823.00	8,126.53	5,735.00	42.60	40.66	-84.19	-2,473.29	71.11	869.90	788.57	81.33	10.696		
8,400.00	5,823.00	8,226.50	5,735.00	43.88	41.97	-84.21	-2,573.26	71.54	872.30	788.35	83.95	10.391		
8,500.00	5,823.00	8,326.47	5,735.00	45.17	43.30	-84.22	-2,673.23	71.96	874.69	788.10	86.59	10.101		
8,600.00	5,823.00	8,426.44	5,735.00	46.47	44.63	-84.24	-2,773.20	72.39	877.09	787.83	89.25	9.827		
8,700.00	5,823.00	8,526.41	5,735.00	47.78	45.98	-84.26	-2,873.17	72.82	879.48	787.55	91.93	9.567		
8,800.00	5,823.00	8,626.39	5,735.00	49.10	47.33	-84.27	-2,973.14	73.24	881.87	787.25	94.62	9.320		
8,900.00	5,823.00	8,726.36	5,735.00	50.43	48.69	-84.29	-3,073.11	73.67	884.27	786.94	97.33	9.085		
9,000.00	5,823.00	8,826.33	5,735.00	51.77	50.06	-84.30	-3,173.08	74.10	886.66	786.61	100.05	8.862		
9,100.00	5,823.00	8,926.30	5,735.00	53.11	51.43	-84.32	-3,273.05	74.52	889.06	786.28	102.78	8.650		
9,200.00	5,823.00	9,026.27	5,735.00	54.46	52.80	-84.33	-3,373.02	74.95	891.45	785.93	105.52	8.448		
9,300.00	5,823.00	9,126.24	5,735.00	55.81	54.18	-84.35	-3,472.99	75.38	893.85	785.58	108.27	8.256		
9,400.00	5,823.00	9,226.21	5,735.00	57.18	55.57	-84.36	-3,572.96	75.81	896.24	785.21	111.03	8.072		
9,500.00	5,823.00	9,326.18	5,735.00	58.54	56.96	-84.38	-3,672.93	76.23	898.64	784.84	113.80	7.897		
9,600.00	5,823.00	9,426.15	5,735.00	59.91	58.36	-84.39	-3,772.90	76.66	901.03	784.45	116.58	7.729		
9,700.00	5,823.00	9,526.13	5,735.00	61.29	59.75	-84.41	-3,872.87	77.09	903.43	784.07	119.36	7.569		
9,800.00	5,823.00	9,626.10	5,735.00	62.67	61.16	-84.42	-3,972.84	77.51	905.82	783.67	122.16	7.415		
9,900.00	5,823.00	9,726.07	5,735.00	64.05	62.56	-84.44	-4,072.81	77.94	908.22	783.27	124.95	7.268		
10,000.00	5,823.00	9,826.04	5,735.00	65.44	63.97	-84.45	-4,172.78	78.37	910.61	782.86	127.76	7.128		
10,100.00	5,823.00	9,926.01	5,735.00	66.83	65.38	-84.47	-4,272.75	78.79	913.01	782.44	130.57	6.993		
10,200.00	5,823.00	10,025.98	5,735.00	68.22	66.79	-84.48	-4,372.72	79.22	915.41	782.02	133.38	6.863		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	HZ	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor		
10,300.00	5,823.00	10,125.95	5,735.00	69.62	68.21	-84.50	-4,472.69	79.65	917.80	781.60	136.20	6.739		
10,400.00	5,823.00	10,225.92	5,735.00	71.02	69.63	-84.51	-4,572.66	80.07	920.20	781.17	139.03	6.619		
10,500.00	5,823.00	10,325.89	5,735.00	72.42	71.05	-84.52	-4,672.63	80.50	922.59	780.74	141.86	6.504		
10,600.00	5,823.00	10,425.86	5,735.00	73.83	72.47	-84.54	-4,772.60	80.93	924.99	780.30	144.69	6.393		
10,700.00	5,823.00	10,525.84	5,735.00	75.24	73.90	-84.55	-4,872.57	81.35	927.38	779.86	147.53	6.286		
10,800.00	5,823.00	10,625.81	5,735.00	76.65	75.32	-84.57	-4,972.54	81.78	929.78	779.41	150.37	6.183		
10,900.00	5,823.00	10,725.78	5,735.00	78.06	76.75	-84.58	-5,072.51	82.21	932.18	778.96	153.21	6.084		
11,000.00	5,823.00	10,825.75	5,735.00	79.47	78.18	-84.60	-5,172.48	82.63	934.57	778.51	156.06	5.989		
11,100.00	5,823.00	10,925.72	5,735.00	80.89	79.61	-84.61	-5,272.46	83.06	936.97	778.06	158.91	5.896		
11,200.00	5,823.00	11,025.69	5,735.00	82.31	81.04	-84.62	-5,372.43	83.49	939.36	777.60	161.77	5.807		
11,300.00	5,823.00	11,125.66	5,735.00	83.73	82.48	-84.64	-5,472.40	83.91	941.76	777.14	164.62	5.721		
11,400.00	5,823.00	11,225.63	5,735.00	85.15	83.91	-84.65	-5,572.37	84.34	944.16	776.67	167.48	5.637		
11,500.00	5,823.00	11,325.60	5,735.00	86.57	85.35	-84.66	-5,672.34	84.77	946.55	776.21	170.34	5.557		
11,600.00	5,823.00	11,425.57	5,735.00	87.99	86.79	-84.68	-5,772.31	85.20	948.95	775.74	173.21	5.479		
11,700.00	5,823.00	11,525.55	5,735.00	89.42	88.23	-84.69	-5,872.28	85.62	951.34	775.27	176.08	5.403		
11,800.00	5,823.00	11,625.52	5,735.00	90.85	89.67	-84.70	-5,972.25	86.05	953.74	774.80	178.94	5.330		
11,900.00	5,823.00	11,725.49	5,735.00	92.28	91.11	-84.72	-6,072.22	86.48	956.14	774.32	181.82	5.259		
12,000.00	5,823.00	11,825.46	5,735.00	93.70	92.55	-84.73	-6,172.19	86.90	958.53	773.85	184.69	5.190		
12,100.00	5,823.00	11,925.43	5,735.00	95.14	93.99	-84.74	-6,272.16	87.33	960.93	773.37	187.56	5.123		
12,200.00	5,823.00	12,025.40	5,735.00	96.57	95.44	-84.76	-6,372.13	87.76	963.33	772.89	190.44	5.058		
12,300.00	5,823.00	12,125.37	5,735.00	98.00	96.88	-84.77	-6,472.10	88.18	965.72	772.40	193.32	4.995		
12,400.00	5,823.00	12,225.34	5,735.00	99.43	98.33	-84.78	-6,572.07	88.61	968.12	771.92	196.20	4.934		
12,500.00	5,823.00	12,325.31	5,735.00	100.87	99.77	-84.80	-6,672.04	89.04	970.52	771.44	199.08	4.875		
12,600.00	5,823.00	12,425.29	5,735.00	102.30	101.22	-84.81	-6,772.01	89.46	972.91	770.95	201.97	4.817		
12,700.00	5,823.00	12,525.26	5,735.00	103.74	102.67	-84.82	-6,871.98	89.89	975.31	770.46	204.85	4.761		
12,800.00	5,823.00	12,625.23	5,735.00	105.18	104.12	-84.83	-6,971.95	90.32	977.71	769.97	207.74	4.706		
12,900.00	5,823.00	12,725.20	5,735.00	106.62	105.57	-84.85	-7,071.92	90.74	980.10	769.48	210.62	4.653		
13,000.00	5,823.00	12,825.17	5,735.00	108.06	107.02	-84.86	-7,171.89	91.17	982.50	768.99	213.51	4.602		
13,100.00	5,823.00	12,925.14	5,735.00	109.50	108.47	-84.87	-7,271.86	91.60	984.90	768.49	216.40	4.551		
13,200.00	5,823.00	13,025.11	5,735.00	110.94	109.92	-84.88	-7,371.83	92.02	987.30	768.00	219.30	4.502		
13,300.00	5,823.00	13,125.08	5,735.00	112.38	111.37	-84.90	-7,471.80	92.45	989.69	767.50	222.19	4.454		
13,400.00	5,823.00	13,225.05	5,735.00	113.82	112.82	-84.91	-7,571.77	92.88	992.09	767.01	225.08	4.408		
13,500.00	5,823.00	13,325.02	5,735.00	115.26	114.27	-84.92	-7,671.74	93.31	994.49	766.51	227.98	4.362		
13,600.00	5,823.00	13,425.00	5,735.00	116.71	115.73	-84.93	-7,771.71	93.73	996.88	766.01	230.87	4.318		
13,700.00	5,823.00	13,524.97	5,735.00	118.15	117.18	-84.95	-7,871.68	94.16	999.28	765.51	233.77	4.275		
13,800.00	5,823.00	13,624.94	5,735.00	119.59	118.63	-84.96	-7,971.65	94.59	1,001.68	765.01	236.67	4.232		
13,900.00	5,823.00	13,724.91	5,735.00	121.04	120.09	-84.97	-8,071.62	95.01	1,004.08	764.51	239.57	4.191		
13,986.28	5,823.00	13,811.16	5,735.00	122.29	121.34	-84.98	-8,157.87	95.38	1,006.15	764.08	242.07	4.156 SF		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	90.00	-0.01	179.94	179.94					
100.00	100.00	100.00	100.00	0.13	0.13	90.00	-0.01	179.94	179.94	179.67	0.27	675.565		
200.00	200.00	200.00	200.00	0.47	0.47	90.00	-0.01	179.94	179.94	178.99	0.94	191.289		
300.00	300.00	300.00	300.00	0.81	0.81	90.00	-0.01	179.94	179.94	178.32	1.61	111.419 CC, ES		
400.00	399.98	394.76	394.74	1.13	1.12	167.85	0.78	181.29	183.07	180.77	2.30	79.624		
500.00	499.84	490.18	490.04	1.46	1.45	167.43	3.13	185.31	192.40	189.39	3.01	63.944		
600.00	599.45	589.24	588.94	1.81	1.77	167.09	6.05	190.33	205.97	202.31	3.66	56.337		
700.00	698.70	687.79	687.32	2.16	2.10	166.97	8.96	195.32	222.90	218.59	4.31	51.695		
800.00	797.47	785.71	785.07	2.53	2.43	167.03	11.85	200.27	243.18	238.21	4.97	48.908		
900.00	895.87	883.18	882.37	2.93	2.76	167.26	14.73	205.21	265.51	259.89	5.62	47.218		
1,000.00	994.28	980.64	979.66	3.33	3.10	167.46	17.60	210.14	287.87	281.61	6.26	45.982		
1,100.00	1,092.68	1,078.10	1,076.96	3.73	3.43	167.64	20.48	215.08	310.24	303.33	6.90	44.936		
1,200.00	1,191.09	1,175.57	1,174.26	4.14	3.76	167.79	23.36	220.01	332.60	325.05	7.55	44.042		
1,300.00	1,289.49	1,273.03	1,271.55	4.56	4.10	167.92	26.23	224.94	354.97	346.77	8.20	43.272		
1,400.00	1,387.89	1,370.49	1,368.85	4.97	4.43	168.03	29.11	229.88	377.34	368.49	8.86	42.603		
1,500.00	1,486.30	1,467.96	1,466.14	5.39	4.77	168.13	31.99	234.81	399.72	390.20	9.51	42.017		
1,600.00	1,584.70	1,565.42	1,563.44	5.81	5.10	168.23	34.86	239.75	422.09	411.92	10.17	41.500		
1,700.00	1,683.11	1,662.88	1,660.73	6.22	5.44	168.31	37.74	244.68	444.46	433.63	10.83	41.041		
1,800.00	1,781.51	1,760.35	1,758.03	6.64	5.77	168.38	40.62	249.61	466.84	455.35	11.49	40.630		
1,900.00	1,879.91	1,857.81	1,855.32	7.06	6.11	168.45	43.49	254.55	489.21	477.06	12.15	40.262		
2,000.00	1,978.32	1,955.27	1,952.62	7.48	6.44	168.51	46.37	259.48	511.59	498.78	12.81	39.928		
2,100.00	2,076.72	2,052.73	2,049.92	7.90	6.78	168.57	49.24	264.42	533.97	520.49	13.48	39.626		
2,200.00	2,175.13	2,150.20	2,147.21	8.33	7.11	168.62	52.12	269.35	556.34	542.20	14.14	39.350		
2,300.00	2,273.53	2,247.66	2,244.51	8.75	7.45	168.67	55.00	274.29	578.72	563.92	14.80	39.098		
2,400.00	2,371.94	2,345.12	2,341.80	9.17	7.78	168.71	57.87	279.22	601.10	585.63	15.47	38.867		
2,500.00	2,470.34	2,442.59	2,439.10	9.59	8.12	168.75	60.75	284.15	623.48	607.35	16.13	38.653		
2,600.00	2,568.74	2,540.05	2,536.39	10.01	8.45	168.79	63.63	289.09	645.85	629.06	16.79	38.456		
2,700.00	2,667.15	2,637.51	2,633.69	10.44	8.79	168.83	66.50	294.02	668.23	650.77	17.46	38.273		
2,800.00	2,765.55	2,734.98	2,730.98	10.86	9.12	168.86	69.38	298.96	690.61	672.49	18.12	38.103		
2,900.00	2,863.96	2,832.44	2,828.28	11.28	9.46	168.89	72.26	303.89	712.99	694.20	18.79	37.945		
3,000.00	2,962.36	2,929.90	2,925.57	11.70	9.79	168.92	75.13	308.82	735.37	715.91	19.46	37.797		
3,100.00	3,060.76	3,027.36	3,022.87	12.13	10.13	168.95	78.01	313.76	757.75	737.63	20.12	37.658		
3,200.00	3,159.17	3,124.83	3,120.17	12.55	10.47	168.98	80.89	318.69	780.13	759.34	20.79	37.528		
3,300.00	3,257.57	3,222.29	3,217.46	12.97	10.80	169.00	83.76	323.63	802.51	781.05	21.45	37.406		
3,400.00	3,355.98	3,319.75	3,314.76	13.40	11.14	169.03	86.64	328.56	824.89	802.77	22.12	37.291		
3,500.00	3,454.38	3,417.22	3,412.05	13.82	11.47	169.05	89.52	333.49	847.27	824.48	22.79	37.182		
3,600.00	3,552.78	3,514.68	3,509.35	14.24	11.81	169.07	92.39	338.43	869.65	846.20	23.45	37.080		
3,700.00	3,651.19	3,612.14	3,606.64	14.67	12.14	169.09	95.27	343.36	892.03	867.91	24.12	36.983		
3,800.00	3,749.59	3,709.61	3,703.94	15.09	12.48	169.11	98.15	348.30	914.41	889.62	24.79	36.891		
3,900.00	3,848.00	3,807.07	3,801.23	15.51	12.81	169.13	101.02	353.23	936.79	911.34	25.45	36.803		
4,000.00	3,946.40	3,904.53	3,898.53	15.94	13.15	169.14	103.90	358.16	959.17	933.05	26.12	36.720		
4,100.00	4,044.80	4,001.99	3,995.83	16.36	13.49	169.16	106.77	363.10	981.55	954.76	26.79	36.641		
4,200.00	4,143.21	4,099.46	4,093.12	16.78	13.82	169.17	109.65	368.03	1,003.93	976.48	27.46	36.566		
4,300.00	4,241.61	4,196.92	4,190.42	17.21	14.16	169.19	112.53	372.97	1,026.31	998.19	28.12	36.494		
4,400.00	4,340.02	4,294.38	4,287.71	17.63	14.49	169.20	115.40	377.90	1,048.69	1,019.90	28.79	36.425		
4,500.00	4,438.42	4,391.85	4,385.01	18.05	14.83	169.22	118.28	382.83	1,071.07	1,041.62	29.46	36.360		
4,600.00	4,536.87	4,489.36	4,482.36	18.45	15.16	169.26	121.16	387.77	1,093.22	1,063.11	30.11	36.306		
4,700.00	4,635.76	4,587.45	4,580.27	18.74	15.50	169.32	124.05	392.74	1,112.66	1,081.96	30.71	36.233		
4,800.00	4,735.12	4,686.14	4,678.79	19.02	15.84	169.33	126.97	397.73	1,128.74	1,097.43	31.31	36.055		
4,900.00	4,834.80	4,785.31	4,777.80	19.28	16.18	169.29	129.89	402.75	1,141.41	1,109.51	31.90	35.776		
5,000.00	4,934.70	4,884.85	4,877.17	19.52	16.53	169.21	132.83	407.79	1,150.69	1,118.18	32.50	35.402		
5,100.00	5,034.69	5,007.12	4,999.26	19.75	16.92	91.07	136.07	413.34	1,156.24	1,123.01	33.22	34.802		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	HZ	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor		
5,200.00	5,134.69	5,142.57	5,134.69	20.02	17.28	91.03	136.99	414.93	1,157.27	1,123.31	33.96	34.075		
5,300.00	5,234.69	5,242.57	5,234.69	20.29	17.58	91.03	136.99	414.93	1,157.27	1,122.70	34.57	33.479		
5,300.02	5,234.72	5,242.60	5,234.72	20.29	17.58	91.03	136.99	414.93	1,157.27	1,122.70	34.57	33.479		
5,400.00	5,334.67	5,341.24	5,333.34	20.56	17.88	-90.11	136.05	414.94	1,157.29	1,122.12	35.17	32.909		
5,500.00	5,433.27	5,437.20	5,428.05	20.79	18.14	-90.10	121.52	414.95	1,157.61	1,121.95	35.65	32.467		
5,600.00	5,527.04	5,533.32	5,518.66	21.01	18.40	-90.09	89.81	414.99	1,158.31	1,122.22	36.09	32.096		
5,700.00	5,612.56	5,629.75	5,602.15	21.22	18.65	-90.08	41.85	415.05	1,159.36	1,122.86	36.50	31.765		
5,800.00	5,686.66	5,726.59	5,675.68	21.42	18.89	-90.06	-20.95	415.13	1,160.73	1,123.81	36.92	31.440		
5,900.00	5,746.64	5,823.96	5,736.63	21.62	19.13	-90.04	-96.71	415.23	1,162.37	1,124.97	37.40	31.082		
6,000.00	5,790.28	5,921.96	5,782.68	21.83	19.39	-90.02	-183.05	415.34	1,164.23	1,126.26	37.97	30.663		
6,100.00	5,815.98	6,020.68	5,811.93	22.08	19.70	-89.99	-277.18	415.46	1,166.24	1,127.58	38.66	30.168		
6,200.00	5,823.00	6,120.19	5,822.94	22.39	20.08	-90.00	-375.93	415.58	1,168.33	1,128.86	39.46	29.607		
6,300.00	5,823.00	6,220.17	5,823.00	22.79	20.53	-90.00	-475.91	415.71	1,170.43	1,130.00	40.43	28.948		
6,400.00	5,823.00	6,320.14	5,823.00	23.27	21.08	-90.00	-575.88	415.83	1,172.54	1,130.95	41.59	28.195		
6,500.00	5,823.00	6,420.12	5,823.00	23.84	21.72	-90.00	-675.86	415.96	1,174.64	1,131.73	42.91	27.374		
6,600.00	5,823.00	6,520.10	5,823.00	24.49	22.44	-90.00	-775.84	416.08	1,176.75	1,132.36	44.39	26.510		
6,700.00	5,823.00	6,620.08	5,823.00	25.22	23.23	-90.00	-875.82	416.21	1,178.85	1,132.84	46.01	25.622		
6,800.00	5,823.00	6,720.06	5,823.00	26.01	24.08	-90.00	-975.79	416.33	1,180.96	1,133.20	47.76	24.729		
6,900.00	5,823.00	6,820.03	5,823.00	26.86	25.00	-90.00	-1,075.77	416.46	1,183.07	1,133.45	49.61	23.845		
7,000.00	5,823.00	6,920.01	5,823.00	27.77	25.96	-90.00	-1,175.75	416.59	1,185.17	1,133.60	51.57	22.980		
7,100.00	5,823.00	7,019.99	5,823.00	28.73	26.98	-90.00	-1,275.73	416.71	1,187.28	1,133.65	53.62	22.141		
7,200.00	5,823.00	7,119.97	5,823.00	29.73	28.03	-90.00	-1,375.71	416.84	1,189.38	1,133.63	55.75	21.334		
7,300.00	5,823.00	7,219.94	5,823.00	30.76	29.12	-90.00	-1,475.68	416.96	1,191.49	1,133.54	57.95	20.560		
7,400.00	5,823.00	7,319.92	5,823.00	31.84	30.24	-90.00	-1,575.66	417.09	1,193.59	1,133.38	60.21	19.823		
7,500.00	5,823.00	7,419.90	5,823.00	32.94	31.39	-90.00	-1,675.64	417.22	1,195.70	1,133.17	62.53	19.121		
7,600.00	5,823.00	7,519.88	5,823.00	34.08	32.57	-90.00	-1,775.62	417.34	1,197.80	1,132.90	64.90	18.456		
7,700.00	5,823.00	7,619.86	5,823.00	35.24	33.77	-90.00	-1,875.59	417.47	1,199.91	1,132.59	67.32	17.825		
7,800.00	5,823.00	7,719.83	5,823.00	36.42	34.99	-90.00	-1,975.57	417.59	1,202.02	1,132.24	69.77	17.228		
7,900.00	5,823.00	7,819.81	5,823.00	37.62	36.23	-90.00	-2,075.55	417.72	1,204.12	1,131.86	72.26	16.663		
8,000.00	5,823.00	7,919.79	5,823.00	38.84	37.48	-90.00	-2,175.53	417.84	1,206.23	1,131.44	74.79	16.129		
8,100.00	5,823.00	8,019.77	5,823.00	40.08	38.76	-90.00	-2,275.51	417.97	1,208.33	1,130.99	77.34	15.624		
8,200.00	5,823.00	8,119.75	5,823.00	41.33	40.04	-90.00	-2,375.48	418.10	1,210.44	1,130.52	79.92	15.146		
8,300.00	5,823.00	8,219.72	5,823.00	42.60	41.34	-90.00	-2,475.46	418.22	1,212.54	1,130.02	82.52	14.694		
8,400.00	5,823.00	8,319.70	5,823.00	43.88	42.65	-90.00	-2,575.44	418.35	1,214.65	1,129.50	85.15	14.266		
8,500.00	5,823.00	8,419.68	5,823.00	45.17	43.97	-90.00	-2,675.42	418.47	1,216.76	1,128.96	87.79	13.860		
8,600.00	5,823.00	8,519.66	5,823.00	46.47	45.30	-90.00	-2,775.39	418.60	1,218.86	1,128.41	90.45	13.475		
8,700.00	5,823.00	8,619.63	5,823.00	47.78	46.63	-90.00	-2,875.37	418.72	1,220.97	1,127.83	93.13	13.110		
8,800.00	5,823.00	8,719.61	5,823.00	49.10	47.98	-90.00	-2,975.35	418.85	1,223.07	1,127.24	95.83	12.763		
8,900.00	5,823.00	8,819.59	5,823.00	50.43	49.33	-90.00	-3,075.33	418.98	1,225.18	1,126.64	98.54	12.434		
9,000.00	5,823.00	8,919.57	5,823.00	51.77	50.69	-90.00	-3,175.31	419.10	1,227.28	1,126.02	101.26	12.120		
9,100.00	5,823.00	9,019.55	5,823.00	53.11	52.06	-90.00	-3,275.28	419.23	1,229.39	1,125.39	103.99	11.822		
9,200.00	5,823.00	9,119.52	5,823.00	54.46	53.43	-90.00	-3,375.26	419.35	1,231.49	1,124.76	106.74	11.537		
9,300.00	5,823.00	9,219.50	5,823.00	55.81	54.80	-90.00	-3,475.24	419.48	1,233.60	1,124.11	109.49	11.266		
9,400.00	5,823.00	9,319.48	5,823.00	57.18	56.18	-90.00	-3,575.22	419.61	1,235.71	1,123.45	112.26	11.008		
9,500.00	5,823.00	9,419.46	5,823.00	58.54	57.57	-90.00	-3,675.19	419.73	1,237.81	1,122.78	115.03	10.761		
9,600.00	5,823.00	9,519.43	5,823.00	59.91	58.96	-90.00	-3,775.17	419.86	1,239.92	1,122.11	117.81	10.525		
9,700.00	5,823.00	9,619.41	5,823.00	61.29	60.35	-90.00	-3,875.15	419.98	1,242.02	1,121.42	120.60	10.299		
9,800.00	5,823.00	9,719.39	5,823.00	62.67	61.75	-90.00	-3,975.13	420.11	1,244.13	1,120.73	123.39	10.082		
9,900.00	5,823.00	9,819.37	5,823.00	64.05	63.15	-90.00	-4,075.10	420.23	1,246.23	1,120.04	126.20	9.875		
10,000.00	5,823.00	9,919.35	5,823.00	65.44	64.55	-90.00	-4,175.08	420.36	1,248.34	1,119.33	129.00	9.677		
10,100.00	5,823.00	10,019.32	5,823.00	66.83	65.96	-90.00	-4,275.06	420.49	1,250.45	1,118.63	131.82	9.486		
10,200.00	5,823.00	10,119.30	5,823.00	68.22	67.37	-90.00	-4,375.04	420.61	1,252.55	1,117.91	134.64	9.303		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	HZ	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor		
10,300.00	5,823.00	10,219.28	5,823.00	69.62	68.78	-90.00	-4,475.02	420.74	1,254.66	1,117.19	137.46	9.127		
10,400.00	5,823.00	10,319.26	5,823.00	71.02	70.20	-90.00	-4,574.99	420.86	1,256.76	1,116.47	140.29	8.958		
10,500.00	5,823.00	10,419.24	5,823.00	72.42	71.61	-90.00	-4,674.97	420.99	1,258.87	1,115.74	143.12	8.796		
10,600.00	5,823.00	10,519.21	5,823.00	73.83	73.03	-90.00	-4,774.95	421.12	1,260.97	1,115.01	145.96	8.639		
10,700.00	5,823.00	10,619.19	5,823.00	75.24	74.45	-90.00	-4,874.93	421.24	1,263.08	1,114.28	148.80	8.488		
10,800.00	5,823.00	10,719.17	5,823.00	76.65	75.88	-90.00	-4,974.90	421.37	1,265.18	1,113.54	151.65	8.343		
10,900.00	5,823.00	10,819.15	5,823.00	78.06	77.30	-90.00	-5,074.88	421.49	1,267.29	1,112.79	154.50	8.203		
11,000.00	5,823.00	10,919.12	5,823.00	79.47	78.73	-90.00	-5,174.86	421.62	1,269.40	1,112.05	157.35	8.067		
11,100.00	5,823.00	11,019.10	5,823.00	80.89	80.16	-90.00	-5,274.84	421.74	1,271.50	1,111.30	160.20	7.937		
11,200.00	5,823.00	11,119.08	5,823.00	82.31	81.59	-90.00	-5,374.82	421.87	1,273.61	1,110.55	163.06	7.811		
11,300.00	5,823.00	11,219.06	5,823.00	83.73	83.02	-90.00	-5,474.79	422.00	1,275.71	1,109.79	165.92	7.689		
11,400.00	5,823.00	11,319.04	5,823.00	85.15	84.45	-90.00	-5,574.77	422.12	1,277.82	1,109.03	168.79	7.571		
11,500.00	5,823.00	11,419.01	5,823.00	86.57	85.89	-90.00	-5,674.75	422.25	1,279.92	1,108.27	171.65	7.456		
11,600.00	5,823.00	11,518.99	5,823.00	87.99	87.32	-90.00	-5,774.73	422.37	1,282.03	1,107.51	174.52	7.346		
11,700.00	5,823.00	11,618.97	5,823.00	89.42	88.76	-90.00	-5,874.70	422.50	1,284.13	1,106.74	177.39	7.239		
11,800.00	5,823.00	11,718.95	5,823.00	90.85	90.19	-90.00	-5,974.68	422.62	1,286.24	1,105.98	180.27	7.135		
11,900.00	5,823.00	11,818.93	5,823.00	92.28	91.63	-90.00	-6,074.66	422.75	1,288.35	1,105.21	183.14	7.035		
12,000.00	5,823.00	11,918.90	5,823.00	93.70	93.07	-90.00	-6,174.64	422.88	1,290.45	1,104.43	186.02	6.937		
12,100.00	5,823.00	12,018.88	5,823.00	95.14	94.51	-90.00	-6,274.62	423.00	1,292.56	1,103.66	188.90	6.843		
12,200.00	5,823.00	12,118.86	5,823.00	96.57	95.95	-90.00	-6,374.59	423.13	1,294.66	1,102.89	191.78	6.751		
12,300.00	5,823.00	12,218.84	5,823.00	98.00	97.40	-90.00	-6,474.57	423.25	1,296.77	1,102.11	194.66	6.662		
12,400.00	5,823.00	12,318.81	5,823.00	99.43	98.84	-90.00	-6,574.55	423.38	1,298.87	1,101.33	197.54	6.575		
12,500.00	5,823.00	12,418.79	5,823.00	100.87	100.28	-90.00	-6,674.53	423.51	1,300.98	1,100.55	200.43	6.491		
12,600.00	5,823.00	12,518.77	5,823.00	102.30	101.73	-90.00	-6,774.50	423.63	1,303.09	1,099.77	203.32	6.409		
12,700.00	5,823.00	12,618.75	5,823.00	103.74	103.17	-90.00	-6,874.48	423.76	1,305.19	1,098.98	206.21	6.330		
12,800.00	5,823.00	12,718.73	5,823.00	105.18	104.62	-90.00	-6,974.46	423.88	1,307.30	1,098.20	209.10	6.252		
12,900.00	5,823.00	12,818.70	5,823.00	106.62	106.07	-90.00	-7,074.44	424.01	1,309.40	1,097.41	211.99	6.177		
13,000.00	5,823.00	12,918.68	5,823.00	108.06	107.52	-90.00	-7,174.42	424.13	1,311.51	1,096.63	214.88	6.103		
13,100.00	5,823.00	13,018.66	5,823.00	109.50	108.96	-90.00	-7,274.39	424.26	1,313.61	1,095.84	217.78	6.032		
13,200.00	5,823.00	13,118.64	5,823.00	110.94	110.41	-90.00	-7,374.37	424.39	1,315.72	1,095.05	220.67	5.962		
13,300.00	5,823.00	13,218.61	5,823.00	112.38	111.86	-90.00	-7,474.35	424.51	1,317.82	1,094.26	223.57	5.895		
13,400.00	5,823.00	13,318.59	5,823.00	113.82	113.31	-90.00	-7,574.33	424.64	1,319.93	1,093.46	226.47	5.828		
13,500.00	5,823.00	13,418.57	5,823.00	115.26	114.76	-90.00	-7,674.30	424.76	1,322.04	1,092.67	229.36	5.764		
13,600.00	5,823.00	13,518.55	5,823.00	116.71	116.22	-90.00	-7,774.28	424.89	1,324.14	1,091.88	232.26	5.701		
13,700.00	5,823.00	13,618.53	5,823.00	118.15	117.67	-90.00	-7,874.26	425.01	1,326.25	1,091.08	235.16	5.640		
13,800.00	5,823.00	13,718.50	5,823.00	119.59	119.12	-90.00	-7,974.24	425.14	1,328.35	1,090.29	238.07	5.580		
13,900.00	5,823.00	13,818.48	5,823.00	121.04	120.57	-90.00	-8,074.22	425.27	1,330.46	1,089.49	240.97	5.521		
13,986.28	5,823.00	13,903.39	5,823.00	122.29	121.81	-90.00	-8,159.13	425.37	1,332.28	1,088.83	243.45	5.473 SF		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	HZ	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag												Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	90.00	-0.01	239.91	239.91	239.65	0.27	900.753	
100.00	100.00	100.00	100.00	0.13	0.13	90.00	-0.01	239.91	239.91	238.97	0.94	255.052	
200.00	200.00	200.00	200.00	0.47	0.47	90.00	-0.01	239.91	239.91	238.30	1.61	148.559 CC, ES	
300.00	300.00	300.00	300.00	0.81	0.81	90.00	-0.01	239.91	239.91	240.88	2.30	105.885	
400.00	399.98	392.44	392.42	1.13	1.11	167.97	0.40	241.35	243.17	249.90	3.04	83.321	
500.00	499.84	484.30	484.17	1.46	1.41	167.89	1.59	245.62	252.93	265.32	3.79	70.944	
600.00	599.45	575.02	574.60	1.81	1.72	167.76	3.55	252.62	269.12	286.89	4.49	64.932	
700.00	698.70	667.57	666.59	2.16	2.05	167.60	6.27	262.33	291.38	312.36	5.10	62.205	
800.00	797.47	764.10	762.49	2.53	2.38	167.54	9.24	272.96	317.46	339.86	5.71	60.471	
900.00	895.87	860.06	857.83	2.93	2.72	167.66	12.20	283.53	345.58	367.40	6.32	59.170	
1,000.00	994.28	956.02	953.15	3.33	3.07	167.77	15.15	294.09	373.72	394.93	6.93	58.022	
1,100.00	1,092.68	1,051.98	1,048.48	3.73	3.42	167.87	18.11	304.65	401.86	422.45	7.55	56.974	
1,200.00	1,191.09	1,147.93	1,143.81	4.14	3.77	167.95	21.07	315.22	430.00	449.97	8.17	56.043	
1,300.00	1,289.49	1,243.89	1,239.14	4.56	4.12	168.02	24.02	325.78	458.15	477.48	8.81	55.214	
1,400.00	1,387.89	1,339.85	1,334.46	4.97	4.47	168.09	26.98	336.35	486.29	504.99	9.44	54.472	
1,500.00	1,486.30	1,435.80	1,429.79	5.39	4.83	168.15	29.94	346.91	514.43	532.49	10.08	53.806	
1,600.00	1,584.70	1,531.76	1,525.12	5.81	5.18	168.20	32.89	357.48	542.58	560.00	10.73	53.206	
1,700.00	1,683.11	1,627.72	1,620.45	6.22	5.53	168.24	35.85	368.04	570.72	587.50	11.37	52.663	
1,800.00	1,781.51	1,723.67	1,715.77	6.64	5.89	168.29	38.81	378.60	598.87	615.00	12.02	52.170	
1,900.00	1,879.91	1,819.63	1,811.10	7.06	6.24	168.32	41.76	389.17	627.01	642.49	12.67	51.721	
2,000.00	1,978.32	1,915.59	1,906.43	7.48	6.60	168.36	44.72	399.73	655.16	669.99	13.32	51.311	
2,100.00	2,076.72	2,011.54	2,001.76	7.90	6.95	168.39	47.67	410.30	683.31	697.48	13.97	50.934	
2,200.00	2,175.13	2,107.50	2,097.08	8.33	7.31	168.42	50.63	420.86	711.45	724.98	14.62	50.588	
2,300.00	2,273.53	2,203.46	2,192.41	8.75	7.66	168.45	53.59	431.43	739.60	752.47	15.27	50.268	
2,400.00	2,371.94	2,299.41	2,287.74	9.17	8.02	168.47	56.54	441.99	767.74	779.96	15.93	49.972	
2,500.00	2,470.34	2,395.37	2,383.07	9.59	8.37	168.50	59.50	452.56	795.89	807.46	16.58	49.697	
2,600.00	2,568.74	2,491.33	2,478.39	10.01	8.73	168.52	62.46	463.12	824.04	834.95	17.24	49.441	
2,700.00	2,667.15	2,587.28	2,573.72	10.44	9.08	168.54	65.41	473.68	852.19	862.44	17.89	49.203	
2,800.00	2,765.55	2,683.24	2,669.05	10.86	9.44	168.56	68.37	484.25	880.33	889.93	18.55	48.980	
2,900.00	2,863.96	2,779.20	2,764.38	11.28	9.79	168.58	71.33	494.81	908.48	917.42	19.20	48.771	
3,000.00	2,962.36	2,875.15	2,859.70	11.70	10.15	168.59	74.28	505.38	936.63	944.91	19.86	48.575	
3,100.00	3,060.76	2,971.11	2,955.03	12.13	10.51	168.61	77.24	515.94	964.77	972.40	20.52	48.391	
3,200.00	3,159.17	3,067.07	3,050.36	12.55	10.86	168.63	80.19	526.51	992.92	999.89	21.18	48.217	
3,300.00	3,257.57	3,163.02	3,145.69	12.97	11.22	168.64	83.15	537.07	1,021.07	1,027.38	21.83	48.054	
3,400.00	3,355.98	3,258.98	3,241.01	13.40	11.57	168.65	86.11	547.63	1,049.22	1,054.87	22.49	47.899	
3,500.00	3,454.38	3,354.94	3,336.34	13.82	11.93	168.67	89.06	558.20	1,077.36	1,082.36	23.15	47.752	
3,600.00	3,552.78	3,450.89	3,431.67	14.24	12.28	168.68	92.02	568.76	1,105.51	1,109.85	23.81	47.613	
3,700.00	3,651.19	3,546.85	3,527.00	14.67	12.64	168.69	94.98	579.33	1,133.66	1,137.34	24.47	47.481	
3,800.00	3,749.59	3,642.81	3,622.32	15.09	13.00	168.70	97.93	589.89	1,161.81	1,164.83	25.13	47.356	
3,900.00	3,848.00	3,738.76	3,717.65	15.51	13.35	168.71	100.89	600.46	1,189.95	1,192.31	25.79	47.237	
4,000.00	3,946.40	3,834.72	3,812.98	15.94	13.71	168.72	103.85	611.02	1,218.10	1,219.80	26.45	47.123	
4,100.00	4,044.80	3,930.68	3,908.30	16.36	14.06	168.73	106.80	621.59	1,246.25	1,247.29	27.11	47.014	
4,200.00	4,143.21	4,026.63	4,003.63	16.78	14.42	168.74	109.76	632.15	1,274.40	1,274.78	27.77	46.911	
4,300.00	4,241.61	4,122.59	4,098.96	17.21	14.78	168.75	112.72	642.71	1,302.54	1,302.27	28.43	46.812	
4,400.00	4,340.02	4,218.55	4,194.29	17.63	15.13	168.76	115.67	653.28	1,330.69	1,329.75	29.09	46.717	
4,500.00	4,438.42	4,314.50	4,289.61	18.05	15.49	168.76	118.63	663.84	1,358.84	1,357.02	29.73	46.639	
4,600.00	4,536.87	4,410.53	4,385.01	18.45	15.84	168.81	121.59	674.41	1,386.76	1,381.69	30.33	46.563	
4,700.00	4,635.76	4,507.28	4,481.13	18.74	16.20	168.90	124.57	685.07	1,412.02	1,403.03	30.92	46.379	
4,800.00	4,735.12	4,604.83	4,578.04	19.02	16.56	168.94	127.57	695.81	1,433.95	1,421.01	31.51	46.093	
4,900.00	4,834.80	4,703.07	4,675.63	19.28	16.93	168.94	130.60	706.62	1,452.53	1,432.70	32.49	45.090	
5,000.00	4,934.70	4,886.54	4,858.40	19.52	17.47	168.87	134.86	721.84	1,465.19				
5,100.00	5,034.69	5,062.92	5,034.69	19.75	17.92	90.85	136.00	725.91	1,468.22	1,434.89	33.33	44.049	

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	HZ	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Sec 30-T10N-R57W - Horsetail #30G-3144 - Hz - APD		Offset Site Error:		0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:		0.00 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)	Minimum Separation (usft)	Separation Factor					
5,200.00	5,134.69	5,162.92	5,134.69	20.02	18.21	90.85	136.00	725.91	1,468.22	1,434.29	33.93	43.269					
5,208.04	5,142.74	5,170.96	5,142.74	20.04	18.23	90.85	136.00	725.91	1,468.22	1,434.24	33.98	43.206					
5,300.00	5,234.69	5,261.89	5,233.66	20.29	18.49	90.86	135.63	725.91	1,468.23	1,433.70	34.53	42.519					
5,400.00	5,334.67	5,355.33	5,326.22	20.56	18.73	-89.83	123.77	725.96	1,468.52	1,433.45	35.07	41.878					
5,500.00	5,433.27	5,446.14	5,412.75	20.79	18.96	-89.22	96.60	726.06	1,469.35	1,433.83	35.52	41.362					
5,600.00	5,527.04	5,535.05	5,491.65	21.01	19.18	-88.64	55.85	726.20	1,470.67	1,434.74	35.93	40.929					
5,700.00	5,612.56	5,622.46	5,561.37	21.22	19.39	-88.10	3.30	726.40	1,472.38	1,436.06	36.32	40.541					
5,800.00	5,686.66	5,708.74	5,620.63	21.42	19.60	-87.62	-59.28	726.62	1,474.38	1,437.65	36.72	40.149					
5,900.00	5,746.64	5,794.24	5,668.38	21.62	19.82	-87.22	-130.09	726.88	1,476.55	1,439.36	37.18	39.710					
6,000.00	5,790.28	5,879.31	5,703.77	21.83	20.05	-86.90	-207.34	727.16	1,478.79	1,441.06	37.73	39.192					
6,100.00	5,815.98	5,964.29	5,726.12	22.08	20.33	-86.68	-289.22	727.46	1,481.01	1,442.62	38.39	38.582					
6,200.00	5,823.00	6,050.00	5,734.89	22.39	20.66	-86.59	-374.39	727.77	1,483.14	1,443.99	39.14	37.888					
6,300.00	5,823.00	6,147.59	5,735.00	22.79	21.11	-86.60	-471.98	728.13	1,485.47	1,445.35	40.12	37.024					
6,400.00	5,823.00	6,247.56	5,735.00	23.27	21.65	-86.61	-571.95	728.49	1,487.81	1,446.52	41.29	36.035					
6,500.00	5,823.00	6,347.53	5,735.00	23.84	22.28	-86.61	-671.92	728.86	1,490.15	1,447.53	42.63	34.959					
6,600.00	5,823.00	6,447.51	5,735.00	24.49	22.99	-86.62	-771.89	729.22	1,492.49	1,448.37	44.12	33.830					
6,700.00	5,823.00	6,547.48	5,735.00	25.22	23.77	-86.62	-871.86	729.58	1,494.83	1,449.08	45.75	32.674					
6,800.00	5,823.00	6,647.45	5,735.00	26.01	24.61	-86.63	-971.84	729.95	1,497.17	1,449.66	47.51	31.515					
6,900.00	5,823.00	6,747.42	5,735.00	26.86	25.51	-86.63	-1,071.81	730.31	1,499.51	1,450.13	49.38	30.369					
7,000.00	5,823.00	6,847.40	5,735.00	27.77	26.47	-86.64	-1,171.78	730.68	1,501.85	1,450.50	51.35	29.250					
7,100.00	5,823.00	6,947.37	5,735.00	28.73	27.47	-86.65	-1,271.75	731.04	1,504.19	1,450.79	53.40	28.166					
7,200.00	5,823.00	7,047.34	5,735.00	29.73	28.51	-86.65	-1,371.72	731.40	1,506.53	1,450.99	55.54	27.124					
7,300.00	5,823.00	7,147.31	5,735.00	30.76	29.59	-86.66	-1,471.70	731.77	1,508.87	1,451.12	57.75	26.128					
7,400.00	5,823.00	7,247.29	5,735.00	31.84	30.70	-86.66	-1,571.67	732.13	1,511.21	1,451.19	60.02	25.179					
7,500.00	5,823.00	7,347.26	5,735.00	32.94	31.84	-86.67	-1,671.64	732.50	1,513.55	1,451.21	62.35	24.277					
7,600.00	5,823.00	7,447.23	5,735.00	34.08	33.01	-86.67	-1,771.61	732.86	1,515.89	1,451.17	64.72	23.422					
7,700.00	5,823.00	7,547.20	5,735.00	35.24	34.20	-86.68	-1,871.58	733.23	1,518.23	1,451.09	67.14	22.613					
7,800.00	5,823.00	7,647.18	5,735.00	36.42	35.41	-86.68	-1,971.55	733.59	1,520.57	1,450.97	69.60	21.847					
7,900.00	5,823.00	7,747.15	5,735.00	37.62	36.64	-86.69	-2,071.53	733.95	1,522.91	1,450.82	72.10	21.124					
8,000.00	5,823.00	7,847.12	5,735.00	38.84	37.89	-86.69	-2,171.50	734.32	1,525.25	1,450.63	74.62	20.439					
8,100.00	5,823.00	7,947.09	5,735.00	40.08	39.16	-86.70	-2,271.47	734.68	1,527.59	1,450.41	77.18	19.793					
8,200.00	5,823.00	8,047.07	5,735.00	41.33	40.44	-86.70	-2,371.44	735.05	1,529.93	1,450.17	79.76	19.181					
8,300.00	5,823.00	8,147.04	5,735.00	42.60	41.73	-86.71	-2,471.41	735.41	1,532.27	1,449.90	82.37	18.603					
8,400.00	5,823.00	8,247.01	5,735.00	43.88	43.03	-86.71	-2,571.39	735.78	1,534.61	1,449.62	85.00	18.055					
8,500.00	5,823.00	8,346.98	5,735.00	45.17	44.34	-86.72	-2,671.36	736.14	1,536.95	1,449.31	87.64	17.537					
8,600.00	5,823.00	8,446.96	5,735.00	46.47	45.67	-86.72	-2,771.33	736.50	1,539.29	1,448.98	90.31	17.045					
8,700.00	5,823.00	8,546.93	5,735.00	47.78	47.00	-86.73	-2,871.30	736.87	1,541.63	1,448.64	92.99	16.579					
8,800.00	5,823.00	8,646.90	5,735.00	49.10	48.34	-86.73	-2,971.27	737.23	1,543.97	1,448.29	95.69	16.136					
8,900.00	5,823.00	8,746.87	5,735.00	50.43	49.69	-86.74	-3,071.25	737.60	1,546.31	1,447.92	98.40	15.715					
9,000.00	5,823.00	8,846.85	5,735.00	51.77	51.04	-86.74	-3,171.22	737.96	1,548.65	1,447.53	101.12	15.315 SF					



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	HZ	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 6420-MWD													Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor		
11,900.00	5,823.00	5,768.10	5,768.10	92.28	9.69	90.00	-7,599.26	-929.95	1,524.34	1,489.93	34.40	44.306		
12,000.00	5,823.00	5,768.10	5,768.10	93.70	9.69	90.00	-7,599.26	-929.95	1,424.36	1,389.90	34.47	41.325		
12,100.00	5,823.00	5,768.10	5,768.10	95.14	9.69	90.00	-7,599.26	-929.95	1,324.39	1,289.87	34.52	38.361		
12,200.00	5,823.00	5,768.10	5,768.10	96.57	9.69	90.00	-7,599.26	-929.95	1,224.43	1,189.85	34.58	35.412		
12,300.00	5,823.00	5,768.10	5,768.10	98.00	9.69	90.00	-7,599.26	-929.95	1,124.47	1,089.85	34.62	32.479		
12,400.00	5,823.00	5,768.10	5,768.10	99.43	9.69	90.00	-7,599.26	-929.95	1,024.52	989.86	34.66	29.561		
12,500.00	5,823.00	5,768.10	5,768.10	100.87	9.69	90.00	-7,599.26	-929.95	924.58	889.90	34.68	26.658		
12,600.00	5,823.00	5,768.10	5,768.10	102.30	9.69	90.00	-7,599.26	-929.95	824.66	789.97	34.70	23.768		
12,700.00	5,823.00	5,768.10	5,768.10	103.74	9.69	90.00	-7,599.26	-929.95	724.76	690.07	34.69	20.890		
12,800.00	5,823.00	5,768.10	5,768.10	105.18	9.69	90.00	-7,599.26	-929.95	624.89	590.21	34.68	18.020		
12,900.00	5,823.00	5,768.10	5,768.10	106.62	9.69	90.00	-7,599.26	-929.95	525.07	490.41	34.65	15.152		
13,000.00	5,823.00	5,768.10	5,768.10	108.06	9.69	90.00	-7,599.26	-929.95	425.33	390.67	34.66	12.273		
13,100.00	5,823.00	5,768.10	5,768.10	109.50	9.69	90.00	-7,599.26	-929.95	325.75	290.92	34.83	9.353		
13,200.00	5,823.00	5,768.10	5,768.10	110.94	9.69	90.00	-7,599.26	-929.95	226.55	190.73	35.82	6.324		
13,300.00	5,823.00	5,768.10	5,768.10	112.38	9.69	90.00	-7,599.26	-929.95	128.58	86.69	41.89	3.069		
13,400.00	5,823.00	5,768.10	5,768.10	113.82	9.69	90.00	-7,599.26	-929.95	41.75	-56.76	98.51	0.424	Level 1	
13,423.95	5,823.00	5,768.10	5,768.10	114.17	9.69	90.00	-7,599.26	-929.95	34.19	-89.27	123.46	0.277	Level 1, CC, ES, SF	
13,500.00	5,823.00	5,768.10	5,768.10	115.26	9.69	90.00	-7,599.26	-929.95	83.38	13.40	69.98	1.191	Level 2	
13,600.00	5,823.00	5,768.10	5,768.10	116.71	9.69	90.00	-7,599.26	-929.95	179.34	129.38	49.95	3.590		
13,700.00	5,823.00	5,768.10	5,768.10	118.15	9.69	90.00	-7,599.26	-929.95	278.16	233.47	44.69	6.224		
13,800.00	5,823.00	5,768.10	5,768.10	119.59	9.69	90.00	-7,599.26	-929.95	377.60	335.08	42.52	8.881		
13,900.00	5,823.00	5,768.10	5,768.10	121.04	9.69	90.00	-7,599.26	-929.95	477.27	435.86	41.41	11.525		
13,986.28	5,823.00	5,768.10	5,768.10	122.29	9.69	90.00	-7,599.26	-929.95	563.36	522.51	40.85	13.791		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 6500-MWD													Offset Well Error:	0.00 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)	Minimum Separation (usft)	Separation Factor		
11,600.00	5,823.00	5,772.10	5,772.10	87.99	9.70	90.00	-7,296.86	-955.69	1,523.55	1,489.93	33.62	45.323		
11,700.00	5,823.00	5,772.10	5,772.10	89.42	9.70	90.00	-7,296.86	-955.69	1,423.65	1,390.00	33.65	42.306		
11,800.00	5,823.00	5,772.10	5,772.10	90.85	9.70	90.00	-7,296.86	-955.69	1,323.76	1,290.08	33.68	39.300		
11,900.00	5,823.00	5,772.10	5,772.10	92.28	9.70	90.00	-7,296.86	-955.69	1,223.90	1,190.19	33.71	36.306		
12,000.00	5,823.00	5,772.10	5,772.10	93.70	9.70	90.00	-7,296.86	-955.69	1,124.06	1,090.32	33.73	33.320		
12,100.00	5,823.00	5,772.10	5,772.10	95.14	9.70	90.00	-7,296.86	-955.69	1,024.24	990.49	33.76	30.342		
12,200.00	5,823.00	5,772.10	5,772.10	96.57	9.70	90.00	-7,296.86	-955.69	924.47	890.69	33.78	27.368		
12,300.00	5,823.00	5,772.10	5,772.10	98.00	9.70	90.00	-7,296.86	-955.69	824.76	790.95	33.81	24.392		
12,400.00	5,823.00	5,772.10	5,772.10	99.43	9.70	90.00	-7,296.86	-955.69	725.12	691.25	33.87	21.407		
12,500.00	5,823.00	5,772.10	5,772.10	100.87	9.70	90.00	-7,296.86	-955.69	625.60	591.60	34.00	18.398		
12,600.00	5,823.00	5,772.10	5,772.10	102.30	9.70	90.00	-7,296.86	-955.69	526.27	491.97	34.30	15.344		
12,700.00	5,823.00	5,772.10	5,772.10	103.74	9.70	90.00	-7,296.86	-955.69	427.24	392.24	35.00	12.208		
12,800.00	5,823.00	5,772.10	5,772.10	105.18	9.70	90.00	-7,296.86	-955.69	328.80	292.03	36.77	8.943		
12,900.00	5,823.00	5,772.10	5,772.10	106.62	9.70	90.00	-7,296.86	-955.69	231.70	189.95	41.74	5.550		
13,000.00	5,823.00	5,772.10	5,772.10	108.06	9.70	90.00	-7,296.86	-955.69	138.78	80.75	58.02	2.392		
13,100.00	5,823.00	5,772.10	5,772.10	109.50	9.70	90.00	-7,296.86	-955.69	69.53	-40.97	110.50	0.629	Level 1	
13,122.12	5,823.00	5,772.10	5,772.10	109.81	9.70	90.00	-7,296.86	-955.69	65.92	-53.19	119.10	0.553	Level 1, CC, ES, SF	
13,200.00	5,823.00	5,772.10	5,772.10	110.94	9.70	90.00	-7,296.86	-955.69	102.03	11.53	90.50	1.127	Level 2	
13,300.00	5,823.00	5,772.10	5,772.10	112.38	9.70	90.00	-7,296.86	-955.69	189.70	126.78	62.92	3.015		
13,400.00	5,823.00	5,772.10	5,772.10	113.82	9.70	90.00	-7,296.86	-955.69	285.59	232.81	52.78	5.411		
13,500.00	5,823.00	5,772.10	5,772.10	115.26	9.70	90.00	-7,296.86	-955.69	383.59	335.50	48.09	7.977		
13,600.00	5,823.00	5,772.10	5,772.10	116.71	9.70	90.00	-7,296.86	-955.69	482.40	436.88	45.53	10.596		
13,700.00	5,823.00	5,772.10	5,772.10	118.15	9.70	90.00	-7,296.86	-955.69	581.63	537.65	43.97	13.227		
13,800.00	5,823.00	5,772.10	5,772.10	119.59	9.70	90.00	-7,296.86	-955.69	681.08	638.11	42.97	15.851		
13,900.00	5,823.00	5,772.10	5,772.10	121.04	9.70	90.00	-7,296.86	-955.69	780.67	738.38	42.29	18.461		
13,986.28	5,823.00	5,772.10	5,772.10	122.29	9.70	90.00	-7,296.86	-955.69	866.67	824.80	41.87	20.700		



WOG

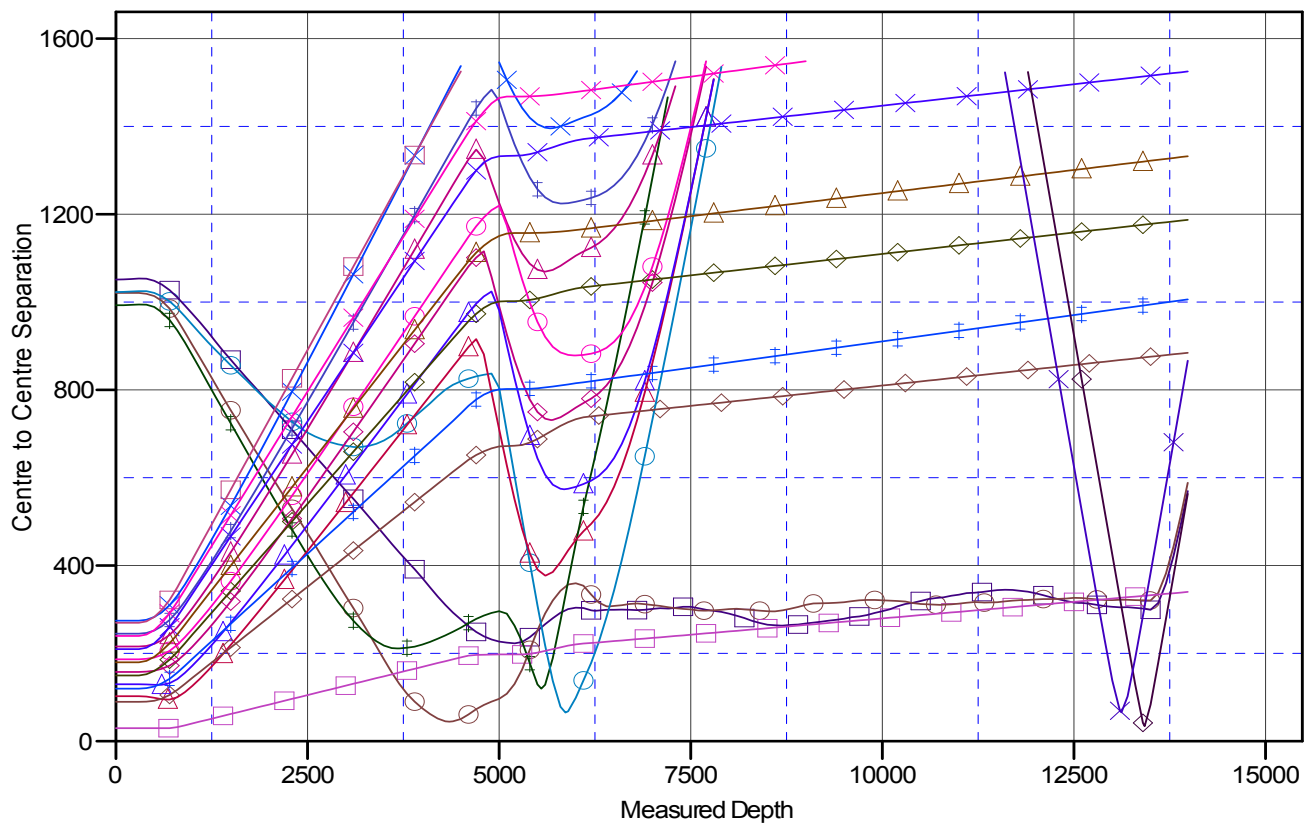
Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30G-3139
Project:	Weld County, CO	TVD Reference:	KBE @ 4758.90usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4758.90usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30G-3139	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KBE @ 4758.90usft (Original Well Ele)
Offset Depths are relative to Offset Datum
Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: Horsetail #30G-3139
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 1.10°

Ladder Plot



LEGEND

Horsetail #30F-3106, Hz, HzV0	Horsetail #30G-1912, Hz, APDV0	Horsetail #30G-3112, Hz, APDV0
Horsetail #30F-3107, Hz, HzV0	Horsetail #30G-1942, Hz, APDV0	Horsetail #30G-3140, Hz, APDV0
Horsetail #30F-1948, Hz, HzV0	Horsetail #30G-1943, Hz, APDV0	Horsetail #30G-3142, Hz, APDV0
Horsetail #30F-1947, Hz, HzV0	Horsetail #30G-1944, Hz, APDV0	Horsetail #30G-3143, Hz, APDV0
Horsetail #30G-1909, Hz, APDV0	Horsetail #30G-3109, Hz, APDV0	Horsetail #30G-3144, Hz, APDV0
Horsetail #30G-1910, Hz, APDV0	Horsetail #30G-3110, Hz, APDV0	Maddy#1, Wellbore#1, Wellbore#1 V0
Horsetail #30G-1911, Hz, APDV0	Horsetail #30G-3111, Hz, APDV0	Maddy#2, Wellbore#1, Wellbore#1 V0



WOG

Anticollision Report

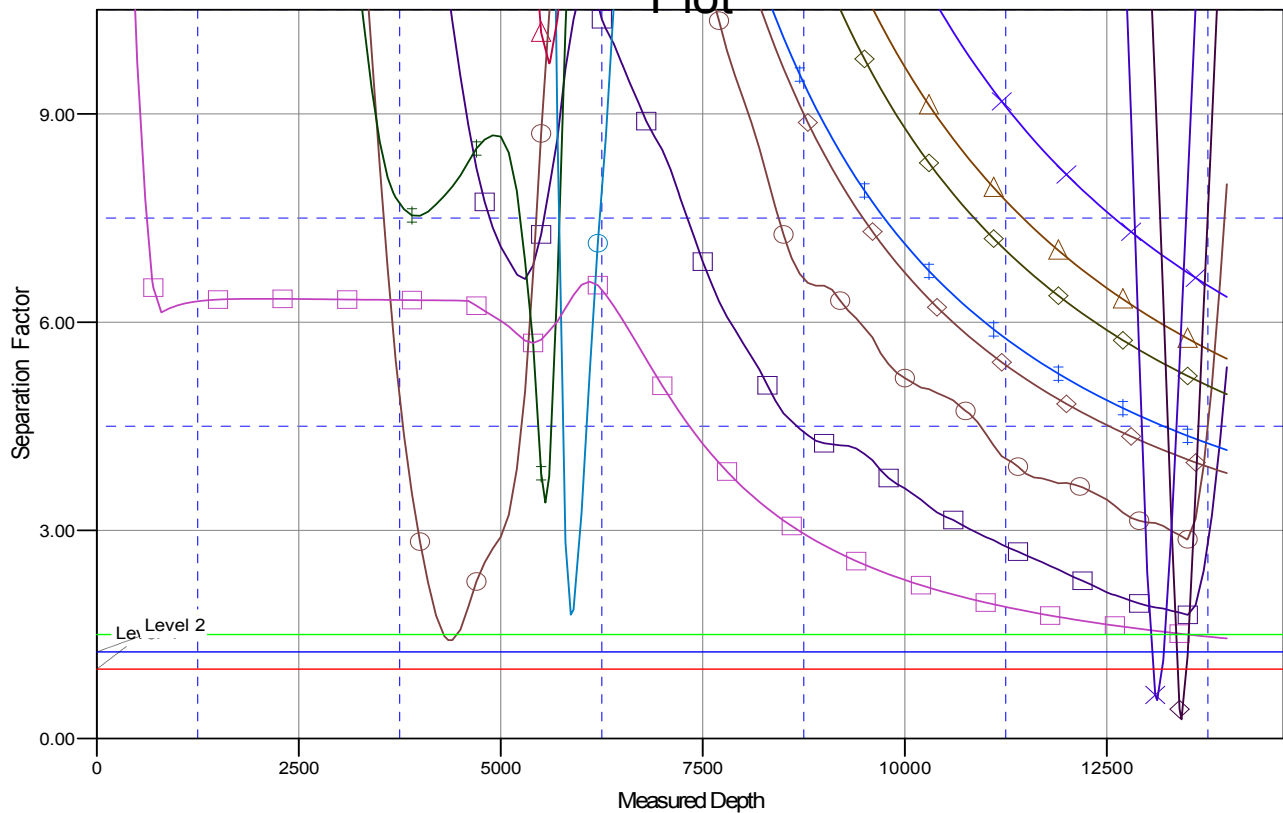
Company: Whiting Petroleum Corp.
Project: Weld County, CO
Reference Site: Sec 30-T10N-R57W
Site Error: 0.00 usft
Reference Well: Horsetail #30G-3139
Well Error: 0.00 usft
Reference Wellbore: Hz
Reference Design: APD

Local Co-ordinate Reference: Well Horsetail #30G-3139
TVD Reference: KBE @ 4758.90usft (Original Well Elev)
MD Reference: KBE @ 4758.90usft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 3.00 sigma
Database: LandmarkEDM
Offset TVD Reference: Offset Datum

Reference Depths are relative to KBE @ 4758.90usft (Original Well Ele)
Offset Depths are relative to Offset Datum
Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: Horsetail #30G-3139
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 1.10°

Separation Factor Plot



LEGEND

- | | | |
|--------------------------------|--------------------------------|--------------------------------------|
| Horsetail #30F-3106, Hz, HzV0 | Horsetail #30G-1912, Hz, APDV0 | Horsetail #30G-3112, Hz, APDV0 |
| Horsetail #30F-3107, Hz, HzV0 | Horsetail #30G-1942, Hz, APDV0 | Horsetail #30G-3140, Hz, APDV0 |
| Horsetail #30F-1948, Hz, HzV0 | Horsetail #30G-1943, Hz, APDV0 | Horsetail #30G-3142, Hz, APDV0 |
| Horsetail #30F-1947, Hz, HzV0 | Horsetail #30G-1944, Hz, APDV0 | Horsetail #30G-3143, Hz, APDV0 |
| Horsetail #30G-1909, Hz, APDV0 | Horsetail #30G-3109, Hz, APDV0 | Horsetail #30G-3144, Hz, APDV0 |
| Horsetail #30G-1910, Hz, APDV0 | Horsetail #30G-3110, Hz, APDV0 | Maddy#1, Wellbore #1, Wellbore #1 V0 |
| Horsetail #30G-1911, Hz, APDV0 | Horsetail #30G-3111, Hz, APDV0 | Maddy#2, Wellbore #1, Wellbore #1 V0 |