



Whiting Petroleum Corp.

Weld County, CO

Sec 30-T10N-R57W

Horsetail #30E-1936

Hz

APD

Anticollision Report

22 October, 2015



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1936
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-1936	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	13,849.49	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 #30E-1901 - Hz - APD	300.00	300.00	150.71	149.10	93.325	CC, ES
Horsetail #30E-1901 - Hz - APD	13,849.49	13,649.62	847.94	620.13	3.722	SF
Horsetail #30E-1902 - Hz - APD	300.00	300.00	89.97	88.35	55.709	CC, ES
Horsetail #30E-1902 - Hz - APD	13,849.49	13,718.74	511.58	284.74	2.255	SF
Horsetail #30E-1903 - Hz - APD	300.00	300.00	29.99	28.37	18.570	CC
Horsetail #30E-1903 - Hz - APD	400.00	400.07	30.29	28.08	13.696	ES
Horsetail #30E-1903 - Hz - APD	13,849.49	13,650.75	257.15	93.06	1.567	SF
Horsetail #30E-1904 - Hz - APD	300.00	300.00	29.99	28.37	18.570	CC
Horsetail #30E-1904 - Hz - APD	13,849.49	13,732.32	209.05	16.24	1.084	Level 2, ES, SF
Horsetail #30E-1934 - Hz - APD	300.00	300.00	119.96	118.34	74.279	CC, ES
Horsetail #30E-1934 - Hz - APD	13,849.49	13,844.89	660.30	426.80	2.828	SF
Horsetail #30E-1935 - Hz - APD	300.00	300.00	59.98	58.36	37.140	CC, ES
Horsetail #30E-1935 - Hz - APD	13,849.49	13,926.28	341.30	113.68	1.499	Level 3, SF
Horsetail #30E-3103 - Hz - APD	786.09	785.76	13.53	8.66	2.781	CC, ES
Horsetail #30E-3103 - Hz - APD	5,632.22	6,057.58	99.35	58.74	2.446	SF
Horsetail #30E-3104 - Hz - APD	636.81	632.55	50.65	46.74	12.949	CC, ES
Horsetail #30E-3104 - Hz - APD	5,726.29	6,087.03	429.33	388.88	10.614	SF
Horsetail #30E-3135 - Hz - APD	766.20	766.61	55.43	50.75	11.844	CC
Horsetail #30E-3135 - Hz - APD	6,187.12	5,821.22	78.70	39.52	2.009	ES, SF
Horsetail #30E-3136 - Hz - APD	744.74	742.43	21.83	17.20	4.713	CC, ES, SF
Horsetail #30E-3137 Dropped - Hz - APD	512.95	508.84	76.49	73.47	25.320	CC, ES
Horsetail #30E-3137 Dropped - Hz - APD	5,900.00	6,083.31	582.03	542.32	14.659	SF
Horsetail #30E-3138 - Hz - APD	300.00	300.00	102.06	100.44	63.197	CC
Horsetail #30E-3138 - Hz - APD	400.00	397.16	102.26	99.99	45.104	ES
Horsetail #30E-3138 - Hz - APD	900.00	872.86	134.73	128.58	21.909	SF
Horsetail #30F-1941 - Hz - Hz	13,849.49	13,907.64	356.34	38.10	1.120	Level 2, CC, ES, SF

Offset Design	Sec 30-T10N-R57W - Horsetail #30E-1901 - 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)	Offset Wellbore Centre +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	-150.71	150.71				
100.00	100.00	100.00	100.00	0.13	0.13	-90.00	0.00	-150.71	150.71	150.45	0.27	565.856	

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



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Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-1936	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		
200.00	200.00	200.00	200.00	0.47	0.47	-90.00	0.00	-150.71	150.71	149.77	0.94	160.225		
300.00	300.00	300.00	300.00	0.81	0.81	-90.00	0.00	-150.71	150.71	149.10	1.61	93.325 CC, ES		
400.00	399.98	397.81	397.79	1.11	1.10	104.06	-1.51	-151.42	151.86	149.64	2.22	68.437		
500.00	499.84	495.55	495.40	1.41	1.40	104.15	-6.04	-153.54	155.29	152.48	2.82	55.124		
600.00	599.45	593.13	592.62	1.73	1.71	104.29	-13.57	-157.05	161.01	157.54	3.47	46.393		
700.00	698.70	690.49	689.29	2.07	2.04	104.46	-24.08	-161.95	169.00	164.83	4.17	40.541		
800.00	797.47	787.56	785.21	2.43	2.39	104.65	-37.50	-168.22	179.25	174.34	4.91	36.513		
900.00	895.81	884.29	880.25	2.82	2.77	104.75	-53.80	-175.83	191.50	185.81	5.69	33.658		
1,000.00	994.13	983.10	976.93	3.23	3.19	104.40	-72.28	-184.45	204.61	198.13	6.48	31.584		
1,100.00	1,092.45	1,082.22	1,073.91	3.65	3.62	104.07	-90.85	-193.11	217.74	210.45	7.28	29.890		
1,200.00	1,190.77	1,181.35	1,170.90	4.07	4.05	103.79	-109.41	-201.78	230.87	222.77	8.10	28.489		
1,300.00	1,289.09	1,280.48	1,267.89	4.49	4.49	103.53	-127.97	-210.44	244.01	235.08	8.94	27.309		
1,400.00	1,387.41	1,379.61	1,364.88	4.92	4.93	103.30	-146.54	-219.10	257.15	247.38	9.77	26.311		
1,500.00	1,485.73	1,478.73	1,461.86	5.35	5.38	103.10	-165.10	-227.76	270.30	259.68	10.62	25.458		
1,600.00	1,584.05	1,577.86	1,558.85	5.78	5.82	102.91	-183.66	-236.43	283.45	271.99	11.47	24.721		
1,700.00	1,682.37	1,676.99	1,655.84	6.21	6.27	102.74	-202.23	-245.09	296.61	284.29	12.32	24.079		
1,800.00	1,780.69	1,776.12	1,752.83	6.65	6.72	102.58	-220.79	-253.75	309.76	296.59	13.17	23.515		
1,900.00	1,879.01	1,875.24	1,849.81	7.08	7.18	102.44	-239.35	-262.42	322.92	308.89	14.03	23.016		
2,000.00	1,977.33	1,974.37	1,946.80	7.52	7.63	102.31	-257.92	-271.08	336.08	321.19	14.89	22.572		
2,100.00	2,075.65	2,073.50	2,043.79	7.95	8.08	102.18	-276.48	-279.74	349.24	333.49	15.75	22.174		
2,200.00	2,173.97	2,172.63	2,140.78	8.39	8.54	102.07	-295.04	-288.41	362.41	345.79	16.61	21.816		
2,300.00	2,272.29	2,271.75	2,237.77	8.82	8.99	101.96	-313.61	-297.07	375.57	358.09	17.48	21.492		
2,400.00	2,370.61	2,370.88	2,334.75	9.26	9.45	101.87	-332.17	-305.73	388.74	370.40	18.34	21.197		
2,500.00	2,468.93	2,470.01	2,431.74	9.70	9.90	101.77	-350.73	-314.39	401.90	382.70	19.20	20.928		
2,600.00	2,567.25	2,569.14	2,528.73	10.14	10.36	101.69	-369.30	-323.06	415.07	395.00	20.07	20.681		
2,700.00	2,665.57	2,668.26	2,625.72	10.57	10.81	101.61	-387.86	-331.72	428.24	407.30	20.94	20.455		
2,800.00	2,763.89	2,767.39	2,722.70	11.01	11.27	101.53	-406.42	-340.38	441.41	419.60	21.80	20.245		
2,900.00	2,862.22	2,866.52	2,819.69	11.45	11.72	101.46	-424.99	-349.05	454.58	431.91	22.67	20.052		
3,000.00	2,960.54	2,965.64	2,916.68	11.89	12.18	101.39	-443.55	-357.71	467.75	444.21	23.54	19.872		
3,100.00	3,058.86	3,064.77	3,013.67	12.33	12.64	101.33	-462.11	-366.37	480.92	456.51	24.41	19.705		
3,200.00	3,157.18	3,163.90	3,110.65	12.76	13.09	101.27	-480.68	-375.04	494.09	468.81	25.27	19.549		
3,300.00	3,255.50	3,263.03	3,207.64	13.20	13.55	101.21	-499.24	-383.70	507.26	481.12	26.14	19.403		
3,400.00	3,353.82	3,362.15	3,304.63	13.64	14.01	101.16	-517.80	-392.36	520.43	493.42	27.01	19.266		
3,500.00	3,452.14	3,461.28	3,401.62	14.08	14.47	101.10	-536.37	-401.02	533.61	505.73	27.88	19.138		
3,600.00	3,550.46	3,560.41	3,498.61	14.52	14.92	101.05	-554.93	-409.69	546.78	518.03	28.75	19.017		
3,700.00	3,648.78	3,659.54	3,595.59	14.96	15.38	101.01	-573.49	-418.35	559.95	530.33	29.62	18.904		
3,800.00	3,747.10	3,758.66	3,692.58	15.40	15.84	100.96	-592.06	-427.01	573.13	542.64	30.49	18.796		
3,900.00	3,845.42	3,857.79	3,789.57	15.84	16.30	100.92	-610.62	-435.68	586.30	554.94	31.36	18.695		
4,000.00	3,943.74	3,956.92	3,886.56	16.27	16.75	100.88	-629.18	-444.34	599.48	567.25	32.23	18.599		
4,100.00	4,042.06	4,056.05	3,983.54	16.71	17.21	100.84	-647.75	-453.00	612.65	579.55	33.10	18.508		
4,200.00	4,140.38	4,155.17	4,080.53	17.15	17.67	100.80	-666.31	-461.67	625.83	591.86	33.97	18.421		
4,300.00	4,238.70	4,254.30	4,177.52	17.59	18.13	100.77	-684.87	-470.33	639.00	604.16	34.84	18.339		
4,400.00	4,337.02	4,359.40	4,280.46	18.03	18.56	100.77	-704.06	-479.28	651.95	616.24	35.71	18.255		
4,500.00	4,435.34	4,470.47	4,389.94	18.47	18.90	101.07	-720.99	-487.18	663.33	626.81	36.52	18.164		
4,600.00	4,533.72	4,581.62	4,500.15	18.87	19.18	101.73	-734.07	-493.29	672.92	635.68	37.24	18.070		
4,700.00	4,632.58	4,692.88	4,610.93	19.14	19.45	102.50	-743.27	-497.58	680.23	642.43	37.80	17.995		
4,800.00	4,731.90	4,804.16	4,722.05	19.39	19.70	103.21	-748.57	-500.05	685.14	646.81	38.33	17.877		
4,900.00	4,831.57	4,913.69	4,831.57	19.63	19.97	103.86	-749.99	-500.72	687.65	648.81	38.85	17.702		
5,000.00	4,931.45	5,013.58	4,931.45	19.86	20.20	104.26	-749.99	-500.72	688.78	649.46	39.32	17.517		
5,100.00	5,031.44	5,113.15	5,031.02	20.11	20.40	-89.65	-749.80	-500.72	689.08	649.29	39.78	17.322		
5,200.00	5,131.44	5,208.66	5,125.72	20.32	20.55	-88.71	-738.52	-500.91	689.45	649.28	40.16	17.167		
5,300.00	5,231.44	5,297.39	5,210.51	20.53	20.62	-86.54	-712.73	-501.33	691.20	650.75	40.45	17.087		

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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		
5,400.00	5,330.45	5,380.36	5,284.78	20.69	20.62	-83.93	-675.92	-501.94	694.82	654.28	40.55	17.136		
5,500.00	5,425.18	5,460.15	5,349.82	20.75	20.58	-81.51	-629.85	-502.69	699.65	659.23	40.43	17.307		
5,600.00	5,512.16	5,537.50	5,405.45	20.75	20.51	-79.36	-576.22	-503.57	705.12	664.99	40.13	17.570		
5,700.00	5,588.19	5,613.01	5,451.52	20.70	20.42	-77.54	-516.48	-504.56	710.65	670.92	39.74	17.884		
5,800.00	5,650.47	5,687.19	5,487.91	20.62	20.33	-76.08	-451.93	-505.62	715.75	676.42	39.33	18.198		
5,900.00	5,696.73	5,760.44	5,514.50	20.55	20.24	-75.03	-383.75	-506.74	719.99	680.98	39.01	18.459		
6,000.00	5,725.25	5,833.15	5,531.19	20.51	20.16	-74.40	-313.05	-507.90	723.06	684.23	38.83	18.620		
6,099.99	5,735.00	5,905.65	5,537.87	20.52	20.10	-74.22	-240.92	-509.08	724.78	685.93	38.86	18.653		
6,200.00	5,735.00	6,001.16	5,538.00	20.62	20.09	-74.26	-145.43	-510.65	726.31	687.23	39.08	18.584		
6,300.00	5,735.00	6,101.15	5,538.00	20.82	20.18	-74.30	-45.45	-512.29	727.89	688.38	39.52	18.420		
6,400.00	5,735.00	6,201.13	5,538.00	21.13	20.40	-74.33	54.52	-513.94	729.48	689.33	40.15	18.169		
6,500.00	5,735.00	6,301.12	5,538.00	21.54	20.75	-74.37	154.49	-515.58	731.06	690.08	40.97	17.843		
6,600.00	5,735.00	6,401.11	5,538.00	22.05	21.22	-74.40	254.46	-517.22	732.64	690.67	41.97	17.455		
6,700.00	5,735.00	6,501.09	5,538.00	22.64	21.79	-74.43	354.44	-518.86	734.22	691.08	43.14	17.020		
6,800.00	5,735.00	6,601.08	5,538.00	23.32	22.46	-74.47	454.41	-520.51	735.80	691.35	44.46	16.551		
6,900.00	5,735.00	6,701.07	5,538.00	24.06	23.22	-74.50	554.38	-522.15	737.39	691.47	45.92	16.059		
7,000.00	5,735.00	6,801.05	5,538.00	24.87	24.04	-74.54	654.36	-523.79	738.97	691.47	47.50	15.556		
7,100.00	5,735.00	6,901.04	5,538.00	25.74	24.92	-74.57	754.33	-525.43	740.55	691.35	49.21	15.050		
7,200.00	5,735.00	7,001.02	5,538.00	26.66	25.86	-74.60	854.30	-527.08	742.14	691.13	51.01	14.549		
7,300.00	5,735.00	7,101.01	5,538.00	27.64	26.85	-74.64	954.28	-528.72	743.72	690.81	52.91	14.056		
7,400.00	5,735.00	7,201.00	5,538.00	28.65	27.88	-74.67	1,054.25	-530.36	745.30	690.41	54.89	13.578		
7,500.00	5,735.00	7,300.98	5,538.00	29.70	28.94	-74.70	1,154.22	-532.00	746.89	689.94	56.95	13.115		
7,600.00	5,735.00	7,400.97	5,538.00	30.79	30.05	-74.74	1,254.20	-533.65	748.47	689.40	59.07	12.670		
7,700.00	5,735.00	7,500.96	5,538.00	31.90	31.18	-74.77	1,354.17	-535.29	750.06	688.80	61.26	12.244		
7,800.00	5,735.00	7,600.94	5,538.00	33.05	32.34	-74.80	1,454.14	-536.93	751.64	688.14	63.50	11.837		
7,900.00	5,735.00	7,700.93	5,538.00	34.22	33.53	-74.84	1,554.11	-538.57	753.23	687.44	65.79	11.450		
8,000.00	5,735.00	7,800.92	5,538.00	35.41	34.73	-74.87	1,654.09	-540.22	754.81	686.70	68.12	11.081		
8,100.00	5,735.00	7,900.90	5,538.00	36.62	35.96	-74.90	1,754.06	-541.86	756.40	685.91	70.49	10.730		
8,200.00	5,735.00	8,000.89	5,538.00	37.85	37.20	-74.93	1,854.03	-543.50	757.99	685.09	72.90	10.398		
8,300.00	5,735.00	8,100.88	5,538.00	39.10	38.46	-74.97	1,954.01	-545.14	759.57	684.23	75.34	10.082		
8,400.00	5,735.00	8,200.86	5,538.00	40.36	39.74	-75.00	2,053.98	-546.79	761.16	683.35	77.81	9.782		
8,500.00	5,735.00	8,300.85	5,538.00	41.64	41.03	-75.03	2,153.95	-548.43	762.75	682.44	80.31	9.498		
8,600.00	5,735.00	8,400.84	5,538.00	42.93	42.33	-75.06	2,253.93	-550.07	764.33	681.51	82.83	9.228		
8,700.00	5,735.00	8,500.82	5,538.00	44.23	43.64	-75.09	2,353.90	-551.71	765.92	680.55	85.37	8.972		
8,800.00	5,735.00	8,600.81	5,538.00	45.54	44.96	-75.13	2,453.87	-553.36	767.51	679.57	87.93	8.728		
8,900.00	5,735.00	8,700.80	5,538.00	46.86	46.29	-75.16	2,553.84	-555.00	769.10	678.58	90.52	8.497		
9,000.00	5,735.00	8,800.78	5,538.00	48.19	47.63	-75.19	2,653.82	-556.64	770.68	677.57	93.12	8.276		
9,100.00	5,735.00	8,900.77	5,538.00	49.52	48.98	-75.22	2,753.79	-558.28	772.27	676.54	95.73	8.067		
9,200.00	5,735.00	9,000.76	5,538.00	50.87	50.33	-75.25	2,853.76	-559.93	773.86	675.49	98.37	7.867		
9,300.00	5,735.00	9,100.74	5,538.00	52.22	51.69	-75.28	2,953.74	-561.57	775.45	674.44	101.01	7.677		
9,400.00	5,735.00	9,200.73	5,538.00	53.58	53.06	-75.31	3,053.71	-563.21	777.04	673.37	103.67	7.495		
9,500.00	5,735.00	9,300.71	5,538.00	54.94	54.43	-75.34	3,153.68	-564.85	778.63	672.29	106.34	7.322		
9,600.00	5,735.00	9,400.70	5,538.00	56.31	55.81	-75.37	3,253.66	-566.50	780.22	671.20	109.02	7.157		
9,700.00	5,735.00	9,500.69	5,538.00	57.68	57.19	-75.40	3,353.63	-568.14	781.81	670.10	111.71	6.999		
9,800.00	5,735.00	9,600.67	5,538.00	59.06	58.57	-75.43	3,453.60	-569.78	783.39	668.99	114.41	6.847		
9,900.00	5,735.00	9,700.66	5,538.00	60.44	59.97	-75.46	3,553.57	-571.42	784.98	667.87	117.12	6.703		
10,000.00	5,735.00	9,800.65	5,538.00	61.83	61.36	-75.49	3,653.55	-573.07	786.58	666.74	119.83	6.564		
10,100.00	5,735.00	9,900.63	5,538.00	63.22	62.76	-75.52	3,753.52	-574.71	788.17	665.61	122.56	6.431		
10,200.00	5,735.00	10,000.62	5,538.00	64.62	64.16	-75.55	3,853.49	-576.35	789.76	664.47	125.29	6.303		
10,300.00	5,735.00	10,100.61	5,538.00	66.01	65.57	-75.58	3,953.47	-577.99	791.35	663.32	128.03	6.181		
10,400.00	5,735.00	10,200.59	5,538.00	67.41	66.97	-75.61	4,053.44	-579.64	792.94	662.16	130.77	6.063		
10,500.00	5,735.00	10,300.58	5,538.00	68.82	68.38	-75.64	4,153.41	-581.28	794.53	661.00	133.53	5.950		

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 #30E-1936
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-1936	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		
10,600.00	5,735.00	10,400.57	5,538.00	70.22	69.80	-75.67	4,253.39	-582.92	796.12	659.84	136.28	5.842		
10,700.00	5,735.00	10,500.55	5,538.00	71.63	71.21	-75.70	4,353.36	-584.56	797.71	658.67	139.05	5.737		
10,800.00	5,735.00	10,600.54	5,538.00	73.05	72.63	-75.73	4,453.33	-586.21	799.30	657.49	141.81	5.636		
10,900.00	5,735.00	10,700.53	5,538.00	74.46	74.05	-75.76	4,553.30	-587.85	800.90	656.31	144.59	5.539		
11,000.00	5,735.00	10,800.51	5,538.00	75.88	75.47	-75.79	4,653.28	-589.49	802.49	655.12	147.36	5.446		
11,100.00	5,735.00	10,900.50	5,538.00	77.29	76.90	-75.82	4,753.25	-591.13	804.08	653.93	150.15	5.355		
11,200.00	5,735.00	11,000.49	5,538.00	78.71	78.33	-75.84	4,853.22	-592.78	805.67	652.74	152.93	5.268		
11,300.00	5,735.00	11,100.47	5,538.00	80.14	79.75	-75.87	4,953.20	-594.42	807.27	651.54	155.72	5.184		
11,400.00	5,735.00	11,200.46	5,538.00	81.56	81.18	-75.90	5,053.17	-596.06	808.86	650.34	158.52	5.103		
11,500.00	5,735.00	11,300.44	5,538.00	82.99	82.61	-75.93	5,153.14	-597.70	810.45	649.14	161.32	5.024		
11,600.00	5,735.00	11,400.43	5,538.00	84.41	84.05	-75.96	5,253.12	-599.34	812.05	647.93	164.12	4.948		
11,700.00	5,735.00	11,500.42	5,538.00	85.84	85.48	-75.99	5,353.09	-600.99	813.64	646.72	166.92	4.874		
11,800.00	5,735.00	11,600.40	5,538.00	87.27	86.92	-76.01	5,453.06	-602.63	815.23	645.50	169.73	4.803		
11,900.00	5,735.00	11,700.39	5,538.00	88.70	88.35	-76.04	5,553.03	-604.27	816.83	644.29	172.54	4.734		
12,000.00	5,735.00	11,800.38	5,538.00	90.14	89.79	-76.07	5,653.01	-605.91	818.42	643.07	175.35	4.667		
12,100.00	5,735.00	11,900.36	5,538.00	91.57	91.23	-76.10	5,752.98	-607.56	820.02	641.85	178.17	4.602		
12,200.00	5,735.00	12,000.35	5,538.00	93.00	92.67	-76.13	5,852.95	-609.20	821.61	640.62	180.99	4.540		
12,300.00	5,735.00	12,100.34	5,538.00	94.44	94.11	-76.15	5,952.93	-610.84	823.21	639.39	183.81	4.479		
12,400.00	5,735.00	12,200.32	5,538.00	95.88	95.56	-76.18	6,052.90	-612.48	824.80	638.16	186.64	4.419		
12,500.00	5,735.00	12,300.31	5,538.00	97.32	97.00	-76.21	6,152.87	-614.13	826.40	636.93	189.46	4.362		
12,600.00	5,735.00	12,400.30	5,538.00	98.76	98.44	-76.23	6,252.85	-615.77	827.99	635.70	192.29	4.306		
12,700.00	5,735.00	12,500.28	5,538.00	100.20	99.89	-76.26	6,352.82	-617.41	829.59	634.46	195.12	4.252		
12,800.00	5,735.00	12,600.27	5,538.00	101.64	101.34	-76.29	6,452.79	-619.05	831.18	633.22	197.96	4.199		
12,900.00	5,735.00	12,700.26	5,538.00	103.08	102.78	-76.31	6,552.77	-620.70	832.78	631.98	200.79	4.147		
13,000.00	5,735.00	12,800.24	5,538.00	104.52	104.23	-76.34	6,652.74	-622.34	834.37	630.74	203.63	4.097		
13,100.00	5,735.00	12,900.23	5,538.00	105.97	105.68	-76.37	6,752.71	-623.98	835.97	629.50	206.47	4.049		
13,200.00	5,735.00	13,000.22	5,538.00	107.41	107.13	-76.39	6,852.68	-625.62	837.57	628.25	209.31	4.002		
13,300.00	5,735.00	13,100.20	5,538.00	108.85	108.58	-76.42	6,952.66	-627.27	839.16	627.01	212.16	3.955		
13,400.00	5,735.00	13,200.19	5,538.00	110.30	110.03	-76.45	7,052.63	-628.91	840.76	625.76	215.00	3.910		
13,500.00	5,735.00	13,300.17	5,538.00	111.75	111.48	-76.47	7,152.60	-630.55	842.36	624.51	217.85	3.867		
13,600.00	5,735.00	13,400.16	5,538.00	113.19	112.93	-76.50	7,252.58	-632.19	843.96	623.26	220.70	3.824		
13,700.00	5,735.00	13,500.15	5,538.00	114.64	114.38	-76.53	7,352.55	-633.84	845.55	622.01	223.55	3.782		
13,800.00	5,735.00	13,600.13	5,538.00	116.09	115.84	-76.55	7,452.52	-635.48	847.15	620.75	226.40	3.742		
13,849.49	5,735.00	13,649.62	5,538.00	116.81	116.56	-76.56	7,502.00	-636.29	847.94	620.13	227.81	3.722 SF		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1936
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-1936	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	-89.99	0.01	-89.97	89.97					
100.00	100.00	100.00	100.00	0.13	0.13	-89.99	0.01	-89.97	89.97	89.70	0.27	337.782		
200.00	200.00	200.00	200.00	0.47	0.47	-89.99	0.01	-89.97	89.97	89.03	0.94	95.644		
300.00	300.00	300.00	300.00	0.81	0.81	-89.99	0.01	-89.97	89.97	88.35	1.61	55.709 CC, ES		
400.00	399.98	399.19	399.17	1.11	1.11	104.03	-1.65	-90.41	90.84	88.62	2.21	41.025		
500.00	499.84	498.34	498.18	1.41	1.41	104.01	-6.62	-91.73	93.44	90.64	2.80	33.376		
600.00	599.45	597.40	596.86	1.73	1.72	103.99	-14.90	-93.94	97.77	94.33	3.44	28.402		
700.00	698.70	696.33	695.07	2.07	2.05	103.95	-26.44	-97.01	103.83	99.70	4.13	25.112		
800.00	797.47	795.09	792.62	2.43	2.41	103.91	-41.23	-100.95	111.61	106.73	4.88	22.889		
900.00	895.81	894.17	890.00	2.82	2.80	103.73	-58.91	-105.66	120.74	115.09	5.65	21.352		
1,000.00	994.13	993.74	987.78	3.23	3.21	103.49	-77.10	-110.50	130.02	123.57	6.46	20.140		
1,100.00	1,092.45	1,093.30	1,085.55	3.65	3.63	103.28	-95.28	-115.34	139.30	132.03	7.27	19.152		
1,200.00	1,190.77	1,192.87	1,183.32	4.07	4.05	103.09	-113.46	-120.18	148.58	140.48	8.10	18.339		
1,300.00	1,289.09	1,292.44	1,281.10	4.49	4.48	102.93	-131.64	-125.03	157.87	148.93	8.94	17.659		
1,400.00	1,387.41	1,392.01	1,378.87	4.92	4.91	102.78	-149.82	-129.87	167.15	157.37	9.78	17.085		
1,500.00	1,485.73	1,491.57	1,476.64	5.35	5.34	102.65	-168.00	-134.71	176.44	165.80	10.63	16.595		
1,600.00	1,584.05	1,591.14	1,574.42	5.78	5.78	102.53	-186.18	-139.55	185.72	174.24	11.48	16.172		
1,700.00	1,682.37	1,690.71	1,672.19	6.21	6.21	102.43	-204.36	-144.39	195.01	182.67	12.34	15.804		
1,800.00	1,780.69	1,790.28	1,769.96	6.65	6.65	102.33	-222.54	-149.24	204.29	191.10	13.20	15.481		
1,900.00	1,879.01	1,889.84	1,867.74	7.08	7.09	102.24	-240.72	-154.08	213.58	199.53	14.06	15.195		
2,000.00	1,977.33	1,989.41	1,965.51	7.52	7.52	102.16	-258.90	-158.92	222.87	207.95	14.92	14.941		
2,100.00	2,075.65	2,088.98	2,063.28	7.95	7.96	102.09	-277.08	-163.76	232.16	216.38	15.78	14.713		
2,200.00	2,173.97	2,188.54	2,161.06	8.39	8.40	102.02	-295.27	-168.60	241.45	224.80	16.64	14.508		
2,300.00	2,272.29	2,288.11	2,258.83	8.82	8.84	101.96	-313.45	-173.45	250.74	233.23	17.51	14.322		
2,400.00	2,370.61	2,387.68	2,356.61	9.26	9.28	101.90	-331.63	-178.29	260.03	241.65	18.37	14.153		
2,500.00	2,468.93	2,487.25	2,454.38	9.70	9.72	101.84	-349.81	-183.13	269.32	250.08	19.24	13.999		
2,600.00	2,567.25	2,586.81	2,552.15	10.14	10.16	101.79	-367.99	-187.97	278.61	258.50	20.10	13.858		
2,700.00	2,665.57	2,686.38	2,649.93	10.57	10.61	101.74	-386.17	-192.81	287.90	266.92	20.97	13.728		
2,800.00	2,763.89	2,785.95	2,747.70	11.01	11.05	101.70	-404.35	-197.65	297.19	275.35	21.84	13.608		
2,900.00	2,862.22	2,885.52	2,845.47	11.45	11.49	101.66	-422.53	-202.50	306.48	283.77	22.71	13.497		
3,000.00	2,960.54	2,985.08	2,943.25	11.89	11.93	101.62	-440.71	-207.34	315.77	292.19	23.58	13.394		
3,100.00	3,058.86	3,084.65	3,041.02	12.33	12.37	101.58	-458.89	-212.18	325.06	300.61	24.44	13.298		
3,200.00	3,157.18	3,184.22	3,138.79	12.76	12.81	101.54	-477.07	-217.02	334.35	309.03	25.31	13.208		
3,300.00	3,255.50	3,283.78	3,236.57	13.20	13.26	101.51	-495.26	-221.86	343.64	317.46	26.18	13.125		
3,400.00	3,353.82	3,383.35	3,334.34	13.64	13.70	101.48	-513.44	-226.71	352.93	325.88	27.05	13.046		
3,500.00	3,452.14	3,482.92	3,432.11	14.08	14.14	101.45	-531.62	-231.55	362.22	334.30	27.92	12.973		
3,600.00	3,550.46	3,582.49	3,529.89	14.52	14.58	101.42	-549.80	-236.39	371.51	342.72	28.79	12.903		
3,700.00	3,648.78	3,682.05	3,627.66	14.96	15.03	101.39	-567.98	-241.23	380.80	351.14	29.66	12.838		
3,800.00	3,747.10	3,781.62	3,725.43	15.40	15.47	101.37	-586.16	-246.07	390.09	359.56	30.53	12.777		
3,900.00	3,845.42	3,881.19	3,823.21	15.84	15.91	101.34	-604.34	-250.91	399.39	367.98	31.40	12.718		
4,000.00	3,943.74	3,980.76	3,920.98	16.27	16.35	101.32	-622.52	-255.76	408.68	376.40	32.27	12.663		
4,100.00	4,042.06	4,080.32	4,018.75	16.71	16.80	101.30	-640.70	-260.60	417.97	384.83	33.14	12.611		
4,200.00	4,140.38	4,179.89	4,116.53	17.15	17.24	101.27	-658.88	-265.44	427.26	393.25	34.01	12.561		
4,300.00	4,238.70	4,279.46	4,214.30	17.59	17.68	101.25	-677.06	-270.28	436.55	401.67	34.89	12.514		
4,400.00	4,337.02	4,379.02	4,312.07	18.03	18.13	101.23	-695.24	-275.12	445.84	410.09	35.76	12.469		
4,500.00	4,435.34	4,481.91	4,413.26	18.47	18.52	101.22	-713.20	-279.91	454.89	418.30	36.59	12.431		
4,600.00	4,533.72	4,586.40	4,516.62	18.91	18.96	101.20	-731.18	-284.65	463.87	426.57	37.46	12.393		
4,700.00	4,632.10	4,690.93	4,620.50	19.35	19.40	101.18	-749.16	-289.49	472.84	434.94	38.33	12.355		
4,800.00	4,730.48	4,795.45	4,724.73	19.79	19.84	101.16	-767.14	-294.33	481.81	443.31	39.20	12.317		
4,900.00	4,828.86	4,899.93	4,829.13	20.23	20.28	101.14	-785.12	-300.17	490.78	451.68	40.07	12.279		
5,000.00	4,927.24	5,002.26	4,931.45	20.67	20.72	101.12	-803.10	-305.01	499.75	460.05	40.94	12.241		
5,100.00	5,025.62	5,102.25	5,031.44	21.11	21.16	101.10	-821.08	-310.85	508.72	468.42	41.81	12.203		

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



WOG

Anticollision Report

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Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
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Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-1936	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		
5,105.69	5,037.14	5,107.94	5,037.14	20.12	20.02	-89.64	-750.99	-289.97	478.32	438.53	39.79	12.022		
5,200.00	5,131.44	5,201.77	5,130.91	20.32	20.20	-89.40	-748.96	-289.97	478.34	438.16	40.18	11.906		
5,300.00	5,231.44	5,297.61	5,225.06	20.53	20.33	-87.36	-731.81	-290.01	478.89	438.39	40.50	11.825		
5,400.00	5,330.45	5,388.79	5,310.29	20.69	20.37	-84.68	-699.76	-290.07	480.60	439.97	40.63	11.829		
5,500.00	5,425.18	5,476.90	5,386.15	20.75	20.35	-82.23	-655.14	-290.16	483.14	442.60	40.54	11.917		
5,600.00	5,512.16	5,562.53	5,451.65	20.75	20.30	-80.05	-600.13	-290.28	486.16	445.88	40.27	12.071		
5,700.00	5,588.19	5,650.00	5,508.35	20.70	20.22	-78.16	-533.66	-290.41	489.29	449.38	39.91	12.259		
5,800.00	5,650.47	5,728.42	5,549.10	20.62	20.15	-76.76	-466.74	-290.55	492.12	452.63	39.49	12.461		
5,900.00	5,696.73	5,809.58	5,580.21	20.55	20.09	-75.72	-391.88	-290.70	494.40	455.23	39.17	12.623		
6,000.00	5,725.25	5,890.06	5,599.22	20.51	20.06	-75.11	-313.75	-290.86	495.88	456.88	39.00	12.715		
6,099.99	5,735.00	5,970.23	5,605.99	20.52	20.05	-74.94	-233.95	-291.02	496.42	457.38	39.04	12.716		
6,200.00	5,735.00	6,069.27	5,606.00	20.62	20.14	-74.94	-134.91	-291.22	496.61	457.32	39.29	12.640		
6,300.00	5,735.00	6,169.27	5,606.00	20.82	20.33	-74.95	-34.92	-291.42	496.80	457.07	39.73	12.503		
6,400.00	5,735.00	6,269.27	5,606.00	21.13	20.64	-74.96	65.08	-291.62	497.00	456.62	40.38	12.309		
6,500.00	5,735.00	6,369.27	5,606.00	21.54	21.04	-74.96	165.08	-291.83	497.19	455.99	41.21	12.066		
6,600.00	5,735.00	6,469.27	5,606.00	22.05	21.55	-74.97	265.08	-292.03	497.39	455.18	42.21	11.783		
6,700.00	5,735.00	6,569.27	5,606.00	22.64	22.15	-74.97	365.08	-292.23	497.58	454.20	43.39	11.469		
6,800.00	5,735.00	6,669.27	5,606.00	23.32	22.82	-74.98	465.08	-292.43	497.78	453.07	44.71	11.134		
6,900.00	5,735.00	6,769.27	5,606.00	24.06	23.58	-74.99	565.08	-292.64	497.98	451.80	46.17	10.785		
7,000.00	5,735.00	6,869.26	5,606.00	24.87	24.40	-74.99	665.08	-292.84	498.17	450.41	47.76	10.430		
7,100.00	5,735.00	6,969.26	5,606.00	25.74	25.28	-75.00	765.08	-293.04	498.37	448.90	49.47	10.075		
7,200.00	5,735.00	7,069.26	5,606.00	26.66	26.21	-75.00	865.08	-293.24	498.56	447.29	51.27	9.724		
7,300.00	5,735.00	7,169.26	5,606.00	27.64	27.19	-75.01	965.08	-293.45	498.76	445.59	53.17	9.380		
7,400.00	5,735.00	7,269.26	5,606.00	28.65	28.22	-75.02	1,065.08	-293.65	498.95	443.80	55.15	9.047		
7,500.00	5,735.00	7,369.26	5,606.00	29.70	29.28	-75.02	1,165.08	-293.85	499.15	441.94	57.21	8.725		
7,600.00	5,735.00	7,469.26	5,606.00	30.79	30.38	-75.03	1,265.08	-294.05	499.35	440.02	59.33	8.417		
7,700.00	5,735.00	7,569.26	5,606.00	31.90	31.50	-75.03	1,365.08	-294.26	499.54	438.03	61.51	8.121		
7,800.00	5,735.00	7,669.26	5,606.00	33.05	32.66	-75.04	1,465.08	-294.46	499.74	435.99	63.74	7.840		
7,900.00	5,735.00	7,769.26	5,606.00	34.22	33.84	-75.05	1,565.08	-294.66	499.93	433.90	66.03	7.572		
8,000.00	5,735.00	7,869.26	5,606.00	35.41	35.04	-75.05	1,665.08	-294.87	500.13	431.77	68.35	7.317		
8,100.00	5,735.00	7,969.26	5,606.00	36.62	36.26	-75.06	1,765.08	-295.07	500.32	429.60	70.72	7.075		
8,200.00	5,735.00	8,069.26	5,606.00	37.85	37.50	-75.06	1,865.08	-295.27	500.52	427.40	73.12	6.845		
8,300.00	5,735.00	8,169.26	5,606.00	39.10	38.75	-75.07	1,965.08	-295.47	500.72	425.16	75.55	6.627		
8,400.00	5,735.00	8,269.26	5,606.00	40.36	40.03	-75.08	2,065.08	-295.68	500.91	422.90	78.01	6.421		
8,500.00	5,735.00	8,369.26	5,606.00	41.64	41.31	-75.08	2,165.08	-295.88	501.11	420.61	80.50	6.225		
8,600.00	5,735.00	8,469.26	5,606.00	42.93	42.60	-75.09	2,265.08	-296.08	501.30	418.29	83.01	6.039		
8,700.00	5,735.00	8,569.26	5,606.00	44.23	43.91	-75.09	2,365.07	-296.28	501.50	415.95	85.55	5.862		
8,800.00	5,735.00	8,669.26	5,606.00	45.54	45.23	-75.10	2,465.07	-296.49	501.69	413.59	88.10	5.695		
8,900.00	5,735.00	8,769.26	5,606.00	46.86	46.55	-75.11	2,565.07	-296.69	501.89	411.22	90.67	5.535		
9,000.00	5,735.00	8,869.26	5,606.00	48.19	47.89	-75.11	2,665.07	-296.89	502.09	408.82	93.26	5.384		
9,100.00	5,735.00	8,969.26	5,606.00	49.52	49.23	-75.12	2,765.07	-297.09	502.28	406.42	95.87	5.239		
9,200.00	5,735.00	9,069.26	5,606.00	50.87	50.58	-75.12	2,865.07	-297.30	502.48	403.99	98.48	5.102		
9,300.00	5,735.00	9,169.26	5,606.00	52.22	51.94	-75.13	2,965.07	-297.50	502.67	401.56	101.12	4.971		
9,400.00	5,735.00	9,269.26	5,606.00	53.58	53.30	-75.14	3,065.07	-297.70	502.87	399.11	103.76	4.847		
9,500.00	5,735.00	9,369.26	5,606.00	54.94	54.67	-75.14	3,165.07	-297.90	503.06	396.65	106.41	4.727		
9,600.00	5,735.00	9,469.26	5,606.00	56.31	56.04	-75.15	3,265.07	-298.11	503.26	394.18	109.08	4.614		
9,700.00	5,735.00	9,569.26	5,606.00	57.68	57.42	-75.15	3,365.07	-298.31	503.46	391.70	111.75	4.505		
9,800.00	5,735.00	9,669.26	5,606.00	59.06	58.80	-75.16	3,465.07	-298.51	503.65	389.21	114.44	4.401		
9,900.00	5,735.00	9,769.26	5,606.00	60.44	60.19	-75.17	3,565.07	-298.71	503.85	386.72	117.13	4.302		
10,000.00	5,735.00	9,869.26	5,606.00	61.83	61.58	-75.17	3,665.07	-298.92	504.04	384.21	119.83	4.206		
10,100.00	5,735.00	9,969.26	5,606.00	63.22	62.98	-75.18	3,765.07	-299.12	504.24	381.70	122.54	4.115		
10,200.00	5,735.00	10,069.26	5,606.00	64.62	64.37	-75.18	3,865.07	-299.32	504.43	379.18	125.25	4.027		

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 #30E-1936
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-1936	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	5,735.00	10,169.26	5,606.00	66.01	65.78	-75.19	3,965.07	-299.52	504.63	376.66	127.98	3.943	
10,400.00	5,735.00	10,269.26	5,606.00	67.41	67.18	-75.19	4,065.07	-299.73	504.83	374.12	130.70	3.862	
10,500.00	5,735.00	10,369.26	5,606.00	68.82	68.59	-75.20	4,165.07	-299.93	505.02	371.59	133.44	3.785	
10,600.00	5,735.00	10,469.26	5,606.00	70.22	70.00	-75.21	4,265.07	-300.13	505.22	369.04	136.17	3.710	
10,700.00	5,735.00	10,569.26	5,606.00	71.63	71.41	-75.21	4,365.07	-300.34	505.41	366.50	138.92	3.638	
10,800.00	5,735.00	10,669.26	5,606.00	73.05	72.82	-75.22	4,465.07	-300.54	505.61	363.94	141.67	3.569	
10,900.00	5,735.00	10,769.26	5,606.00	74.46	74.24	-75.22	4,565.07	-300.74	505.81	361.39	144.42	3.502	
11,000.00	5,735.00	10,869.26	5,606.00	75.88	75.66	-75.23	4,665.07	-300.94	506.00	358.83	147.17	3.438	
11,100.00	5,735.00	10,969.26	5,606.00	77.29	77.08	-75.24	4,765.07	-301.15	506.20	356.26	149.94	3.376	
11,200.00	5,735.00	11,069.26	5,606.00	78.71	78.50	-75.24	4,865.06	-301.35	506.39	353.69	152.70	3.316	
11,300.00	5,735.00	11,169.26	5,606.00	80.14	79.93	-75.25	4,965.06	-301.55	506.59	351.12	155.47	3.258	
11,400.00	5,735.00	11,269.26	5,606.00	81.56	81.35	-75.25	5,065.06	-301.75	506.78	348.54	158.24	3.203	
11,500.00	5,735.00	11,369.26	5,606.00	82.99	82.78	-75.26	5,165.06	-301.96	506.98	345.96	161.02	3.149	
11,600.00	5,735.00	11,469.26	5,606.00	84.41	84.21	-75.26	5,265.06	-302.16	507.18	343.38	163.79	3.096	
11,700.00	5,735.00	11,569.26	5,606.00	85.84	85.64	-75.27	5,365.06	-302.36	507.37	340.80	166.57	3.046	
11,800.00	5,735.00	11,669.26	5,606.00	87.27	87.08	-75.28	5,465.06	-302.56	507.57	338.21	169.36	2.997	
11,900.00	5,735.00	11,769.25	5,606.00	88.70	88.51	-75.28	5,565.06	-302.77	507.76	335.62	172.15	2.950	
12,000.00	5,735.00	11,869.25	5,606.00	90.14	89.94	-75.29	5,665.06	-302.97	507.96	333.03	174.93	2.904	
12,100.00	5,735.00	11,969.25	5,606.00	91.57	91.38	-75.29	5,765.06	-303.17	508.16	330.43	177.73	2.859	
12,200.00	5,735.00	12,069.25	5,606.00	93.00	92.82	-75.30	5,865.06	-303.37	508.35	327.83	180.52	2.816	
12,300.00	5,735.00	12,169.25	5,606.00	94.44	94.26	-75.31	5,965.06	-303.58	508.55	325.23	183.32	2.774	
12,400.00	5,735.00	12,269.25	5,606.00	95.88	95.69	-75.31	6,065.06	-303.78	508.74	322.63	186.12	2.733	
12,500.00	5,735.00	12,369.25	5,606.00	97.32	97.14	-75.32	6,165.06	-303.98	508.94	320.02	188.92	2.694	
12,600.00	5,735.00	12,469.25	5,606.00	98.76	98.58	-75.32	6,265.06	-304.18	509.14	317.42	191.72	2.656	
12,700.00	5,735.00	12,569.25	5,606.00	100.20	100.02	-75.33	6,365.06	-304.39	509.33	314.81	194.52	2.618	
12,800.00	5,735.00	12,669.25	5,606.00	101.64	101.46	-75.33	6,465.06	-304.59	509.53	312.20	197.33	2.582	
12,900.00	5,735.00	12,769.25	5,606.00	103.08	102.91	-75.34	6,565.06	-304.79	509.72	309.59	200.14	2.547	
13,000.00	5,735.00	12,869.25	5,606.00	104.52	104.35	-75.35	6,665.06	-305.00	509.92	306.97	202.95	2.513	
13,100.00	5,735.00	12,969.25	5,606.00	105.97	105.80	-75.35	6,765.06	-305.20	510.12	304.36	205.76	2.479	
13,200.00	5,735.00	13,069.25	5,606.00	107.41	107.24	-75.36	6,865.06	-305.40	510.31	301.74	208.57	2.447	
13,300.00	5,735.00	13,169.25	5,606.00	108.85	108.69	-75.36	6,965.06	-305.60	510.51	299.12	211.38	2.415	
13,400.00	5,735.00	13,269.25	5,606.00	110.30	110.14	-75.37	7,065.06	-305.81	510.70	296.50	214.20	2.384	
13,500.00	5,735.00	13,369.25	5,606.00	111.75	111.58	-75.37	7,165.06	-306.01	510.90	293.88	217.02	2.354	
13,600.00	5,735.00	13,469.25	5,606.00	113.19	113.03	-75.38	7,265.05	-306.21	511.10	291.26	219.84	2.325	
13,700.00	5,735.00	13,569.25	5,606.00	114.64	114.48	-75.39	7,365.05	-306.41	511.29	288.64	222.66	2.296	
13,800.00	5,735.00	13,669.25	5,606.00	116.09	115.93	-75.39	7,465.05	-306.62	511.49	286.01	225.48	2.268	
13,849.49	5,735.00	13,718.74	5,606.00	116.81	116.62	-75.39	7,514.54	-306.72	511.58	284.74	226.84	2.255 SF	



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1936
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-1936	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	-89.98	0.01	-29.99	29.99					
100.00	100.00	100.00	100.00	0.13	0.13	-89.98	0.01	-29.99	29.99	29.72	0.27	112.594		
200.00	200.00	200.00	200.00	0.47	0.47	-89.98	0.01	-29.99	29.99	29.05	0.94	31.881		
300.00	300.00	300.00	300.00	0.81	0.81	-89.98	0.01	-29.99	29.99	28.37	1.61	18.570 CC		
400.00	399.98	400.07	400.05	1.11	1.11	103.94	-1.74	-29.87	30.29	28.08	2.21	13.696 ES		
500.00	499.84	500.14	499.98	1.41	1.41	103.66	-6.96	-29.50	31.19	28.40	2.79	11.184		
600.00	599.45	600.20	599.65	1.73	1.73	103.22	-15.67	-28.89	32.69	29.27	3.42	9.546		
700.00	698.70	700.24	698.93	2.07	2.06	102.66	-27.84	-28.03	34.79	30.68	4.11	8.461		
800.00	797.47	800.25	797.71	2.43	2.43	102.04	-43.45	-26.93	37.50	32.64	4.85	7.724		
900.00	895.81	900.22	895.97	2.82	2.82	101.08	-61.81	-25.64	40.63	34.98	5.64	7.199		
1,000.00	994.13	1,000.17	994.17	3.23	3.23	100.11	-80.39	-24.33	43.79	37.33	6.46	6.778		
1,100.00	1,092.45	1,100.11	1,092.36	3.65	3.65	99.28	-98.98	-23.02	46.95	39.66	7.29	6.439		
1,200.00	1,190.77	1,200.06	1,190.56	4.07	4.07	98.54	-117.57	-21.71	50.13	42.00	8.14	6.162		
1,300.00	1,289.09	1,300.01	1,288.75	4.49	4.50	97.90	-136.15	-20.40	53.32	44.33	8.99	5.933		
1,400.00	1,387.41	1,399.96	1,386.95	4.92	4.93	97.33	-154.74	-19.09	56.51	46.67	9.84	5.741		
1,500.00	1,485.73	1,499.90	1,485.14	5.35	5.36	96.82	-173.33	-17.78	59.71	49.00	10.70	5.578		
1,600.00	1,584.05	1,599.85	1,583.34	5.78	5.80	96.36	-191.91	-16.47	62.91	51.34	11.57	5.438		
1,700.00	1,682.37	1,699.80	1,681.54	6.21	6.23	95.95	-210.50	-15.16	66.11	53.68	12.43	5.317		
1,800.00	1,780.69	1,799.75	1,779.73	6.65	6.67	95.57	-229.09	-13.85	69.32	56.02	13.30	5.211		
1,900.00	1,879.01	1,899.69	1,877.93	7.08	7.10	95.23	-247.67	-12.54	72.53	58.36	14.17	5.118		
2,000.00	1,977.33	1,999.64	1,976.12	7.52	7.54	94.91	-266.26	-11.23	75.74	60.70	15.04	5.035		
2,100.00	2,075.65	2,099.59	2,074.32	7.95	7.98	94.63	-284.85	-9.92	78.96	63.04	15.91	4.961		
2,200.00	2,173.97	2,199.54	2,172.51	8.39	8.42	94.36	-303.43	-8.62	82.17	65.39	16.79	4.895		
2,300.00	2,272.29	2,299.49	2,270.71	8.82	8.86	94.11	-322.02	-7.31	85.39	67.73	17.66	4.835		
2,400.00	2,370.61	2,399.43	2,368.90	9.26	9.30	93.89	-340.61	-6.00	88.61	70.08	18.54	4.781		
2,500.00	2,468.93	2,499.38	2,467.10	9.70	9.74	93.68	-359.19	-4.69	91.83	72.42	19.41	4.731		
2,600.00	2,567.25	2,599.33	2,565.29	10.14	10.18	93.48	-377.78	-3.38	95.05	74.77	20.28	4.686		
2,700.00	2,665.57	2,699.28	2,663.49	10.57	10.62	93.29	-396.36	-2.07	98.28	77.12	21.16	4.644		
2,800.00	2,763.89	2,799.22	2,761.68	11.01	11.06	93.12	-414.95	-0.76	101.50	79.47	22.04	4.606		
2,900.00	2,862.22	2,899.17	2,859.88	11.45	11.50	92.96	-433.54	0.55	104.73	81.81	22.91	4.571		
3,000.00	2,960.54	2,999.12	2,958.08	11.89	11.94	92.81	-452.12	1.86	107.95	84.16	23.79	4.538		
3,100.00	3,058.86	3,099.07	3,056.27	12.33	12.38	92.66	-470.71	3.17	111.18	86.51	24.66	4.508		
3,200.00	3,157.18	3,199.01	3,154.47	12.76	12.83	92.53	-489.30	4.48	114.41	88.86	25.54	4.479		
3,300.00	3,255.50	3,298.96	3,252.66	13.20	13.27	92.40	-507.88	5.79	117.63	91.21	26.42	4.453		
3,400.00	3,353.82	3,398.91	3,350.86	13.64	13.71	92.28	-526.47	7.09	120.86	93.57	27.30	4.428		
3,500.00	3,452.14	3,498.86	3,449.05	14.08	14.15	92.16	-545.06	8.40	124.09	95.92	28.17	4.405		
3,600.00	3,550.46	3,598.80	3,547.25	14.52	14.59	92.06	-563.64	9.71	127.32	98.27	29.05	4.383		
3,700.00	3,648.78	3,698.75	3,645.44	14.96	15.04	91.95	-582.23	11.02	130.55	100.62	29.93	4.362		
3,800.00	3,747.10	3,798.70	3,743.64	15.40	15.48	91.85	-600.82	12.33	133.78	102.97	30.80	4.343		
3,900.00	3,845.42	3,898.65	3,841.83	15.84	15.92	91.76	-619.40	13.64	137.01	105.33	31.68	4.325		
4,000.00	3,943.74	3,998.59	3,940.03	16.27	16.36	91.67	-637.99	14.95	140.24	107.68	32.56	4.307		
4,100.00	4,042.06	4,098.54	4,038.23	16.71	16.80	91.58	-656.58	16.26	143.47	110.03	33.44	4.291		
4,200.00	4,140.38	4,198.49	4,136.42	17.15	17.25	91.50	-675.16	17.57	146.70	112.39	34.32	4.275		
4,300.00	4,238.70	4,298.44	4,234.62	17.59	17.69	91.42	-693.75	18.88	149.93	114.74	35.19	4.260		
4,400.00	4,337.02	4,398.78	4,333.29	18.03	18.09	91.52	-711.96	20.16	153.10	117.07	36.03	4.249		
4,500.00	4,435.34	4,499.42	4,432.76	18.47	18.36	92.74	-727.17	21.23	155.86	119.09	36.76	4.240		
4,600.00	4,533.72	4,599.76	4,532.41	18.87	18.61	95.08	-738.86	22.05	158.32	120.88	37.44	4.229		
4,700.00	4,632.58	4,699.85	4,632.16	19.14	18.85	97.58	-747.04	22.63	160.52	122.57	37.95	4.230		
4,800.00	4,731.90	4,799.72	4,731.90	19.39	19.08	100.01	-751.73	22.96	162.39	123.99	38.40	4.229		
4,900.00	4,831.57	4,899.39	4,831.57	19.63	19.33	102.38	-752.99	23.05	163.95	125.10	38.84	4.221		
5,000.00	4,931.45	4,999.28	4,931.45	19.86	19.53	103.97	-752.99	23.05	165.00	125.77	39.24	4.205		
5,100.00	5,031.44	5,099.24	5,031.41	20.11	19.75	-89.58	-752.79	23.05	165.29	125.61	39.68	4.165		

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 #30E-1936
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-1936	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	5,131.44	5,197.27	5,128.57	20.32	19.90	-85.47	-740.91	23.05	165.83	125.97	39.86	4.160		
5,300.00	5,231.44	5,288.00	5,215.07	20.53	19.96	-76.28	-713.87	23.05	170.81	131.52	39.29	4.347		
5,400.00	5,330.45	5,372.48	5,290.26	20.69	19.96	-66.30	-675.58	23.05	182.19	144.46	37.73	4.829		
5,500.00	5,425.18	5,450.00	5,353.00	20.75	19.92	-58.43	-630.17	23.05	196.95	161.62	35.33	5.575		
5,600.00	5,512.16	5,531.70	5,411.06	20.75	19.87	-51.91	-572.81	23.05	212.57	179.67	32.90	6.461		
5,700.00	5,588.19	5,607.91	5,456.53	20.70	19.81	-47.24	-511.73	23.05	227.32	197.01	30.31	7.500		
5,800.00	5,650.47	5,682.61	5,491.99	20.62	19.75	-43.90	-446.06	23.05	239.87	211.84	28.03	8.558		
5,900.00	5,696.73	5,750.00	5,515.63	20.55	19.72	-41.77	-383.00	23.05	249.46	223.21	26.25	9.503		
6,000.00	5,725.25	5,829.18	5,532.75	20.51	19.72	-40.40	-305.77	23.05	255.22	229.64	25.58	9.978		
6,099.99	5,735.00	5,903.21	5,538.00	20.52	19.75	-40.00	-231.99	23.05	257.16	231.39	25.78	9.976		
6,134.08	5,735.05	5,935.34	5,538.00	20.55	19.79	-39.99	-199.86	23.05	257.20	231.29	25.91	9.928		
6,200.00	5,735.00	6,001.26	5,538.00	20.62	19.87	-40.00	-133.94	23.05	257.16	231.06	26.10	9.854		
6,300.00	5,735.00	6,101.26	5,538.00	20.82	20.10	-40.00	-33.94	23.05	257.16	230.62	26.54	9.691		
6,400.00	5,735.00	6,201.26	5,538.00	21.13	20.44	-40.00	66.06	23.05	257.16	230.03	27.12	9.481		
6,500.00	5,735.00	6,301.26	5,538.00	21.54	20.87	-40.00	166.06	23.05	257.16	229.30	27.85	9.233		
6,600.00	5,735.00	6,401.26	5,538.00	22.05	21.40	-40.00	266.06	23.05	257.16	228.45	28.71	8.957		
6,700.00	5,735.00	6,501.26	5,538.00	22.64	22.01	-40.00	366.06	23.05	257.16	227.47	29.69	8.662		
6,800.00	5,735.00	6,601.26	5,538.00	23.32	22.70	-40.00	466.06	23.05	257.16	226.39	30.77	8.358		
6,900.00	5,735.00	6,701.26	5,538.00	24.06	23.46	-40.00	566.06	23.05	257.16	225.21	31.95	8.049		
7,000.00	5,735.00	6,801.26	5,538.00	24.87	24.29	-40.00	666.06	23.05	257.16	223.94	33.21	7.743		
7,100.00	5,735.00	6,901.26	5,538.00	25.74	25.18	-40.00	766.06	23.05	257.16	222.60	34.55	7.442		
7,200.00	5,735.00	7,001.26	5,538.00	26.66	26.12	-40.00	866.06	23.05	257.16	221.19	35.96	7.150		
7,300.00	5,735.00	7,101.26	5,538.00	27.64	27.11	-40.00	966.06	23.05	257.16	219.72	37.43	6.870		
7,400.00	5,735.00	7,201.26	5,538.00	28.65	28.14	-40.00	1,066.06	23.05	257.15	218.20	38.96	6.601		
7,500.00	5,735.00	7,301.26	5,538.00	29.70	29.21	-40.00	1,166.06	23.05	257.15	216.63	40.53	6.345		
7,600.00	5,735.00	7,401.26	5,538.00	30.79	30.31	-40.00	1,266.06	23.05	257.15	215.02	42.14	6.103		
7,700.00	5,735.00	7,501.26	5,538.00	31.90	31.44	-40.00	1,366.06	23.05	257.15	213.37	43.79	5.873		
7,800.00	5,735.00	7,601.26	5,538.00	33.05	32.60	-40.00	1,466.06	23.05	257.15	211.68	45.47	5.655		
7,900.00	5,735.00	7,701.26	5,538.00	34.22	33.78	-40.00	1,566.06	23.05	257.15	209.97	47.19	5.450		
8,000.00	5,735.00	7,801.26	5,538.00	35.41	34.99	-40.00	1,666.06	23.05	257.15	208.23	48.92	5.256		
8,100.00	5,735.00	7,901.26	5,538.00	36.62	36.21	-40.00	1,766.06	23.05	257.15	206.47	50.69	5.073		
8,200.00	5,735.00	8,001.26	5,538.00	37.85	37.46	-40.00	1,866.06	23.05	257.15	204.68	52.47	4.901		
8,300.00	5,735.00	8,101.26	5,538.00	39.10	38.72	-40.00	1,966.06	23.05	257.15	202.88	54.28	4.738		
8,400.00	5,735.00	8,201.26	5,538.00	40.36	39.99	-40.00	2,066.06	23.05	257.15	201.05	56.10	4.584		
8,500.00	5,735.00	8,301.26	5,538.00	41.64	41.28	-40.00	2,166.06	23.05	257.15	199.22	57.94	4.438		
8,600.00	5,735.00	8,401.26	5,538.00	42.93	42.57	-40.00	2,266.06	23.05	257.15	197.36	59.79	4.301		
8,700.00	5,735.00	8,501.26	5,538.00	44.23	43.88	-40.00	2,366.06	23.05	257.15	195.50	61.66	4.171		
8,800.00	5,735.00	8,601.26	5,538.00	45.54	45.20	-40.00	2,466.06	23.05	257.15	193.62	63.53	4.048		
8,900.00	5,735.00	8,701.26	5,538.00	46.86	46.53	-40.00	2,566.06	23.05	257.15	191.73	65.42	3.931		
9,000.00	5,735.00	8,801.26	5,538.00	48.19	47.87	-40.00	2,666.06	23.05	257.15	189.83	67.32	3.820		
9,100.00	5,735.00	8,901.26	5,538.00	49.52	49.21	-40.00	2,766.06	23.05	257.15	187.93	69.23	3.715		
9,200.00	5,735.00	9,001.26	5,538.00	50.87	50.57	-40.00	2,866.06	23.05	257.15	186.01	71.14	3.615		
9,300.00	5,735.00	9,101.26	5,538.00	52.22	51.92	-40.00	2,966.06	23.06	257.15	184.09	73.07	3.519		
9,400.00	5,735.00	9,201.26	5,538.00	53.58	53.29	-40.00	3,066.06	23.06	257.15	182.16	75.00	3.429		
9,500.00	5,735.00	9,301.26	5,538.00	54.94	54.66	-40.00	3,166.06	23.06	257.15	180.22	76.93	3.343		
9,600.00	5,735.00	9,401.26	5,538.00	56.31	56.03	-40.00	3,266.06	23.06	257.15	178.27	78.88	3.260		
9,700.00	5,735.00	9,501.26	5,538.00	57.68	57.41	-40.00	3,366.06	23.06	257.15	176.33	80.83	3.182		
9,800.00	5,735.00	9,601.26	5,538.00	59.06	58.80	-40.00	3,466.06	23.06	257.15	174.37	82.78	3.106		
9,900.00	5,735.00	9,701.26	5,538.00	60.44	60.19	-40.00	3,566.06	23.06	257.15	172.41	84.74	3.035		
10,000.00	5,735.00	9,801.26	5,538.00	61.83	61.58	-40.00	3,666.06	23.06	257.15	170.45	86.70	2.966		
10,100.00	5,735.00	9,901.26	5,538.00	63.22	62.97	-40.00	3,766.06	23.06	257.15	168.48	88.67	2.900		
10,200.00	5,735.00	10,001.26	5,538.00	64.62	64.37	-40.00	3,866.06	23.06	257.15	166.51	90.65	2.837		

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 #30E-1936
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-1936	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
10,300.00	5,735.00	10,101.26	5,538.00	66.01	65.78	-40.00	3,966.06	23.06	257.15	164.53	92.62	2.776	
10,400.00	5,735.00	10,201.26	5,538.00	67.41	67.18	-40.00	4,066.06	23.06	257.15	162.55	94.60	2.718	
10,500.00	5,735.00	10,301.26	5,538.00	68.82	68.59	-40.00	4,166.06	23.06	257.15	160.57	96.58	2.662	
10,600.00	5,735.00	10,401.26	5,538.00	70.22	70.00	-40.00	4,266.06	23.06	257.15	158.58	98.57	2.609	
10,700.00	5,735.00	10,501.26	5,538.00	71.63	71.41	-40.00	4,366.06	23.06	257.15	156.59	100.56	2.557	
10,800.00	5,735.00	10,601.26	5,538.00	73.05	72.83	-40.00	4,466.06	23.06	257.15	154.60	102.55	2.508	
10,900.00	5,735.00	10,701.26	5,538.00	74.46	74.25	-40.00	4,566.06	23.06	257.15	152.61	104.55	2.460	
11,000.00	5,735.00	10,801.26	5,538.00	75.88	75.67	-40.00	4,666.06	23.06	257.15	150.61	106.54	2.414	
11,100.00	5,735.00	10,901.26	5,538.00	77.29	77.09	-40.00	4,766.06	23.06	257.15	148.61	108.54	2.369	
11,200.00	5,735.00	11,001.26	5,538.00	78.71	78.51	-40.00	4,866.06	23.06	257.15	146.61	110.54	2.326	
11,300.00	5,735.00	11,101.26	5,538.00	80.14	79.94	-40.00	4,966.06	23.06	257.15	144.60	112.55	2.285	
11,400.00	5,735.00	11,201.26	5,538.00	81.56	81.36	-40.00	5,066.06	23.06	257.15	142.60	114.55	2.245	
11,500.00	5,735.00	11,301.26	5,538.00	82.99	82.79	-40.00	5,166.06	23.06	257.15	140.59	116.56	2.206	
11,600.00	5,735.00	11,401.26	5,538.00	84.41	84.22	-40.00	5,266.06	23.06	257.15	138.58	118.57	2.169	
11,700.00	5,735.00	11,501.26	5,538.00	85.84	85.65	-40.00	5,366.06	23.06	257.15	136.57	120.58	2.133	
11,800.00	5,735.00	11,601.26	5,538.00	87.27	87.09	-40.00	5,466.06	23.06	257.15	134.56	122.59	2.098	
11,900.00	5,735.00	11,701.26	5,538.00	88.70	88.52	-40.00	5,566.06	23.06	257.15	132.55	124.60	2.064	
12,000.00	5,735.00	11,801.26	5,538.00	90.14	89.96	-40.00	5,666.06	23.06	257.15	130.53	126.62	2.031	
12,100.00	5,735.00	11,901.26	5,538.00	91.57	91.39	-40.00	5,766.06	23.06	257.15	128.51	128.64	1.999	
12,200.00	5,735.00	12,001.26	5,538.00	93.00	92.83	-40.00	5,866.06	23.06	257.15	126.50	130.65	1.968	
12,300.00	5,735.00	12,101.26	5,538.00	94.44	94.27	-40.00	5,966.06	23.06	257.15	124.48	132.67	1.938	
12,400.00	5,735.00	12,201.26	5,538.00	95.88	95.71	-40.00	6,066.06	23.06	257.15	122.46	134.69	1.909	
12,500.00	5,735.00	12,301.26	5,538.00	97.32	97.15	-40.00	6,166.06	23.06	257.15	120.43	136.71	1.881	
12,600.00	5,735.00	12,401.26	5,538.00	98.76	98.59	-40.00	6,266.06	23.06	257.15	118.41	138.74	1.854	
12,700.00	5,735.00	12,501.26	5,538.00	100.20	100.03	-40.00	6,366.06	23.06	257.15	116.39	140.76	1.827	
12,800.00	5,735.00	12,601.26	5,538.00	101.64	101.48	-40.00	6,466.06	23.06	257.15	114.36	142.78	1.801	
12,900.00	5,735.00	12,701.26	5,538.00	103.08	102.92	-40.00	6,566.06	23.06	257.15	112.34	144.81	1.776	
13,000.00	5,735.00	12,801.26	5,538.00	104.52	104.36	-40.00	6,666.06	23.06	257.15	110.31	146.84	1.751	
13,100.00	5,735.00	12,901.26	5,538.00	105.97	105.81	-40.00	6,766.06	23.06	257.15	108.28	148.86	1.727	
13,200.00	5,735.00	13,001.26	5,538.00	107.41	107.26	-40.00	6,866.06	23.06	257.15	106.26	150.89	1.704	
13,300.00	5,735.00	13,101.26	5,538.00	108.85	108.70	-40.00	6,966.06	23.06	257.15	104.23	152.92	1.682	
13,400.00	5,735.00	13,201.26	5,538.00	110.30	110.15	-40.00	7,066.06	23.06	257.15	102.20	154.95	1.660	
13,500.00	5,735.00	13,301.26	5,538.00	111.75	111.60	-40.00	7,166.06	23.06	257.15	100.17	156.98	1.638	
13,600.00	5,735.00	13,401.26	5,538.00	113.19	113.05	-40.00	7,266.06	23.06	257.15	98.13	159.01	1.617	
13,700.00	5,735.00	13,501.26	5,538.00	114.64	114.50	-40.00	7,366.06	23.06	257.15	96.10	161.04	1.597	
13,800.00	5,735.00	13,601.26	5,538.00	116.09	115.95	-40.00	7,466.06	23.06	257.15	94.07	163.08	1.577	
13,839.87	5,735.00	13,641.13	5,538.00	116.67	116.52	-40.00	7,505.92	23.06	257.15	93.26	163.89	1.569	
13,849.49	5,735.00	13,650.75	5,538.00	116.81	116.66	-40.00	7,515.55	23.06	257.15	93.06	164.08	1.567 SF	



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1936
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-1936	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	31.881		
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 CC		
400.00	399.98	399.59	399.57	1.11	1.11	-76.13	-1.60	30.67	30.25	28.03	2.22	13.616		
500.00	499.84	499.17	499.01	1.41	1.41	-76.63	-6.38	32.71	31.03	28.21	2.82	11.013		
600.00	599.45	598.75	598.21	1.73	1.73	-77.42	-14.32	36.11	32.34	28.87	3.47	9.322		
700.00	698.70	698.32	697.03	2.07	2.06	-78.42	-25.43	40.86	34.18	30.01	4.17	8.202		
800.00	797.47	797.86	795.36	2.43	2.43	-79.55	-39.69	46.96	36.56	31.65	4.91	7.442		
900.00	895.81	897.46	893.15	2.82	2.83	-79.49	-57.04	54.38	39.62	33.91	5.71	6.944		
1,000.00	994.13	997.40	991.05	3.23	3.25	-78.13	-75.50	62.27	43.06	36.55	6.52	6.608		
1,100.00	1,092.45	1,097.33	1,088.95	3.65	3.67	-76.98	-93.96	70.17	46.53	39.18	7.34	6.338		
1,200.00	1,190.77	1,197.27	1,186.85	4.07	4.11	-75.99	-112.42	78.06	50.01	41.83	8.17	6.118		
1,300.00	1,289.09	1,297.21	1,284.74	4.49	4.55	-75.13	-130.89	85.96	53.50	44.49	9.01	5.937		
1,400.00	1,387.41	1,397.14	1,382.64	4.92	4.99	-74.37	-149.35	93.85	57.00	47.15	9.85	5.785		
1,500.00	1,485.73	1,497.08	1,480.54	5.35	5.44	-73.70	-167.81	101.75	60.51	49.82	10.70	5.657		
1,600.00	1,584.05	1,597.01	1,578.44	5.78	5.88	-73.10	-186.27	109.64	64.03	52.49	11.54	5.547		
1,700.00	1,682.37	1,696.95	1,676.34	6.21	6.33	-72.57	-204.74	117.54	67.56	55.17	12.39	5.452		
1,800.00	1,780.69	1,796.89	1,774.23	6.65	6.78	-72.09	-223.20	125.43	71.09	57.85	13.24	5.369		
1,900.00	1,879.01	1,896.82	1,872.13	7.08	7.23	-71.65	-241.66	133.33	74.62	60.53	14.09	5.296		
2,000.00	1,977.33	1,996.76	1,970.03	7.52	7.68	-71.26	-260.12	141.22	78.16	63.22	14.94	5.232		
2,100.00	2,075.65	2,096.69	2,067.93	7.95	8.14	-70.90	-278.58	149.12	81.71	65.91	15.79	5.174		
2,200.00	2,173.97	2,196.63	2,165.83	8.39	8.59	-70.56	-297.05	157.01	85.25	68.61	16.64	5.122		
2,300.00	2,272.29	2,296.57	2,263.72	8.82	9.04	-70.26	-315.51	164.91	88.80	71.31	17.49	5.076		
2,400.00	2,370.61	2,396.50	2,361.62	9.26	9.50	-69.98	-333.97	172.80	92.35	74.00	18.35	5.034		
2,500.00	2,468.93	2,496.44	2,459.52	9.70	9.95	-69.72	-352.43	180.70	95.90	76.70	19.20	4.995		
2,600.00	2,567.25	2,596.37	2,557.42	10.14	10.40	-69.48	-370.90	188.59	99.46	79.41	20.05	4.960		
2,700.00	2,665.57	2,696.31	2,655.31	10.57	10.86	-69.25	-389.36	196.49	103.01	82.11	20.90	4.928		
2,800.00	2,763.89	2,796.25	2,753.21	11.01	11.31	-69.04	-407.82	204.38	106.57	84.81	21.76	4.898		
2,900.00	2,862.22	2,896.18	2,851.11	11.45	11.77	-68.84	-426.28	212.28	110.13	87.52	22.61	4.871		
3,000.00	2,960.54	2,996.12	2,949.01	11.89	12.22	-68.66	-444.74	220.17	113.69	90.23	23.46	4.846		
3,100.00	3,058.86	3,096.05	3,046.91	12.33	12.68	-68.49	-463.21	228.07	117.25	92.94	24.32	4.822		
3,200.00	3,157.18	3,195.99	3,144.80	12.76	13.14	-68.32	-481.67	235.96	120.81	95.65	25.17	4.800		
3,300.00	3,255.50	3,295.92	3,242.70	13.20	13.59	-68.17	-500.13	243.86	124.38	98.36	26.02	4.780		
3,400.00	3,353.82	3,395.86	3,340.60	13.64	14.05	-68.02	-518.59	251.75	127.94	101.07	26.87	4.761		
3,500.00	3,452.14	3,495.80	3,438.50	14.08	14.50	-67.89	-537.06	259.65	131.51	103.78	27.73	4.743		
3,600.00	3,550.46	3,595.73	3,536.40	14.52	14.96	-67.76	-555.52	267.54	135.07	106.49	28.58	4.726		
3,700.00	3,648.78	3,695.67	3,634.29	14.96	15.42	-67.63	-573.98	275.44	138.64	109.20	29.43	4.710		
3,800.00	3,747.10	3,795.60	3,732.19	15.40	15.87	-67.52	-592.44	283.33	142.20	111.92	30.29	4.695		
3,900.00	3,845.42	3,895.54	3,830.09	15.84	16.33	-67.40	-610.90	291.23	145.77	114.63	31.14	4.681		
4,000.00	3,943.74	3,995.48	3,927.99	16.27	16.79	-67.30	-629.37	299.12	149.34	117.35	31.99	4.668		
4,100.00	4,042.06	4,095.41	4,025.89	16.71	17.24	-67.20	-647.83	307.02	152.91	120.06	32.85	4.655		
4,200.00	4,140.38	4,195.35	4,123.78	17.15	17.70	-67.10	-666.29	314.91	156.48	122.78	33.70	4.643		
4,300.00	4,238.70	4,295.28	4,221.68	17.59	18.16	-67.01	-684.75	322.81	160.05	125.49	34.55	4.632		
4,400.00	4,337.02	4,395.55	4,319.90	18.03	18.60	-66.93	-703.26	330.72	163.61	128.20	35.40	4.621		
4,500.00	4,435.34	4,498.63	4,421.31	18.47	18.90	-67.49	-720.28	338.00	166.03	129.86	36.17	4.590		
4,600.00	4,533.72	4,601.59	4,523.19	18.87	19.17	-69.03	-733.92	343.83	166.77	129.80	36.96	4.512		
4,700.00	4,632.58	4,704.40	4,625.39	19.14	19.43	-70.69	-744.17	348.22	166.88	129.27	37.61	4.437		
4,800.00	4,731.90	4,807.07	4,727.77	19.39	19.68	-72.29	-751.04	351.15	166.57	128.36	38.21	4.359		
4,900.00	4,831.57	4,909.58	4,830.21	19.63	19.91	-73.84	-754.53	352.64	165.83	127.05	38.78	4.276		
5,000.00	4,931.45	5,010.83	4,931.45	19.86	20.15	-75.23	-755.01	352.85	164.81	125.47	39.34	4.190		
5,100.00	5,031.44	5,110.81	5,031.44	20.11	20.36	90.35	-755.01	352.85	164.51	124.68	39.83	4.130		

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 #30E-1936
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-1936	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		
5,186.01	5,117.45	5,196.85	5,117.45	20.29	20.54	90.00	-754.00	352.85	164.51	124.30	40.21	4.091		
5,200.00	5,131.44	5,210.78	5,131.35	20.32	20.56	89.63	-752.95	352.85	164.51	124.22	40.29	4.083		
5,300.00	5,231.44	5,307.47	5,226.30	20.53	20.68	83.62	-735.48	352.85	165.60	124.64	40.95	4.043		
5,400.00	5,330.45	5,400.00	5,312.68	20.69	20.73	75.94	-702.63	352.85	169.82	128.65	41.17	4.125		
5,500.00	5,425.18	5,488.04	5,388.24	20.75	20.71	69.30	-657.67	352.85	176.33	135.75	40.58	4.345		
5,600.00	5,512.16	5,574.13	5,453.80	20.75	20.65	63.74	-602.01	352.85	184.01	144.67	39.34	4.677		
5,700.00	5,588.19	5,658.18	5,508.12	20.70	20.57	59.34	-538.00	352.85	191.79	154.09	37.70	5.088		
5,800.00	5,650.47	5,740.65	5,550.75	20.62	20.48	56.03	-467.50	352.85	198.76	162.78	35.98	5.524		
5,900.00	5,696.73	5,821.99	5,581.39	20.55	20.40	53.73	-392.24	352.85	204.25	169.71	34.54	5.913		
6,000.00	5,725.25	5,900.00	5,599.44	20.51	20.33	52.40	-316.42	352.85	207.79	174.18	33.61	6.182		
6,099.99	5,735.00	5,982.81	5,606.00	20.52	20.29	51.90	-233.96	352.85	209.06	175.56	33.49	6.242		
6,200.00	5,735.00	6,082.83	5,606.00	20.62	20.33	51.90	-133.94	352.85	209.06	175.26	33.79	6.186		
6,300.00	5,735.00	6,182.83	5,606.00	20.82	20.47	51.90	-33.94	352.85	209.06	174.80	34.26	6.102		
6,400.00	5,735.00	6,282.83	5,606.00	21.13	20.74	51.90	66.06	352.85	209.06	174.17	34.89	5.992		
6,500.00	5,735.00	6,382.83	5,606.00	21.54	21.12	51.90	166.06	352.85	209.06	173.39	35.67	5.861		
6,600.00	5,735.00	6,482.83	5,606.00	22.05	21.61	51.90	266.06	352.85	209.06	172.47	36.59	5.714		
6,700.00	5,735.00	6,582.83	5,606.00	22.64	22.19	51.90	366.06	352.85	209.06	171.41	37.64	5.554		
6,800.00	5,735.00	6,682.83	5,606.00	23.32	22.87	51.90	466.06	352.85	209.06	170.24	38.82	5.385		
6,900.00	5,735.00	6,782.83	5,606.00	24.06	23.62	51.90	566.06	352.85	209.06	168.95	40.11	5.213		
7,000.00	5,735.00	6,882.83	5,606.00	24.87	24.44	51.90	666.06	352.85	209.06	167.56	41.49	5.038		
7,100.00	5,735.00	6,982.83	5,606.00	25.74	25.31	51.90	766.06	352.85	209.06	166.08	42.97	4.865		
7,200.00	5,735.00	7,082.83	5,606.00	26.66	26.24	51.90	866.06	352.85	209.06	164.52	44.53	4.695		
7,300.00	5,735.00	7,182.83	5,606.00	27.64	27.22	51.90	966.06	352.85	209.06	162.89	46.17	4.528		
7,400.00	5,735.00	7,282.83	5,606.00	28.65	28.25	51.90	1,066.06	352.85	209.06	161.19	47.87	4.368		
7,500.00	5,735.00	7,382.83	5,606.00	29.70	29.31	51.90	1,166.06	352.85	209.06	159.43	49.62	4.213		
7,600.00	5,735.00	7,482.83	5,606.00	30.79	30.40	51.90	1,266.06	352.85	209.06	157.62	51.44	4.064		
7,700.00	5,735.00	7,582.83	5,606.00	31.90	31.52	51.90	1,366.06	352.85	209.06	155.76	53.30	3.923		
7,800.00	5,735.00	7,682.83	5,606.00	33.05	32.68	51.90	1,466.06	352.85	209.06	153.86	55.20	3.787		
7,900.00	5,735.00	7,782.83	5,606.00	34.22	33.85	51.90	1,566.06	352.85	209.06	151.92	57.14	3.659		
8,000.00	5,735.00	7,882.83	5,606.00	35.41	35.05	51.90	1,666.06	352.85	209.06	149.94	59.12	3.536		
8,100.00	5,735.00	7,982.83	5,606.00	36.62	36.27	51.90	1,766.06	352.85	209.06	147.93	61.12	3.420		
8,200.00	5,735.00	8,082.83	5,606.00	37.85	37.51	51.90	1,866.06	352.85	209.06	145.90	63.16	3.310		
8,300.00	5,735.00	8,182.83	5,606.00	39.10	38.76	51.90	1,966.06	352.85	209.06	143.84	65.22	3.205		
8,400.00	5,735.00	8,282.83	5,606.00	40.36	40.03	51.90	2,066.06	352.85	209.06	141.75	67.30	3.106		
8,500.00	5,735.00	8,382.83	5,606.00	41.64	41.31	51.90	2,166.06	352.85	209.06	139.64	69.41	3.012		
8,600.00	5,735.00	8,482.83	5,606.00	42.93	42.60	51.90	2,266.06	352.85	209.06	137.52	71.54	2.922		
8,700.00	5,735.00	8,582.83	5,606.00	44.23	43.91	51.90	2,366.06	352.85	209.06	135.38	73.68	2.837		
8,800.00	5,735.00	8,682.83	5,606.00	45.54	45.22	51.90	2,466.06	352.85	209.05	133.22	75.84	2.757		
8,900.00	5,735.00	8,782.83	5,606.00	46.86	46.54	51.90	2,566.06	352.85	209.05	131.04	78.01	2.680		
9,000.00	5,735.00	8,882.83	5,606.00	48.19	47.88	51.90	2,666.06	352.85	209.05	128.85	80.20	2.607		
9,100.00	5,735.00	8,982.83	5,606.00	49.52	49.22	51.90	2,766.06	352.85	209.05	126.65	82.40	2.537		
9,200.00	5,735.00	9,082.83	5,606.00	50.87	50.57	51.90	2,866.06	352.85	209.05	124.44	84.62	2.471		
9,300.00	5,735.00	9,182.83	5,606.00	52.22	51.92	51.90	2,966.06	352.85	209.05	122.22	86.84	2.407		
9,400.00	5,735.00	9,282.83	5,606.00	53.58	53.28	51.90	3,066.06	352.85	209.05	119.98	89.07	2.347		
9,500.00	5,735.00	9,382.83	5,606.00	54.94	54.65	51.90	3,166.06	352.85	209.05	117.74	91.31	2.289		
9,600.00	5,735.00	9,482.83	5,606.00	56.31	56.02	51.90	3,266.06	352.85	209.05	115.49	93.56	2.234		
9,700.00	5,735.00	9,582.83	5,606.00	57.68	57.39	51.90	3,366.06	352.85	209.05	113.23	95.82	2.182		
9,800.00	5,735.00	9,682.83	5,606.00	59.06	58.78	51.90	3,466.06	352.85	209.05	110.97	98.09	2.131		
9,900.00	5,735.00	9,782.83	5,606.00	60.44	60.16	51.90	3,566.06	352.85	209.05	108.69	100.36	2.083		
10,000.00	5,735.00	9,882.83	5,606.00	61.83	61.55	51.90	3,666.06	352.85	209.05	106.41	102.64	2.037		
10,100.00	5,735.00	9,982.83	5,606.00	63.22	62.94	51.90	3,766.06	352.85	209.05	104.13	104.93	1.992		
10,200.00	5,735.00	10,082.83	5,606.00	64.62	64.34	51.90	3,866.06	352.85	209.05	101.84	107.22	1.950		

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 #30E-1936
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-1936	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	5,735.00	10,182.83	5,606.00	66.01	65.74	51.90	3,966.06	352.85	209.05	99.54	109.51	1.909		
10,400.00	5,735.00	10,282.83	5,606.00	67.41	67.14	51.90	4,066.06	352.84	209.05	97.24	111.81	1.870		
10,500.00	5,735.00	10,382.83	5,606.00	68.82	68.55	51.90	4,166.06	352.84	209.05	94.94	114.12	1.832		
10,600.00	5,735.00	10,482.83	5,606.00	70.22	69.96	51.90	4,266.06	352.84	209.05	92.63	116.43	1.796		
10,700.00	5,735.00	10,582.83	5,606.00	71.63	71.37	51.90	4,366.06	352.84	209.05	90.31	118.74	1.761		
10,800.00	5,735.00	10,682.83	5,606.00	73.05	72.78	51.90	4,466.06	352.84	209.05	87.99	121.06	1.727		
10,900.00	5,735.00	10,782.83	5,606.00	74.46	74.20	51.90	4,566.06	352.84	209.05	85.67	123.38	1.694		
11,000.00	5,735.00	10,882.83	5,606.00	75.88	75.61	51.90	4,666.06	352.84	209.05	83.35	125.71	1.663		
11,100.00	5,735.00	10,982.83	5,606.00	77.29	77.03	51.90	4,766.06	352.84	209.05	81.02	128.04	1.633		
11,200.00	5,735.00	11,082.83	5,606.00	78.71	78.45	51.90	4,866.06	352.84	209.05	78.69	130.37	1.604		
11,300.00	5,735.00	11,182.83	5,606.00	80.14	79.88	51.90	4,966.06	352.84	209.05	76.35	132.70	1.575		
11,400.00	5,735.00	11,282.83	5,606.00	81.56	81.30	51.90	5,066.06	352.84	209.05	74.02	135.04	1.548		
11,500.00	5,735.00	11,382.83	5,606.00	82.99	82.73	51.90	5,166.06	352.84	209.05	71.68	137.38	1.522		
11,600.00	5,735.00	11,482.83	5,606.00	84.41	84.16	51.90	5,266.06	352.84	209.05	69.33	139.72	1.496 Level 3		
11,700.00	5,735.00	11,582.83	5,606.00	85.84	85.59	51.90	5,366.06	352.84	209.05	66.99	142.07	1.472 Level 3		
11,800.00	5,735.00	11,682.83	5,606.00	87.27	87.02	51.90	5,466.06	352.84	209.05	64.64	144.41	1.448 Level 3		
11,900.00	5,735.00	11,782.83	5,606.00	88.70	88.45	51.90	5,566.06	352.84	209.05	62.29	146.76	1.424 Level 3		
12,000.00	5,735.00	11,882.83	5,606.00	90.14	89.89	51.90	5,666.06	352.84	209.05	59.94	149.11	1.402 Level 3		
12,100.00	5,735.00	11,982.83	5,606.00	91.57	91.32	51.90	5,766.06	352.84	209.05	57.59	151.47	1.380 Level 3		
12,200.00	5,735.00	12,082.83	5,606.00	93.00	92.76	51.90	5,866.06	352.84	209.05	55.23	153.82	1.359 Level 3		
12,300.00	5,735.00	12,182.83	5,606.00	94.44	94.19	51.90	5,966.06	352.84	209.05	52.88	156.18	1.339 Level 3		
12,400.00	5,735.00	12,282.83	5,606.00	95.88	95.63	51.90	6,066.06	352.84	209.05	50.52	158.54	1.319 Level 3		
12,500.00	5,735.00	12,382.83	5,606.00	97.32	97.07	51.90	6,166.06	352.84	209.05	48.16	160.90	1.299 Level 3		
12,600.00	5,735.00	12,482.83	5,606.00	98.76	98.51	51.90	6,266.06	352.84	209.05	45.80	163.26	1.281 Level 3		
12,700.00	5,735.00	12,582.83	5,606.00	100.20	99.95	51.90	6,366.06	352.84	209.05	43.43	165.62	1.262 Level 3		
12,800.00	5,735.00	12,682.83	5,606.00	101.64	101.39	51.90	6,466.06	352.84	209.05	41.07	167.98	1.244 Level 2		
12,900.00	5,735.00	12,782.83	5,606.00	103.08	102.84	51.90	6,566.06	352.84	209.05	38.70	170.35	1.227 Level 2		
13,000.00	5,735.00	12,882.83	5,606.00	104.52	104.28	51.90	6,666.06	352.84	209.05	36.34	172.72	1.210 Level 2		
13,100.00	5,735.00	12,982.83	5,606.00	105.97	105.72	51.90	6,766.06	352.84	209.05	33.97	175.09	1.194 Level 2		
13,200.00	5,735.00	13,082.83	5,606.00	107.41	107.17	51.90	6,866.06	352.84	209.05	31.60	177.46	1.178 Level 2		
13,300.00	5,735.00	13,182.83	5,606.00	108.85	108.62	51.90	6,966.06	352.84	209.05	29.23	179.83	1.163 Level 2		
13,400.00	5,735.00	13,282.83	5,606.00	110.30	110.06	51.90	7,066.06	352.84	209.05	26.85	182.20	1.147 Level 2		
13,500.00	5,735.00	13,382.83	5,606.00	111.75	111.51	51.90	7,166.06	352.84	209.05	24.48	184.57	1.133 Level 2		
13,600.00	5,735.00	13,482.83	5,606.00	113.19	112.96	51.90	7,266.06	352.84	209.05	22.11	186.95	1.118 Level 2		
13,700.00	5,735.00	13,582.83	5,606.00	114.64	114.41	51.90	7,366.06	352.84	209.05	19.73	189.32	1.104 Level 2		
13,800.00	5,735.00	13,682.83	5,606.00	116.09	115.85	51.90	7,466.06	352.84	209.05	17.36	191.70	1.091 Level 2		
13,849.49	5,735.00	13,732.32	5,606.00	116.81	116.52	51.90	7,515.55	352.84	209.05	16.24	192.82	1.084 Level 2, ES, SF		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1936
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-1936	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	450.375		
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	398.57	398.55	1.11	1.11	104.04	-1.59	-120.54	120.97	118.75	2.22	54.577		
500.00	499.84	497.08	496.93	1.41	1.40	104.09	-6.36	-122.29	124.01	121.20	2.81	44.164		
600.00	599.45	595.47	594.95	1.73	1.72	104.16	-14.30	-125.19	129.08	125.62	3.46	37.349		
700.00	698.70	693.69	692.45	2.07	2.05	104.24	-25.36	-129.24	136.15	132.00	4.15	32.801		
800.00	797.47	791.67	789.26	2.43	2.40	104.33	-39.52	-134.43	145.23	140.34	4.89	29.688		
900.00	895.81	890.23	886.14	2.82	2.79	104.36	-56.53	-140.66	155.94	150.27	5.66	27.530		
1,000.00	994.13	989.63	983.76	3.23	3.20	104.32	-74.12	-147.10	166.82	160.37	6.45	25.845		
1,100.00	1,092.45	1,089.04	1,081.39	3.65	3.61	104.29	-91.70	-153.54	177.70	170.44	7.26	24.467		
1,200.00	1,190.77	1,188.44	1,179.01	4.07	4.04	104.26	-109.29	-159.98	188.59	180.51	8.08	23.330		
1,300.00	1,289.09	1,287.85	1,276.64	4.49	4.46	104.24	-126.87	-166.41	199.47	190.56	8.91	22.378		
1,400.00	1,387.41	1,387.26	1,374.27	4.92	4.89	104.21	-144.45	-172.85	210.36	200.61	9.75	21.574		
1,500.00	1,485.73	1,486.66	1,471.89	5.35	5.32	104.19	-162.04	-179.29	221.24	210.65	10.59	20.887		
1,600.00	1,584.05	1,586.07	1,569.52	5.78	5.76	104.17	-179.62	-185.73	232.13	220.69	11.44	20.295		
1,700.00	1,682.37	1,685.47	1,667.14	6.21	6.19	104.15	-197.21	-192.17	243.01	230.73	12.29	19.778		
1,800.00	1,780.69	1,784.88	1,764.77	6.65	6.63	104.14	-214.79	-198.61	253.90	240.76	13.14	19.325		
1,900.00	1,879.01	1,884.29	1,862.40	7.08	7.06	104.12	-232.38	-205.05	264.78	250.79	13.99	18.924		
2,000.00	1,977.33	1,983.69	1,960.02	7.52	7.50	104.11	-249.96	-211.49	275.67	260.82	14.85	18.567		
2,100.00	2,075.65	2,083.10	2,057.65	7.95	7.94	104.10	-267.54	-217.93	286.55	270.85	15.70	18.247		
2,200.00	2,173.97	2,182.50	2,155.27	8.39	8.38	104.09	-285.13	-224.37	297.44	280.87	16.56	17.959		
2,300.00	2,272.29	2,281.91	2,252.90	8.82	8.81	104.08	-302.71	-230.81	308.32	290.90	17.42	17.698		
2,400.00	2,370.61	2,381.31	2,350.53	9.26	9.25	104.07	-320.30	-237.24	319.21	300.92	18.28	17.461		
2,500.00	2,468.93	2,480.72	2,448.15	9.70	9.69	104.06	-337.88	-243.68	330.09	310.95	19.14	17.244		
2,600.00	2,567.25	2,580.13	2,545.78	10.14	10.13	104.05	-355.47	-250.12	340.97	320.97	20.00	17.046		
2,700.00	2,665.57	2,679.53	2,643.41	10.57	10.57	104.04	-373.05	-256.56	351.86	330.99	20.87	16.863		
2,800.00	2,763.89	2,778.94	2,741.03	11.01	11.01	104.03	-390.63	-263.00	362.74	341.02	21.73	16.695		
2,900.00	2,862.22	2,878.34	2,838.66	11.45	11.45	104.03	-408.22	-269.44	373.63	351.04	22.59	16.539		
3,000.00	2,960.54	2,977.75	2,936.28	11.89	11.89	104.02	-425.80	-275.88	384.51	361.06	23.45	16.394		
3,100.00	3,058.86	3,077.16	3,033.91	12.33	12.34	104.01	-443.39	-282.32	395.40	371.08	24.32	16.259		
3,200.00	3,157.18	3,176.56	3,131.54	12.76	12.78	104.01	-460.97	-288.76	406.28	381.10	25.18	16.134		
3,300.00	3,255.50	3,275.97	3,229.16	13.20	13.22	104.00	-478.56	-295.20	417.17	391.12	26.05	16.016		
3,400.00	3,353.82	3,375.37	3,326.79	13.64	13.66	103.99	-496.14	-301.64	428.05	401.14	26.91	15.906		
3,500.00	3,452.14	3,474.78	3,424.41	14.08	14.10	103.99	-513.73	-308.07	438.94	411.16	27.78	15.803		
3,600.00	3,550.46	3,574.18	3,522.04	14.52	14.54	103.98	-531.31	-314.51	449.82	421.18	28.64	15.705		
3,700.00	3,648.78	3,673.59	3,619.67	14.96	14.98	103.98	-548.89	-320.95	460.71	431.20	29.51	15.614		
3,800.00	3,747.10	3,773.00	3,717.29	15.40	15.42	103.98	-566.48	-327.39	471.59	441.22	30.37	15.527		
3,900.00	3,845.42	3,872.40	3,814.92	15.84	15.87	103.97	-584.06	-333.83	482.48	451.24	31.24	15.445		
4,000.00	3,943.74	3,971.81	3,912.54	16.27	16.31	103.97	-601.65	-340.27	493.36	461.26	32.10	15.368		
4,100.00	4,042.06	4,071.21	4,010.17	16.71	16.75	103.96	-619.23	-346.71	504.25	471.28	32.97	15.294		
4,200.00	4,140.38	4,170.62	4,107.80	17.15	17.19	103.96	-636.82	-353.15	515.13	481.30	33.84	15.224		
4,300.00	4,238.70	4,270.03	4,205.42	17.59	17.63	103.96	-654.40	-359.59	526.02	491.31	34.70	15.158		
4,400.00	4,337.02	4,369.43	4,303.05	18.03	18.07	103.95	-671.98	-366.03	536.90	501.33	35.57	15.095		
4,500.00	4,435.34	4,468.84	4,400.67	18.47	18.52	103.95	-689.57	-372.47	547.79	511.35	36.43	15.035		
4,600.00	4,533.72	4,569.96	4,500.01	18.91	18.94	104.01	-707.35	-378.98	558.56	521.30	37.26	14.992		
4,700.00	4,632.58	4,676.60	4,605.25	19.34	19.25	104.13	-723.48	-384.88	567.73	529.88	37.85	15.001		
4,800.00	4,731.90	4,783.55	4,711.37	19.78	19.52	104.22	-735.95	-389.45	574.80	536.41	38.38	14.975		
4,900.00	4,831.57	4,890.74	4,818.14	19.63	19.78	104.28	-744.70	-392.66	579.75	540.86	38.89	14.907		
5,000.00	4,931.45	4,998.08	4,925.34	19.86	20.03	104.31	-749.71	-394.49	582.58	543.21	39.37	14.798		
5,100.00	5,031.44	5,104.19	5,031.44	20.11	20.28	-89.71	-751.00	-394.96	583.31	543.43	39.88	14.626		

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 #30E-1936
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-1936	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	5,131.44	5,204.19	5,131.44	20.32	20.49	-89.71	-751.00	-394.96	583.31	543.00	40.30	14.473		
5,286.32	5,217.75	5,290.45	5,217.70	20.50	20.68	-89.83	-750.99	-394.96	583.30	542.63	40.67	14.342		
5,300.00	5,231.44	5,303.91	5,231.16	20.53	20.70	-89.71	-750.72	-394.96	583.31	542.58	40.73	14.322		
5,400.00	5,330.45	5,402.33	5,328.64	20.69	20.86	-89.71	-738.23	-395.08	583.43	542.39	41.04	14.218		
5,500.00	5,425.18	5,500.82	5,422.10	20.75	20.93	-89.73	-707.64	-395.36	583.71	542.55	41.17	14.179		
5,600.00	5,512.16	5,599.42	5,508.24	20.75	20.92	-89.76	-659.96	-395.81	584.16	543.01	41.16	14.194		
5,700.00	5,588.19	5,698.19	5,583.99	20.70	20.86	-89.79	-596.81	-396.40	584.75	543.71	41.05	14.246		
5,800.00	5,650.47	5,797.18	5,646.60	20.62	20.77	-89.84	-520.34	-397.11	585.47	544.57	40.90	14.316		
5,900.00	5,696.73	5,896.41	5,693.75	20.55	20.67	-89.88	-433.20	-397.92	586.28	545.52	40.77	14.382		
6,000.00	5,725.25	5,995.92	5,723.60	20.51	20.59	-89.94	-338.43	-398.80	587.17	546.46	40.71	14.424		
6,099.99	5,735.00	6,095.72	5,734.92	20.52	20.56	-89.99	-239.43	-399.73	588.09	547.33	40.76	14.428		
6,200.00	5,735.00	6,195.73	5,735.00	20.62	20.60	-90.00	-139.43	-400.66	589.02	548.04	40.99	14.371		
6,300.00	5,735.00	6,295.72	5,735.00	20.82	20.75	-90.00	-39.44	-401.59	589.96	548.53	41.42	14.243		
6,400.00	5,735.00	6,395.72	5,735.00	21.13	21.01	-90.00	60.55	-402.52	590.89	548.83	42.06	14.049		
6,500.00	5,735.00	6,495.71	5,735.00	21.54	21.39	-90.00	160.54	-403.45	591.82	548.93	42.89	13.798		
6,600.00	5,735.00	6,595.71	5,735.00	22.05	21.87	-90.00	260.53	-404.39	592.75	548.85	43.90	13.501		
6,700.00	5,735.00	6,695.71	5,735.00	22.64	22.45	-90.00	360.52	-405.32	593.68	548.60	45.09	13.167		
6,800.00	5,735.00	6,795.70	5,735.00	23.32	23.11	-90.00	460.52	-406.25	594.62	548.19	46.43	12.807		
6,900.00	5,735.00	6,895.70	5,735.00	24.06	23.85	-90.00	560.51	-407.18	595.55	547.63	47.91	12.430		
7,000.00	5,735.00	6,995.69	5,735.00	24.87	24.66	-90.00	660.50	-408.11	596.48	546.95	49.53	12.043		
7,100.00	5,735.00	7,095.69	5,735.00	25.74	25.53	-90.00	760.49	-409.05	597.41	546.15	51.26	11.654		
7,200.00	5,735.00	7,195.68	5,735.00	26.66	26.45	-90.00	860.48	-409.98	598.34	545.24	53.10	11.268		
7,300.00	5,735.00	7,295.68	5,735.00	27.64	27.43	-90.00	960.47	-410.91	599.27	544.24	55.04	10.889		
7,400.00	5,735.00	7,395.68	5,735.00	28.65	28.44	-90.00	1,060.46	-411.84	600.21	543.15	57.06	10.519		
7,500.00	5,735.00	7,495.67	5,735.00	29.70	29.49	-90.00	1,160.46	-412.77	601.14	541.98	59.16	10.161		
7,600.00	5,735.00	7,595.67	5,735.00	30.79	30.58	-90.00	1,260.45	-413.70	602.07	540.74	61.33	9.817		
7,700.00	5,735.00	7,695.66	5,735.00	31.90	31.70	-90.00	1,360.44	-414.64	603.00	539.44	63.56	9.487		
7,800.00	5,735.00	7,795.66	5,735.00	33.05	32.85	-90.00	1,460.43	-415.57	603.93	538.08	65.85	9.171		
7,900.00	5,735.00	7,895.65	5,735.00	34.22	34.02	-90.00	1,560.42	-416.50	604.86	536.67	68.19	8.870		
8,000.00	5,735.00	7,995.65	5,735.00	35.41	35.21	-90.00	1,660.41	-417.43	605.80	535.22	70.57	8.584		
8,100.00	5,735.00	8,095.64	5,735.00	36.62	36.43	-90.00	1,760.40	-418.36	606.73	533.73	73.00	8.311		
8,200.00	5,735.00	8,195.64	5,735.00	37.85	37.66	-90.00	1,860.39	-419.29	607.66	532.20	75.46	8.053		
8,300.00	5,735.00	8,295.64	5,735.00	39.10	38.91	-90.00	1,960.39	-420.23	608.59	530.63	77.96	7.807		
8,400.00	5,735.00	8,395.63	5,735.00	40.36	40.18	-90.00	2,060.38	-421.16	609.52	529.04	80.48	7.573		
8,500.00	5,735.00	8,495.63	5,735.00	41.64	41.46	-90.00	2,160.37	-422.09	610.45	527.42	83.04	7.352		
8,600.00	5,735.00	8,595.62	5,735.00	42.93	42.75	-90.00	2,260.36	-423.02	611.39	525.77	85.62	7.141		
8,700.00	5,735.00	8,695.62	5,735.00	44.23	44.05	-90.00	2,360.35	-423.95	612.32	524.10	88.22	6.941		
8,800.00	5,735.00	8,795.61	5,735.00	45.54	45.36	-90.00	2,460.34	-424.89	613.25	522.41	90.84	6.751		
8,900.00	5,735.00	8,895.61	5,735.00	46.86	46.68	-90.00	2,560.33	-425.82	614.18	520.70	93.48	6.570		
9,000.00	5,735.00	8,995.61	5,735.00	48.19	48.02	-90.00	2,660.32	-426.75	615.11	518.97	96.14	6.398		
9,100.00	5,735.00	9,095.60	5,735.00	49.52	49.36	-90.00	2,760.32	-427.68	616.05	517.23	98.82	6.234		
9,200.00	5,735.00	9,195.60	5,735.00	50.87	50.70	-90.00	2,860.31	-428.61	616.98	515.47	101.51	6.078		
9,300.00	5,735.00	9,295.59	5,735.00	52.22	52.06	-90.00	2,960.30	-429.54	617.91	513.70	104.21	5.929		
9,400.00	5,735.00	9,395.59	5,735.00	53.58	53.42	-90.00	3,060.29	-430.48	618.84	511.91	106.93	5.787		
9,500.00	5,735.00	9,495.58	5,735.00	54.94	54.78	-90.00	3,160.28	-431.41	619.77	510.11	109.66	5.652		
9,600.00	5,735.00	9,595.58	5,735.00	56.31	56.15	-90.00	3,260.27	-432.34	620.70	508.30	112.40	5.522		
9,700.00	5,735.00	9,695.58	5,735.00	57.68	57.53	-90.00	3,360.26	-433.27	621.64	506.49	115.15	5.398		
9,800.00	5,735.00	9,795.57	5,735.00	59.06	58.91	-90.00	3,460.26	-434.20	622.57	504.66	117.91	5.280		
9,900.00	5,735.00	9,895.57	5,735.00	60.44	60.29	-90.00	3,560.25	-435.13	623.50	502.82	120.68	5.167		
10,000.00	5,735.00	9,995.56	5,735.00	61.83	61.68	-90.00	3,660.24	-436.07	624.43	500.98	123.45	5.058		
10,100.00	5,735.00	10,095.56	5,735.00	63.22	63.08	-90.00	3,760.23	-437.00	625.36	499.12	126.24	4.954		
10,200.00	5,735.00	10,195.55	5,735.00	64.62	64.47	-90.00	3,860.22	-437.93	626.29	497.27	129.03	4.854		

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 #30E-1936
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-1936	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	5,735.00	10,295.55	5,735.00	66.01	65.87	-90.00	3,960.21	-438.86	627.23	495.40	131.83	4.758	
10,400.00	5,735.00	10,395.55	5,735.00	67.41	67.28	-90.00	4,060.20	-439.79	628.16	493.53	134.63	4.666	
10,500.00	5,735.00	10,495.54	5,735.00	68.82	68.68	-90.00	4,160.19	-440.73	629.09	491.65	137.44	4.577	
10,600.00	5,735.00	10,595.54	5,735.00	70.22	70.09	-90.00	4,260.19	-441.66	630.02	489.76	140.26	4.492	
10,700.00	5,735.00	10,695.53	5,735.00	71.63	71.50	-90.00	4,360.18	-442.59	630.95	487.87	143.08	4.410	
10,800.00	5,735.00	10,795.53	5,735.00	73.05	72.92	-90.00	4,460.17	-443.52	631.89	485.98	145.90	4.331	
10,900.00	5,735.00	10,895.52	5,735.00	74.46	74.33	-90.00	4,560.16	-444.45	632.82	484.08	148.74	4.255	
11,000.00	5,735.00	10,995.52	5,735.00	75.88	75.75	-90.00	4,660.15	-445.38	633.75	482.18	151.57	4.181	
11,100.00	5,735.00	11,095.51	5,735.00	77.29	77.17	-90.00	4,760.14	-446.32	634.68	480.27	154.41	4.110	
11,200.00	5,735.00	11,195.51	5,735.00	78.71	78.59	-90.00	4,860.13	-447.25	635.61	478.36	157.25	4.042	
11,300.00	5,735.00	11,295.51	5,735.00	80.14	80.02	-90.00	4,960.13	-448.18	636.54	476.45	160.10	3.976	
11,400.00	5,735.00	11,395.50	5,735.00	81.56	81.44	-90.00	5,060.12	-449.11	637.48	474.53	162.95	3.912	
11,500.00	5,735.00	11,495.50	5,735.00	82.99	82.87	-90.00	5,160.11	-450.04	638.41	472.61	165.80	3.850	
11,600.00	5,735.00	11,595.49	5,735.00	84.41	84.30	-90.00	5,260.10	-450.97	639.34	470.68	168.66	3.791	
11,700.00	5,735.00	11,695.49	5,735.00	85.84	85.73	-90.00	5,360.09	-451.91	640.27	468.75	171.52	3.733	
11,800.00	5,735.00	11,795.48	5,735.00	87.27	87.16	-90.00	5,460.08	-452.84	641.20	466.82	174.38	3.677	
11,900.00	5,735.00	11,895.48	5,735.00	88.70	88.60	-90.00	5,560.07	-453.77	642.13	464.89	177.25	3.623	
12,000.00	5,735.00	11,995.48	5,735.00	90.14	90.03	-90.00	5,660.06	-454.70	643.07	462.95	180.11	3.570	
12,100.00	5,735.00	12,095.47	5,735.00	91.57	91.47	-90.00	5,760.06	-455.63	644.00	461.01	182.98	3.519	
12,200.00	5,735.00	12,195.47	5,735.00	93.00	92.91	-90.00	5,860.05	-456.57	644.93	459.07	185.86	3.470	
12,300.00	5,735.00	12,295.46	5,735.00	94.44	94.34	-90.00	5,960.04	-457.50	645.86	457.13	188.73	3.422	
12,400.00	5,735.00	12,395.46	5,735.00	95.88	95.78	-90.00	6,060.03	-458.43	646.79	455.19	191.61	3.376	
12,500.00	5,735.00	12,495.45	5,735.00	97.32	97.22	-90.00	6,160.02	-459.36	647.73	453.24	194.49	3.330	
12,600.00	5,735.00	12,595.45	5,735.00	98.76	98.66	-90.00	6,260.01	-460.29	648.66	451.29	197.37	3.287	
12,700.00	5,735.00	12,695.45	5,735.00	100.20	100.11	-90.00	6,360.00	-461.22	649.59	449.34	200.25	3.244	
12,800.00	5,735.00	12,795.44	5,735.00	101.64	101.55	-90.00	6,460.00	-462.16	650.52	447.39	203.14	3.202	
12,900.00	5,735.00	12,895.44	5,735.00	103.08	102.99	-90.00	6,559.99	-463.09	651.45	445.43	206.02	3.162	
13,000.00	5,735.00	12,995.43	5,735.00	104.52	104.44	-90.00	6,659.98	-464.02	652.38	443.47	208.91	3.123	
13,100.00	5,735.00	13,095.43	5,735.00	105.97	105.88	-90.00	6,759.97	-464.95	653.32	441.52	211.80	3.085	
13,200.00	5,735.00	13,195.42	5,735.00	107.41	107.33	-90.00	6,859.96	-465.88	654.25	439.56	214.69	3.047	
13,300.00	5,735.00	13,295.42	5,735.00	108.85	108.78	-90.00	6,959.95	-466.82	655.18	437.60	217.58	3.011	
13,400.00	5,735.00	13,395.41	5,735.00	110.30	110.23	-90.00	7,059.94	-467.75	656.11	435.63	220.48	2.976	
13,500.00	5,735.00	13,495.41	5,735.00	111.75	111.67	-90.00	7,159.93	-468.68	657.04	433.67	223.37	2.941	
13,600.00	5,735.00	13,595.41	5,735.00	113.19	113.12	-90.00	7,259.93	-469.61	657.97	431.71	226.27	2.908	
13,700.00	5,735.00	13,695.40	5,735.00	114.64	114.57	-90.00	7,359.92	-470.54	658.91	429.74	229.17	2.875	
13,800.00	5,735.00	13,795.40	5,735.00	116.09	116.02	-90.00	7,459.91	-471.47	659.84	427.77	232.06	2.843	
13,849.49	5,735.00	13,844.89	5,735.00	116.81	116.74	-90.00	7,509.40	-471.94	660.30	426.80	233.50	2.828 SF	



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1936
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-1936	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	-59.98	59.98					
100.00	100.00	100.00	100.00	0.13	0.13	-90.00	0.00	-59.98	59.98	59.71	0.27	225.188		
200.00	200.00	200.00	200.00	0.47	0.47	-90.00	0.00	-59.98	59.98	59.04	0.94	63.763		
300.00	300.00	300.00	300.00	0.81	0.81	-90.00	0.00	-59.98	59.98	58.36	1.61	37.140 CC, ES		
400.00	399.98	399.77	399.75	1.11	1.11	103.98	-1.73	-60.17	60.59	58.38	2.21	27.399		
500.00	499.84	499.52	499.35	1.41	1.41	103.84	-6.90	-60.73	62.43	59.64	2.79	22.377		
600.00	599.45	599.22	598.67	1.73	1.73	103.63	-15.52	-61.68	65.49	62.06	3.43	19.111		
700.00	698.70	698.85	697.57	2.07	2.06	103.35	-27.56	-63.00	69.76	65.65	4.12	16.952		
800.00	797.47	798.40	795.89	2.43	2.42	103.04	-42.99	-64.69	75.25	70.40	4.86	15.496		
900.00	895.81	898.20	894.19	2.82	2.81	103.36	-60.16	-66.57	81.53	75.89	5.64	14.465		
1,000.00	994.13	998.00	992.48	3.23	3.21	103.74	-77.33	-68.45	87.83	81.39	6.44	13.643		
1,100.00	1,092.45	1,097.80	1,090.78	3.65	3.62	104.06	-94.50	-70.33	94.13	86.88	7.25	12.977		
1,200.00	1,190.77	1,197.60	1,189.07	4.07	4.03	104.34	-111.67	-72.21	100.44	92.36	8.08	12.430		
1,300.00	1,289.09	1,297.40	1,287.36	4.49	4.45	104.59	-128.84	-74.09	106.75	97.84	8.91	11.975		
1,400.00	1,387.41	1,397.20	1,385.66	4.92	4.87	104.82	-146.01	-75.97	113.06	103.31	9.75	11.592		
1,500.00	1,485.73	1,497.00	1,483.95	5.35	5.29	105.01	-163.17	-77.85	119.38	108.78	10.60	11.266		
1,600.00	1,584.05	1,596.80	1,582.24	5.78	5.71	105.19	-180.34	-79.73	125.69	114.25	11.44	10.984		
1,700.00	1,682.37	1,696.60	1,680.54	6.21	6.13	105.35	-197.51	-81.61	132.01	119.72	12.29	10.740		
1,800.00	1,780.69	1,796.40	1,778.83	6.65	6.55	105.50	-214.68	-83.49	138.33	125.18	13.14	10.525		
1,900.00	1,879.01	1,896.20	1,877.13	7.08	6.98	105.63	-231.85	-85.37	144.64	130.65	13.99	10.335		
2,000.00	1,977.33	1,996.00	1,975.42	7.52	7.41	105.76	-249.02	-87.25	150.96	136.11	14.85	10.167		
2,100.00	2,075.65	2,095.80	2,073.71	7.95	7.83	105.87	-266.19	-89.13	157.28	141.58	15.70	10.016		
2,200.00	2,173.97	2,195.60	2,172.01	8.39	8.26	105.97	-283.36	-91.01	163.60	147.04	16.56	9.880		
2,300.00	2,272.29	2,295.40	2,270.30	8.82	8.69	106.07	-300.53	-92.89	169.92	152.51	17.42	9.757		
2,400.00	2,370.61	2,395.20	2,368.59	9.26	9.11	106.16	-317.70	-94.77	176.24	157.97	18.27	9.645		
2,500.00	2,468.93	2,495.00	2,466.89	9.70	9.54	106.24	-334.87	-96.65	182.56	163.43	19.13	9.543		
2,600.00	2,567.25	2,594.80	2,565.18	10.14	9.97	106.32	-352.04	-98.53	188.88	168.89	19.99	9.449		
2,700.00	2,665.57	2,694.60	2,663.48	10.57	10.40	106.39	-369.21	-100.42	195.21	174.36	20.85	9.363		
2,800.00	2,763.89	2,794.40	2,761.77	11.01	10.82	106.46	-386.38	-102.30	201.53	179.82	21.71	9.284		
2,900.00	2,862.22	2,894.20	2,860.06	11.45	11.25	106.52	-403.55	-104.18	207.85	185.28	22.57	9.211		
3,000.00	2,960.54	2,994.00	2,958.36	11.89	11.68	106.58	-420.72	-106.06	214.17	190.75	23.43	9.142		
3,100.00	3,058.86	3,093.80	3,056.65	12.33	12.11	106.64	-437.88	-107.94	220.49	196.21	24.29	9.079		
3,200.00	3,157.18	3,193.60	3,154.94	12.76	12.54	106.69	-455.05	-109.82	226.82	201.67	25.15	9.020		
3,300.00	3,255.50	3,293.40	3,253.24	13.20	12.97	106.75	-472.22	-111.70	233.14	207.13	26.01	8.965		
3,400.00	3,353.82	3,393.20	3,351.53	13.64	13.40	106.79	-489.39	-113.58	239.46	212.60	26.87	8.913		
3,500.00	3,452.14	3,493.00	3,449.83	14.08	13.83	106.84	-506.56	-115.46	245.79	218.06	27.73	8.864		
3,600.00	3,550.46	3,592.80	3,548.12	14.52	14.26	106.88	-523.73	-117.34	252.11	223.52	28.59	8.818		
3,700.00	3,648.78	3,692.60	3,646.41	14.96	14.68	106.92	-540.90	-119.22	258.43	228.98	29.45	8.775		
3,800.00	3,747.10	3,792.40	3,744.71	15.40	15.11	106.96	-558.07	-121.10	264.76	234.45	30.31	8.735		
3,900.00	3,845.42	3,892.20	3,843.00	15.84	15.54	107.00	-575.24	-122.98	271.08	239.91	31.17	8.696		
4,000.00	3,943.74	3,992.00	3,941.29	16.27	15.97	107.04	-592.41	-124.86	277.41	245.37	32.03	8.660		
4,100.00	4,042.06	4,091.79	4,039.59	16.71	16.40	107.07	-609.58	-126.74	283.73	250.83	32.90	8.625		
4,200.00	4,140.38	4,191.59	4,137.88	17.15	16.83	107.10	-626.75	-128.62	290.05	256.30	33.76	8.592		
4,300.00	4,238.70	4,291.39	4,236.17	17.59	17.26	107.13	-643.92	-130.50	296.38	261.76	34.62	8.561		
4,400.00	4,337.02	4,391.19	4,334.47	18.03	17.69	107.16	-661.09	-132.38	302.70	267.22	35.48	8.531		
4,500.00	4,435.34	4,490.99	4,432.76	18.47	18.12	107.19	-678.26	-134.26	309.03	272.68	36.34	8.503		
4,600.00	4,533.72	4,590.80	4,531.06	18.91	18.55	107.21	-695.43	-136.14	315.26	278.09	37.17	8.481		
4,700.00	4,632.58	4,690.78	4,629.55	19.34	18.96	106.81	-712.50	-138.01	320.63	282.77	37.85	8.470		
4,800.00	4,731.90	4,791.34	4,729.02	19.79	19.23	106.25	-727.15	-139.62	324.87	286.48	38.39	8.462		
4,900.00	4,831.57	4,892.08	4,829.13	19.63	19.48	105.72	-738.34	-140.84	327.94	289.04	38.89	8.431		
5,000.00	4,931.45	4,992.98	4,929.73	19.86	19.72	105.20	-746.02	-141.69	329.81	290.44	39.37	8.377		
5,100.00	5,031.44	5,094.02	5,030.67	20.11	19.95	-89.34	-750.19	-142.14	330.50	290.64	39.86	8.291		

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 #30E-1936
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-1936	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	5,131.44	5,194.79	5,131.44	20.32	20.20	-89.48	-751.00	-142.23	330.58	290.26	40.33	8.198		
5,300.00	5,231.44	5,294.79	5,231.44	20.53	20.41	-89.53	-751.00	-142.23	330.58	289.83	40.75	8.112		
5,338.50	5,269.83	5,333.19	5,269.83	20.59	20.50	-90.00	-751.00	-142.23	330.57	289.67	40.90	8.082		
5,400.00	5,330.45	5,394.39	5,331.02	20.69	20.62	-91.58	-750.02	-142.23	330.70	289.56	41.14	8.039		
5,500.00	5,425.18	5,496.48	5,431.65	20.75	20.77	-94.34	-733.83	-142.23	331.54	290.20	41.35	8.019		
5,600.00	5,512.16	5,602.01	5,530.29	20.75	20.83	-96.97	-696.84	-142.23	333.08	291.75	41.33	8.059		
5,700.00	5,588.19	5,711.07	5,622.26	20.70	20.81	-99.35	-638.59	-142.23	335.10	294.01	41.09	8.155		
5,800.00	5,650.47	5,823.55	5,702.28	20.62	20.75	-101.38	-559.86	-142.23	337.28	296.58	40.69	8.288		
5,900.00	5,696.73	5,939.04	5,764.93	20.55	20.67	-102.95	-463.12	-142.23	339.25	298.99	40.26	8.426		
6,000.00	5,725.25	6,056.85	5,805.34	20.51	20.63	-103.98	-352.72	-142.23	340.69	300.72	39.97	8.524		
6,099.99	5,735.00	6,176.01	5,819.98	20.52	20.66	-104.42	-234.73	-142.23	341.32	301.36	39.96	8.542		
6,200.00	5,735.00	6,276.79	5,820.00	20.62	20.79	-104.42	-133.94	-142.23	341.32	301.10	40.22	8.487		
6,300.00	5,735.00	6,376.79	5,820.00	20.82	21.01	-104.42	-33.94	-142.23	341.32	300.65	40.67	8.393		
6,400.00	5,735.00	6,476.79	5,820.00	21.13	21.33	-104.42	66.06	-142.23	341.32	300.01	41.32	8.261		
6,500.00	5,735.00	6,576.79	5,820.00	21.54	21.75	-104.42	166.06	-142.23	341.32	299.17	42.15	8.098		
6,600.00	5,735.00	6,676.79	5,820.00	22.05	22.25	-104.42	266.06	-142.23	341.32	298.17	43.15	7.909		
6,700.00	5,735.00	6,776.79	5,820.00	22.64	22.85	-104.42	366.06	-142.23	341.32	297.00	44.32	7.701		
6,800.00	5,735.00	6,876.79	5,820.00	23.32	23.52	-104.42	466.06	-142.23	341.32	295.68	45.64	7.478		
6,900.00	5,735.00	6,976.79	5,820.00	24.06	24.26	-104.42	566.06	-142.23	341.32	294.22	47.10	7.247		
7,000.00	5,735.00	7,076.79	5,820.00	24.87	25.06	-104.42	666.06	-142.23	341.32	292.64	48.68	7.012		
7,100.00	5,735.00	7,176.79	5,820.00	25.74	25.93	-104.42	766.06	-142.23	341.32	290.95	50.37	6.776		
7,200.00	5,735.00	7,276.79	5,820.00	26.66	26.85	-104.42	866.06	-142.23	341.32	289.15	52.17	6.542		
7,300.00	5,735.00	7,376.79	5,820.00	27.64	27.81	-104.42	966.06	-142.23	341.32	287.26	54.06	6.314		
7,400.00	5,735.00	7,476.79	5,820.00	28.65	28.82	-104.42	1,066.06	-142.23	341.32	285.29	56.03	6.091		
7,500.00	5,735.00	7,576.79	5,820.00	29.70	29.87	-104.42	1,166.06	-142.23	341.32	283.24	58.08	5.877		
7,600.00	5,735.00	7,676.79	5,820.00	30.79	30.95	-104.42	1,266.06	-142.23	341.32	281.12	60.19	5.670		
7,700.00	5,735.00	7,776.79	5,820.00	31.90	32.06	-104.42	1,366.06	-142.23	341.32	278.95	62.37	5.473		
7,800.00	5,735.00	7,876.79	5,820.00	33.05	33.20	-104.42	1,466.06	-142.23	341.32	276.72	64.59	5.284		
7,900.00	5,735.00	7,976.79	5,820.00	34.22	34.37	-104.42	1,566.06	-142.23	341.32	274.45	66.87	5.104		
8,000.00	5,735.00	8,076.79	5,820.00	35.41	35.56	-104.42	1,666.06	-142.23	341.32	272.13	69.19	4.933		
8,100.00	5,735.00	8,176.79	5,820.00	36.62	36.77	-104.42	1,766.06	-142.22	341.32	269.77	71.55	4.770		
8,200.00	5,735.00	8,276.79	5,820.00	37.85	37.99	-104.42	1,866.06	-142.22	341.32	267.37	73.94	4.616		
8,300.00	5,735.00	8,376.79	5,820.00	39.10	39.24	-104.42	1,966.06	-142.22	341.32	264.94	76.37	4.469		
8,400.00	5,735.00	8,476.79	5,820.00	40.36	40.50	-104.42	2,066.06	-142.22	341.32	262.49	78.83	4.330		
8,500.00	5,735.00	8,576.79	5,820.00	41.64	41.77	-104.42	2,166.06	-142.22	341.32	260.00	81.31	4.198		
8,600.00	5,735.00	8,676.79	5,820.00	42.93	43.06	-104.42	2,266.06	-142.22	341.32	257.50	83.82	4.072		
8,700.00	5,735.00	8,776.79	5,820.00	44.23	44.35	-104.42	2,366.06	-142.22	341.32	254.97	86.35	3.953		
8,800.00	5,735.00	8,876.79	5,820.00	45.54	45.66	-104.42	2,466.06	-142.22	341.32	252.41	88.90	3.839		
8,900.00	5,735.00	8,976.79	5,820.00	46.86	46.98	-104.42	2,566.06	-142.22	341.31	249.85	91.47	3.731		
9,000.00	5,735.00	9,076.79	5,820.00	48.19	48.31	-104.42	2,666.06	-142.22	341.31	247.26	94.06	3.629		
9,100.00	5,735.00	9,176.79	5,820.00	49.52	49.64	-104.42	2,766.06	-142.22	341.31	244.66	96.66	3.531		
9,200.00	5,735.00	9,276.79	5,820.00	50.87	50.99	-104.42	2,866.06	-142.22	341.31	242.04	99.27	3.438		
9,300.00	5,735.00	9,376.79	5,820.00	52.22	52.33	-104.42	2,966.06	-142.22	341.31	239.41	101.90	3.349		
9,400.00	5,735.00	9,476.79	5,820.00	53.58	53.69	-104.42	3,066.06	-142.22	341.31	236.77	104.55	3.265		
9,500.00	5,735.00	9,576.79	5,820.00	54.94	55.05	-104.42	3,166.06	-142.22	341.31	234.11	107.20	3.184		
9,600.00	5,735.00	9,676.79	5,820.00	56.31	56.42	-104.42	3,266.06	-142.22	341.31	231.45	109.86	3.107		
9,700.00	5,735.00	9,776.79	5,820.00	57.68	57.79	-104.42	3,366.06	-142.22	341.31	228.78	112.54	3.033		
9,800.00	5,735.00	9,876.79	5,820.00	59.06	59.17	-104.42	3,466.06	-142.22	341.31	226.09	115.22	2.962		
9,900.00	5,735.00	9,976.79	5,820.00	60.44	60.55	-104.42	3,566.06	-142.22	341.31	223.40	117.91	2.895		
10,000.00	5,735.00	10,076.79	5,820.00	61.83	61.94	-104.42	3,666.06	-142.22	341.31	220.70	120.61	2.830		
10,100.00	5,735.00	10,176.79	5,820.00	63.22	63.33	-104.42	3,766.06	-142.22	341.31	217.99	123.32	2.768		
10,200.00	5,735.00	10,276.79	5,820.00	64.62	64.72	-104.42	3,866.06	-142.22	341.31	215.28	126.03	2.708		

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 #30E-1936
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-1936	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	5,735.00	10,376.79	5,820.00	66.01	66.12	-104.42	3,966.06	-142.22	341.31	212.56	128.75	2.651		
10,400.00	5,735.00	10,476.79	5,820.00	67.41	67.52	-104.42	4,066.06	-142.22	341.31	209.83	131.48	2.596		
10,500.00	5,735.00	10,576.79	5,820.00	68.82	68.92	-104.42	4,166.06	-142.22	341.31	207.10	134.21	2.543		
10,600.00	5,735.00	10,676.79	5,820.00	70.22	70.32	-104.42	4,266.06	-142.22	341.31	204.36	136.95	2.492		
10,700.00	5,735.00	10,776.79	5,820.00	71.63	71.73	-104.42	4,366.06	-142.22	341.31	201.62	139.69	2.443		
10,800.00	5,735.00	10,876.79	5,820.00	73.05	73.14	-104.42	4,466.06	-142.22	341.31	198.87	142.44	2.396		
10,900.00	5,735.00	10,976.79	5,820.00	74.46	74.56	-104.42	4,566.06	-142.22	341.31	196.12	145.19	2.351		
11,000.00	5,735.00	11,076.79	5,820.00	75.88	75.97	-104.42	4,666.06	-142.22	341.31	193.36	147.95	2.307		
11,100.00	5,735.00	11,176.79	5,820.00	77.29	77.39	-104.42	4,766.06	-142.22	341.31	190.60	150.71	2.265		
11,200.00	5,735.00	11,276.79	5,820.00	78.71	78.81	-104.42	4,866.06	-142.22	341.31	187.83	153.48	2.224		
11,300.00	5,735.00	11,376.79	5,820.00	80.14	80.23	-104.42	4,966.06	-142.22	341.31	185.06	156.24	2.184		
11,400.00	5,735.00	11,476.79	5,820.00	81.56	81.65	-104.42	5,066.06	-142.22	341.31	182.29	159.02	2.146		
11,500.00	5,735.00	11,576.79	5,820.00	82.99	83.08	-104.42	5,166.06	-142.22	341.31	179.52	161.79	2.110		
11,600.00	5,735.00	11,676.79	5,820.00	84.41	84.50	-104.42	5,266.06	-142.22	341.31	176.74	164.57	2.074		
11,700.00	5,735.00	11,776.79	5,820.00	85.84	85.93	-104.42	5,366.06	-142.22	341.31	173.96	167.35	2.040		
11,800.00	5,735.00	11,876.79	5,820.00	87.27	87.36	-104.42	5,466.06	-142.22	341.31	171.18	170.13	2.006		
11,900.00	5,735.00	11,976.79	5,820.00	88.70	88.79	-104.42	5,566.06	-142.22	341.31	168.39	172.92	1.974		
12,000.00	5,735.00	12,076.79	5,820.00	90.14	90.23	-104.42	5,666.06	-142.22	341.31	165.60	175.71	1.942		
12,100.00	5,735.00	12,176.79	5,820.00	91.57	91.66	-104.42	5,766.06	-142.22	341.31	162.81	178.50	1.912		
12,200.00	5,735.00	12,276.79	5,820.00	93.00	93.09	-104.42	5,866.06	-142.22	341.31	160.01	181.29	1.883		
12,300.00	5,735.00	12,376.79	5,820.00	94.44	94.53	-104.42	5,966.06	-142.22	341.31	157.22	184.09	1.854		
12,400.00	5,735.00	12,476.79	5,820.00	95.88	95.97	-104.42	6,066.06	-142.22	341.31	154.42	186.89	1.826		
12,500.00	5,735.00	12,576.79	5,820.00	97.32	97.40	-104.42	6,166.06	-142.22	341.31	151.62	189.68	1.799		
12,600.00	5,735.00	12,676.79	5,820.00	98.76	98.84	-104.42	6,266.06	-142.22	341.31	148.82	192.49	1.773		
12,700.00	5,735.00	12,776.79	5,820.00	100.20	100.28	-104.42	6,366.06	-142.22	341.31	146.02	195.29	1.748		
12,800.00	5,735.00	12,876.79	5,820.00	101.64	101.72	-104.42	6,466.06	-142.21	341.31	143.21	198.10	1.723		
12,900.00	5,735.00	12,976.79	5,820.00	103.08	103.16	-104.42	6,566.06	-142.21	341.30	140.40	200.90	1.699		
13,000.00	5,735.00	13,076.79	5,820.00	104.52	104.61	-104.42	6,666.06	-142.21	341.30	137.59	203.71	1.675		
13,100.00	5,735.00	13,176.79	5,820.00	105.97	106.05	-104.42	6,766.06	-142.21	341.30	134.78	206.52	1.653		
13,200.00	5,735.00	13,276.79	5,820.00	107.41	107.49	-104.42	6,866.06	-142.21	341.30	131.97	209.33	1.630		
13,300.00	5,735.00	13,376.79	5,820.00	108.85	108.94	-104.42	6,966.06	-142.21	341.30	129.16	212.15	1.609		
13,400.00	5,735.00	13,476.79	5,820.00	110.30	110.38	-104.42	7,066.06	-142.21	341.30	126.34	214.96	1.588		
13,500.00	5,735.00	13,576.79	5,820.00	111.75	111.83	-104.42	7,166.06	-142.21	341.30	123.53	217.78	1.567		
13,600.00	5,735.00	13,676.79	5,820.00	113.19	113.28	-104.42	7,266.06	-142.21	341.30	120.71	220.59	1.547		
13,700.00	5,735.00	13,776.79	5,820.00	114.64	114.72	-104.42	7,366.06	-142.21	341.30	117.89	223.41	1.528		
13,800.00	5,735.00	13,876.79	5,820.00	116.09	116.17	-104.42	7,466.06	-142.21	341.30	115.07	226.23	1.509		
13,847.71	5,735.00	13,924.51	5,820.00	116.78	116.86	-104.42	7,513.77	-142.21	341.30	113.73	227.57	1.500 Level 3		
13,849.49	5,735.00	13,926.28	5,820.00	116.81	116.89	-104.42	7,515.55	-142.21	341.30	113.68	227.62	1.499 Level 3, SF		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1936
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-1936	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	-148.19	-49.59	-30.76	58.35					
100.00	100.00	100.00	100.00	0.13	0.13	-148.19	-49.59	-30.76	58.35	58.09	0.27	219.080		
200.00	200.00	200.00	200.00	0.47	0.47	-148.19	-49.59	-30.76	58.35	57.41	0.94	62.033		
300.00	300.00	300.00	300.00	0.81	0.81	-148.19	-49.59	-30.76	58.35	56.74	1.61	36.132		
400.00	399.98	401.63	401.61	1.11	1.14	46.13	-48.87	-29.10	55.68	53.38	2.30	24.219		
500.00	499.84	502.82	502.65	1.41	1.48	47.18	-46.73	-24.17	47.69	44.66	3.03	15.743		
600.00	599.45	602.39	601.91	1.73	1.82	50.67	-43.59	-16.93	35.22	31.52	3.70	9.523		
700.00	698.70	701.15	700.35	2.07	2.15	65.56	-40.42	-9.61	21.20	16.84	4.36	4.864		
786.09	783.76	785.76	784.68	2.38	2.44	113.73	-37.71	-3.35	13.53	8.66	4.87	2.781 CC, ES		
800.00	797.47	799.39	798.26	2.43	2.49	125.12	-37.27	-2.34	13.83	8.90	4.93	2.805		
900.00	895.81	897.17	895.73	2.82	2.83	172.55	-34.13	4.90	27.58	22.01	5.57	4.954		
1,000.00	994.13	994.93	993.17	3.23	3.17	-174.69	-30.99	12.15	47.10	40.86	6.24	7.547		
1,100.00	1,092.45	1,092.69	1,090.60	3.65	3.51	-169.49	-27.86	19.39	67.55	60.63	6.91	9.770		
1,200.00	1,190.77	1,190.45	1,188.04	4.07	3.85	-166.71	-24.72	26.63	88.28	80.69	7.59	11.632		
1,300.00	1,289.09	1,288.21	1,285.48	4.49	4.19	-165.00	-21.58	33.87	109.13	100.87	8.27	13.200		
1,400.00	1,387.41	1,385.96	1,382.92	4.92	4.54	-163.83	-18.44	41.11	130.05	121.10	8.95	14.534		
1,500.00	1,485.73	1,483.72	1,480.36	5.35	4.88	-162.99	-15.31	48.35	151.01	141.38	9.63	15.679		
1,600.00	1,584.05	1,581.48	1,577.80	5.78	5.22	-162.35	-12.17	55.59	171.99	161.67	10.32	16.672		
1,700.00	1,682.37	1,679.24	1,675.24	6.21	5.57	-161.85	-9.03	62.83	192.98	181.98	11.00	17.541		
1,800.00	1,780.69	1,777.00	1,772.68	6.65	5.91	-161.45	-5.89	70.07	213.99	202.30	11.69	18.306		
1,900.00	1,879.01	1,874.76	1,870.12	7.08	6.26	-161.12	-2.75	77.31	235.01	222.63	12.38	18.985		
2,000.00	1,977.33	1,972.52	1,967.56	7.52	6.60	-160.85	0.38	84.55	256.03	242.96	13.07	19.592		
2,100.00	2,075.65	2,070.28	2,065.00	7.95	6.94	-160.61	3.52	91.79	277.05	263.29	13.76	20.138		
2,200.00	2,173.97	2,168.04	2,162.44	8.39	7.29	-160.41	6.66	99.04	298.08	283.63	14.45	20.630		
2,300.00	2,272.29	2,265.79	2,259.88	8.82	7.63	-160.24	9.80	106.28	319.11	303.97	15.14	21.077		
2,400.00	2,370.61	2,363.55	2,357.32	9.26	7.98	-160.09	12.93	113.52	340.15	324.32	15.83	21.484		
2,500.00	2,468.93	2,461.31	2,454.76	9.70	8.32	-159.95	16.07	120.76	361.19	344.66	16.52	21.857		
2,600.00	2,567.25	2,559.07	2,552.20	10.14	8.67	-159.83	19.21	128.00	382.23	365.01	17.22	22.200		
2,700.00	2,665.57	2,656.83	2,649.64	10.57	9.01	-159.72	22.35	135.24	403.27	385.36	17.91	22.515		
2,800.00	2,763.89	2,754.59	2,747.08	11.01	9.35	-159.63	25.49	142.48	424.31	405.70	18.60	22.807		
2,900.00	2,862.22	2,852.35	2,844.52	11.45	9.70	-159.54	28.62	149.72	445.35	426.05	19.30	23.077		
3,000.00	2,960.54	2,950.11	2,941.96	11.89	10.04	-159.46	31.76	156.96	466.39	446.40	19.99	23.329		
3,100.00	3,058.86	3,047.86	3,039.40	12.33	10.39	-159.39	34.90	164.20	487.44	466.75	20.69	23.563		
3,200.00	3,157.18	3,145.62	3,136.84	12.76	10.73	-159.32	38.04	171.44	508.48	487.10	21.38	23.782		
3,300.00	3,255.50	3,243.38	3,234.28	13.20	11.08	-159.26	41.18	178.68	529.53	507.45	22.08	23.987		
3,400.00	3,353.82	3,341.14	3,331.72	13.64	11.42	-159.20	44.31	185.93	550.58	527.80	22.77	24.179		
3,500.00	3,452.14	3,438.90	3,429.16	14.08	11.77	-159.15	47.45	193.17	571.62	548.16	23.47	24.360		
3,600.00	3,550.46	3,536.66	3,526.60	14.52	12.11	-159.10	50.59	200.41	592.67	568.51	24.16	24.530		
3,700.00	3,648.78	3,634.42	3,624.04	14.96	12.46	-159.05	53.73	207.65	613.72	588.86	24.86	24.691		
3,800.00	3,747.10	3,732.18	3,721.48	15.40	12.80	-159.01	56.86	214.89	634.76	609.21	25.55	24.843		
3,900.00	3,845.42	3,829.94	3,818.92	15.84	13.15	-158.97	60.00	222.13	655.81	629.57	26.25	24.986		
4,000.00	3,943.74	3,927.69	3,916.36	16.27	13.49	-158.93	63.14	229.37	676.86	649.92	26.94	25.123		
4,100.00	4,042.06	4,025.45	4,013.80	16.71	13.84	-158.90	66.28	236.61	697.91	670.27	27.64	25.252		
4,200.00	4,140.38	4,123.21	4,111.24	17.15	14.18	-158.87	69.42	243.85	718.96	690.62	28.33	25.374		
4,300.00	4,238.70	4,220.97	4,208.68	17.59	14.53	-158.84	72.55	251.09	740.01	710.98	29.03	25.491		
4,400.00	4,337.02	4,318.73	4,306.12	18.03	14.87	-158.81	75.69	258.33	761.06	731.33	29.73	25.602		
4,500.00	4,435.34	4,416.49	4,403.56	18.47	15.22	-158.78	78.83	265.58	782.11	751.68	30.42	25.709		
4,600.00	4,533.72	4,514.31	4,501.06	18.87	15.56	-158.81	81.97	272.82	802.86	771.76	31.10	25.815		
4,700.00	4,632.58	4,614.91	4,601.34	19.14	15.91	-158.83	85.18	280.23	820.91	789.19	31.73	25.875		
4,800.00	4,731.90	4,715.07	4,701.00	19.39	16.24	-158.72	-740.49	287.69	812.62	803.42	9.20	88.296		
4,900.00	4,831.57	4,814.94	4,801.00	19.63	16.57	-158.61	-748.36	287.69	713.58	704.11	9.48	75.293		
5,000.00	4,931.45	4,914.42	4,901.00	19.86	16.89	-158.50	-756.25	287.69	614.68	604.80	9.88	62.217		

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 #30E-1936
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-1936	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	5,031.44	6,170.58	5,538.00	20.11	21.34	90.00	-754.00	287.69	516.21	505.67	10.54	48.996		
5,200.00	5,131.44	6,170.58	5,538.00	20.32	21.34	90.00	-754.00	287.69	418.52	406.84	11.68	35.838		
5,300.00	5,231.44	6,170.29	5,538.00	20.53	21.34	95.90	-753.71	287.69	322.26	308.46	13.80	23.346		
5,400.00	5,330.45	6,157.40	5,538.00	20.69	21.24	115.03	-740.82	287.69	230.10	212.13	17.97	12.805		
5,500.00	5,425.18	6,125.86	5,538.00	20.75	21.02	114.72	-709.28	287.69	150.33	123.79	26.53	5.666		
5,600.00	5,512.16	6,076.82	5,538.00	20.75	20.69	98.47	-660.25	287.69	102.66	63.64	39.02	2.631		
5,632.22	5,538.00	6,057.58	5,538.00	20.73	20.57	90.00	-641.00	287.69	99.35	58.74	40.62	2.446 SF		
5,700.00	5,588.19	6,012.10	5,538.00	20.70	20.29	70.06	-595.52	287.69	111.31	74.32	36.98	3.010		
5,800.00	5,650.47	5,934.06	5,538.00	20.62	19.85	46.52	-517.49	287.69	150.07	121.78	28.29	5.304		
5,900.00	5,696.73	5,849.16	5,538.00	20.55	19.45	34.29	-432.59	287.69	187.29	164.05	23.24	8.058		
6,000.00	5,725.25	5,776.61	5,532.96	20.51	19.15	28.43	-360.27	287.69	218.12	197.07	21.05	10.364		
6,099.99	5,735.00	5,708.55	5,519.14	20.52	18.90	24.73	-293.67	287.69	245.02	224.06	20.96	11.690		
6,200.00	5,735.00	5,650.00	5,500.39	20.62	18.72	22.95	-238.24	287.69	275.30	252.76	22.53	12.217		
6,300.00	5,735.00	5,585.10	5,472.50	20.82	18.53	20.73	-179.69	287.69	316.25	292.60	23.65	13.372		
6,400.00	5,735.00	5,532.91	5,444.92	21.13	18.39	18.91	-135.40	287.69	366.88	341.46	25.42	14.432		
6,500.00	5,735.00	5,487.07	5,417.16	21.54	18.27	17.36	-98.95	287.69	425.58	398.45	27.14	15.682		
6,600.00	5,735.00	5,450.00	5,392.43	22.05	18.18	16.17	-71.34	287.69	490.99	462.18	28.80	17.046		
6,700.00	5,735.00	5,400.00	5,356.08	22.64	18.06	14.69	-37.03	287.69	562.08	532.54	29.54	19.029		
6,800.00	5,735.00	5,382.00	5,342.21	23.32	18.01	14.19	-25.55	287.69	637.05	605.95	31.10	20.485		
6,900.00	5,735.00	5,350.00	5,316.62	24.06	17.94	13.36	-6.36	287.69	715.94	684.07	31.88	22.461		
7,000.00	5,735.00	5,332.36	5,302.02	24.87	17.89	12.92	3.54	287.69	797.67	764.89	32.78	24.335		
7,100.00	5,735.00	5,300.00	5,274.40	25.74	17.81	12.17	20.39	287.69	882.07	848.87	33.20	26.572		
7,200.00	5,735.00	5,300.00	5,274.40	26.66	17.81	12.17	20.39	287.69	968.08	934.05	34.03	28.444		
7,300.00	5,735.00	5,277.88	5,254.94	27.64	17.75	11.69	30.91	287.69	1,055.86	1,021.47	34.39	30.704		
7,400.00	5,735.00	5,250.00	5,229.81	28.65	17.68	11.13	42.97	287.69	1,145.34	1,110.72	34.61	33.089		
7,500.00	5,735.00	5,250.00	5,229.81	29.70	17.68	11.13	42.97	287.69	1,235.48	1,200.39	35.09	35.209		
7,600.00	5,735.00	5,250.00	5,229.81	30.79	17.68	11.13	42.97	287.69	1,327.04	1,291.56	35.48	37.407		
7,700.00	5,735.00	5,228.66	5,210.16	31.90	17.63	10.72	51.28	287.69	1,419.14	1,383.51	35.63	39.831		
7,800.00	5,735.00	5,219.14	5,201.29	33.05	17.60	10.55	54.73	287.69	1,512.14	1,476.29	35.85	42.182		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1936
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-1936	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	149.50	-49.60	29.22	57.57					
100.00	100.00	100.00	100.00	0.13	0.13	149.50	-49.60	29.22	57.57	57.30	0.27	216.143		
200.00	200.00	200.00	200.00	0.47	0.47	149.50	-49.60	29.22	57.57	56.63	0.94	61.202		
300.00	300.00	300.00	300.00	0.81	0.81	149.50	-49.60	29.22	57.57	55.95	1.61	35.648		
400.00	399.98	399.34	399.32	1.11	1.13	-18.65	-49.21	30.90	56.46	54.21	2.24	25.161		
500.00	499.84	498.33	498.17	1.41	1.46	-25.63	-48.06	35.91	53.65	50.76	2.88	18.610		
600.00	599.45	596.62	596.09	1.73	1.80	-38.43	-46.15	44.17	50.96	47.35	3.61	14.120		
636.81	636.03	632.55	631.81	1.86	1.92	-44.67	-45.26	48.01	50.65	46.74	3.91	12.949 CC, ES		
700.00	698.70	693.88	692.64	2.07	2.14	-56.80	-43.51	55.56	51.86	47.40	4.46	11.623		
800.00	797.47	791.38	789.15	2.43	2.49	-76.58	-40.38	69.12	59.18	53.95	5.23	11.316		
900.00	895.81	888.76	885.51	2.82	2.85	-92.83	-37.24	82.71	72.16	66.24	5.92	12.186		
1,000.00	994.13	986.11	981.86	3.23	3.22	-103.76	-34.10	96.29	89.19	82.59	6.60	13.520		
1,100.00	1,092.45	1,083.46	1,078.21	3.65	3.59	-111.08	-30.96	109.88	108.38	101.10	7.28	14.895		
1,200.00	1,190.77	1,180.81	1,174.56	4.07	3.96	-116.17	-27.82	123.47	128.77	120.81	7.97	16.161		
1,300.00	1,289.09	1,278.17	1,270.91	4.49	4.33	-119.85	-24.68	137.06	149.88	141.21	8.67	17.287		
1,400.00	1,387.41	1,375.52	1,367.26	4.92	4.71	-122.63	-21.54	150.65	171.44	162.06	9.38	18.277		
1,500.00	1,485.73	1,472.87	1,463.60	5.35	5.09	-124.78	-18.40	164.24	193.30	183.20	10.10	19.146		
1,600.00	1,584.05	1,570.22	1,559.95	5.78	5.46	-126.50	-15.26	177.82	215.36	204.54	10.82	19.910		
1,700.00	1,682.37	1,667.58	1,656.30	6.21	5.84	-127.89	-12.12	191.41	237.57	226.03	11.54	20.585		
1,800.00	1,780.69	1,764.93	1,752.65	6.65	6.22	-129.05	-8.98	205.00	259.90	247.63	12.27	21.184		
1,900.00	1,879.01	1,862.28	1,849.00	7.08	6.59	-130.03	-5.84	218.59	282.31	269.31	13.00	21.719		
2,000.00	1,977.33	1,959.63	1,945.35	7.52	6.97	-130.86	-2.70	232.18	304.79	291.06	13.73	22.198		
2,100.00	2,075.65	2,056.99	2,041.69	7.95	7.35	-131.58	0.44	245.76	327.32	312.86	14.46	22.631		
2,200.00	2,173.97	2,154.34	2,138.04	8.39	7.73	-132.20	3.59	259.35	349.89	334.69	15.20	23.022		
2,300.00	2,272.29	2,251.69	2,234.39	8.82	8.11	-132.75	6.73	272.94	372.50	356.57	15.93	23.378		
2,400.00	2,370.61	2,349.04	2,330.74	9.26	8.49	-133.24	9.87	286.53	395.14	378.47	16.67	23.703		
2,500.00	2,468.93	2,446.40	2,427.09	9.70	8.87	-133.67	13.01	300.12	417.80	400.39	17.41	24.000		
2,600.00	2,567.25	2,543.75	2,523.44	10.14	9.25	-134.06	16.15	313.70	440.48	422.33	18.15	24.274		
2,700.00	2,665.57	2,641.10	2,619.78	10.57	9.63	-134.41	19.29	327.29	463.18	444.29	18.89	24.526		
2,800.00	2,763.89	2,738.45	2,716.13	11.01	10.01	-134.73	22.43	340.88	485.89	466.27	19.62	24.759		
2,900.00	2,862.22	2,835.80	2,812.48	11.45	10.39	-135.02	25.57	354.47	508.62	488.25	20.36	24.976		
3,000.00	2,960.54	2,933.16	2,908.83	11.89	10.77	-135.29	28.71	368.06	531.36	510.25	21.10	25.177		
3,100.00	3,058.86	3,030.51	3,005.18	12.33	11.15	-135.53	31.85	381.65	554.10	532.26	21.85	25.365		
3,200.00	3,157.18	3,127.86	3,101.53	12.76	11.53	-135.75	34.99	395.23	576.86	554.27	22.59	25.540		
3,300.00	3,255.50	3,225.21	3,197.87	13.20	11.91	-135.96	38.13	408.82	599.62	576.30	23.33	25.704		
3,400.00	3,353.82	3,322.57	3,294.22	13.64	12.29	-136.15	41.27	422.41	622.39	598.33	24.07	25.858		
3,500.00	3,452.14	3,419.92	3,390.57	14.08	12.67	-136.33	44.41	436.00	645.17	620.36	24.81	26.003		
3,600.00	3,550.46	3,517.27	3,486.92	14.52	13.05	-136.50	47.55	449.59	667.95	642.40	25.55	26.140		
3,700.00	3,648.78	3,614.62	3,583.27	14.96	13.43	-136.65	50.69	463.17	690.74	664.45	26.30	26.268		
3,800.00	3,747.10	3,711.98	3,679.62	15.40	13.81	-136.80	53.83	476.76	713.53	686.50	27.04	26.390		
3,900.00	3,845.42	3,809.33	3,775.96	15.84	14.19	-136.94	56.97	490.35	736.33	708.55	27.78	26.505		
4,000.00	3,943.74	3,906.68	3,872.31	16.27	14.57	-137.06	60.11	503.94	759.13	730.61	28.52	26.614		
4,100.00	4,042.06	4,004.03	3,968.66	16.71	14.95	-137.18	63.25	517.53	781.93	752.67	29.27	26.717		
4,200.00	4,140.38	4,101.39	4,065.01	17.15	15.33	-137.30	66.39	531.12	804.74	774.73	30.01	26.816		
4,300.00	4,238.70	4,198.74	4,161.36	17.59	15.71	-137.41	69.53	544.70	827.55	796.80	30.75	26.909		
4,400.00	4,337.02	4,296.09	4,257.71	18.03	16.09	-137.51	72.67	558.29	850.36	818.87	31.50	26.998		
4,500.00	4,435.34	4,393.44	4,354.05	18.47	16.47	-137.60	75.82	571.88	873.18	840.94	32.24	27.083		
4,600.00	4,533.72	4,490.85	4,450.46	18.87	16.85	-137.81	78.96	585.48	895.76	862.80	32.96	27.177		
4,700.00	4,632.58	4,607.96	4,566.56	19.14	17.25	-138.09	82.40	600.37	915.45	881.77	33.68	27.182		
4,800.00	4,731.90	4,733.03	4,691.12	19.39	17.59	-138.36	84.92	611.27	929.89	895.57	34.33	27.089		
4,900.00	4,831.57	6,259.21	5,606.00	19.63	22.52	-82.52	-748.36	617.67	886.16	867.25	18.92	46.850		
5,000.00	4,931.45	6,263.69	5,606.00	19.86	22.55	-78.52	-752.85	617.67	799.74	778.81	20.94	38.200		

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 #30E-1936
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-1936	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	5,031.44	6,264.85	5,606.00	20.11	22.56	90.00	-754.00	617.67	717.25	693.82	23.43	30.613		
5,200.00	5,131.44	6,264.85	5,606.00	20.32	22.56	90.00	-754.00	617.67	639.95	613.51	26.43	24.210		
5,300.00	5,231.44	6,264.55	5,606.00	20.53	22.56	91.67	-753.71	617.67	569.76	539.78	29.98	19.004		
5,400.00	5,330.45	6,251.67	5,606.00	20.69	22.47	98.16	-740.82	617.67	510.15	476.38	33.77	15.106		
5,500.00	5,425.18	6,220.13	5,606.00	20.75	22.26	99.69	-709.28	617.67	465.85	428.67	37.18	12.529		
5,600.00	5,512.16	6,171.09	5,606.00	20.75	21.95	97.13	-660.25	617.67	439.47	399.94	39.53	11.118		
5,700.00	5,588.19	6,106.37	5,606.00	20.70	21.57	91.71	-595.52	617.67	429.70	389.27	40.43	10.629		
5,726.29	5,606.00	6,087.03	5,606.00	20.68	21.47	90.00	-576.19	617.67	429.33	388.88	40.45	10.614 SF		
5,800.00	5,650.47	6,028.33	5,606.00	20.62	21.17	85.04	-517.48	617.67	431.63	391.46	40.16	10.747		
5,900.00	5,696.73	5,940.68	5,605.98	20.55	20.78	78.96	-429.83	617.67	438.82	399.48	39.34	11.155		
6,000.00	5,725.25	5,863.70	5,599.60	20.51	20.49	74.45	-353.19	617.67	447.78	409.37	38.41	11.659		
6,099.99	5,735.00	5,789.46	5,582.82	20.52	20.24	70.49	-280.93	617.67	457.92	420.32	37.60	12.178		
6,200.00	5,735.00	5,719.73	5,557.86	20.62	20.04	67.58	-215.88	617.67	471.61	434.65	36.96	12.760		
6,300.00	5,735.00	5,650.00	5,524.45	20.82	19.87	63.88	-154.74	617.67	493.20	456.90	36.30	13.586		
6,400.00	5,735.00	5,600.00	5,495.61	21.13	19.75	60.86	-113.91	617.67	523.47	487.48	36.00	14.543		
6,500.00	5,735.00	5,550.00	5,462.99	21.54	19.64	57.64	-76.04	617.67	562.96	527.16	35.80	15.725		
6,600.00	5,735.00	5,516.72	5,439.34	22.05	19.56	55.45	-52.65	617.67	611.00	574.97	36.02	16.962		
6,700.00	5,735.00	5,482.34	5,413.38	22.64	19.48	53.16	-30.11	617.67	666.87	630.61	36.26	18.390		
6,800.00	5,735.00	5,450.00	5,387.65	23.32	19.41	51.03	-10.52	617.67	729.45	692.92	36.54	19.965		
6,900.00	5,735.00	5,427.20	5,368.81	24.06	19.36	49.54	2.31	617.67	797.64	760.68	36.96	21.583		
7,000.00	5,735.00	5,400.00	5,345.62	24.87	19.30	47.79	16.53	617.67	870.53	833.31	37.23	23.385		
7,100.00	5,735.00	5,400.00	5,345.62	25.74	19.30	47.79	16.53	617.67	947.49	909.69	37.80	25.064		
7,200.00	5,735.00	5,368.52	5,317.90	26.66	19.22	45.83	31.44	617.67	1,027.07	989.14	37.93	27.079		
7,300.00	5,735.00	5,350.00	5,301.20	27.64	19.18	44.70	39.42	617.67	1,109.58	1,071.40	38.17	29.068		
7,400.00	5,735.00	5,350.00	5,301.20	28.65	19.18	44.70	39.42	617.67	1,194.36	1,155.82	38.53	30.996		
7,500.00	5,735.00	5,328.03	5,281.02	29.70	19.13	43.40	48.12	617.67	1,280.71	1,242.05	38.66	33.126		
7,600.00	5,735.00	5,300.00	5,254.78	30.79	19.06	41.80	57.96	617.67	1,369.10	1,330.37	38.73	35.347		
7,700.00	5,735.00	5,300.00	5,254.78	31.90	19.06	41.80	57.96	617.67	1,458.10	1,419.12	38.98	37.407		
7,800.00	5,735.00	5,300.00	5,254.78	33.05	19.06	41.80	57.96	617.67	1,548.44	1,509.26	39.19	39.513		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1936
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-1936	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	-129.22	-49.59	-60.75	78.42					
100.00	100.00	100.00	100.00	0.13	0.13	-129.22	-49.59	-60.75	78.42	78.15	0.27	294.412		
200.00	200.00	200.00	200.00	0.47	0.47	-129.22	-49.59	-60.75	78.42	77.48	0.94	83.364		
300.00	300.00	300.00	300.00	0.81	0.81	-129.22	-49.59	-60.75	78.42	76.80	1.61	48.556		
400.00	399.98	402.72	402.70	1.11	1.15	66.07	-48.42	-59.32	75.90	73.57	2.33	32.611		
500.00	499.84	503.21	503.09	1.41	1.49	70.25	-45.54	-55.80	69.42	66.45	2.97	23.368		
600.00	599.45	602.54	602.31	1.73	1.82	78.31	-42.59	-52.19	62.38	58.79	3.59	17.366		
700.00	698.70	701.44	701.09	2.07	2.15	91.53	-39.64	-48.59	56.81	52.57	4.24	13.409		
766.20	764.15	766.61	766.20	2.30	2.37	103.18	-37.70	-46.21	55.43	50.75	4.68	11.844 CC		
800.00	797.47	799.78	799.33	2.43	2.48	109.73	-36.71	-45.01	55.86	50.95	4.91	11.384		
900.00	895.81	897.65	897.09	2.82	2.81	128.49	-33.80	-41.44	62.11	56.52	5.59	11.111		
1,000.00	994.13	995.49	994.82	3.23	3.14	142.79	-30.89	-37.88	73.84	67.59	6.26	11.802		
1,100.00	1,092.45	1,093.34	1,092.56	3.65	3.47	152.81	-27.98	-34.32	88.88	81.97	6.91	12.861		
1,200.00	1,190.77	1,191.18	1,190.30	4.07	3.81	159.83	-25.06	-30.76	105.83	98.27	7.56	13.994		
1,300.00	1,289.09	1,289.03	1,288.04	4.49	4.14	164.89	-22.15	-27.19	123.90	115.69	8.22	15.081		
1,400.00	1,387.41	1,386.88	1,385.77	4.92	4.47	168.64	-19.24	-23.63	142.68	133.81	8.87	16.083		
1,500.00	1,485.73	1,484.72	1,483.51	5.35	4.80	171.52	-16.32	-20.07	161.91	152.38	9.53	16.989		
1,600.00	1,584.05	1,582.57	1,581.25	5.78	5.14	173.78	-13.41	-16.51	181.45	171.26	10.19	17.805		
1,700.00	1,682.37	1,680.41	1,678.98	6.21	5.47	175.61	-10.50	-12.95	201.21	190.36	10.85	18.538		
1,800.00	1,780.69	1,778.26	1,776.72	6.65	5.80	177.11	-7.59	-9.38	221.14	209.62	11.52	19.197		
1,900.00	1,879.01	1,876.10	1,874.46	7.08	6.14	178.36	-4.67	-5.82	241.18	229.00	12.19	19.792		
2,000.00	1,977.33	1,973.95	1,972.20	7.52	6.47	179.41	-1.76	-2.26	261.32	248.47	12.85	20.330		
2,100.00	2,075.65	2,071.79	2,069.93	7.95	6.80	-179.68	1.15	1.30	281.53	268.01	13.52	20.819		
2,200.00	2,173.97	2,169.64	2,167.67	8.39	7.14	-178.89	4.06	4.86	301.80	287.61	14.19	21.265		
2,300.00	2,272.29	2,267.49	2,265.41	8.82	7.47	-178.21	6.98	8.43	322.12	307.26	14.86	21.672		
2,400.00	2,370.61	2,365.33	2,363.15	9.26	7.80	-177.60	9.89	11.99	342.48	326.95	15.53	22.046		
2,500.00	2,468.93	2,463.18	2,460.88	9.70	8.14	-177.06	12.80	15.55	362.87	346.66	16.21	22.390		
2,600.00	2,567.25	2,561.02	2,558.62	10.14	8.47	-176.58	15.71	19.11	383.29	366.41	16.88	22.707		
2,700.00	2,665.57	2,658.87	2,656.36	10.57	8.80	-176.15	18.63	22.68	403.73	386.18	17.55	23.001		
2,800.00	2,763.89	2,756.71	2,754.10	11.01	9.14	-175.76	21.54	26.24	424.19	405.96	18.23	23.274		
2,900.00	2,862.22	2,854.56	2,851.83	11.45	9.47	-175.41	24.45	29.80	444.67	425.77	18.90	23.528		
3,000.00	2,960.54	2,952.40	2,949.57	11.89	9.80	-175.09	27.37	33.36	465.16	445.59	19.57	23.764		
3,100.00	3,058.86	3,050.25	3,047.31	12.33	10.14	-174.79	30.28	36.92	485.67	465.42	20.25	23.986		
3,200.00	3,157.18	3,148.10	3,145.04	12.76	10.47	-174.52	33.19	40.49	506.18	485.26	20.92	24.193		
3,300.00	3,255.50	3,245.94	3,242.78	13.20	10.80	-174.27	36.10	44.05	526.71	505.11	21.60	24.387		
3,400.00	3,353.82	3,343.79	3,340.52	13.64	11.14	-174.04	39.02	47.61	547.25	524.97	22.27	24.570		
3,500.00	3,452.14	3,441.63	3,438.26	14.08	11.47	-173.82	41.93	51.17	567.79	544.84	22.95	24.742		
3,600.00	3,550.46	3,539.48	3,535.99	14.52	11.80	-173.62	44.84	54.73	588.34	564.72	23.62	24.905		
3,700.00	3,648.78	3,637.32	3,633.73	14.96	12.14	-173.43	47.75	58.30	608.90	584.60	24.30	25.058		
3,800.00	3,747.10	3,735.17	3,731.47	15.40	12.47	-173.26	50.67	61.86	629.46	604.49	24.98	25.203		
3,900.00	3,845.42	3,833.01	3,829.21	15.84	12.80	-173.10	53.58	65.42	650.03	624.38	25.65	25.341		
4,000.00	3,943.74	3,930.86	3,926.94	16.27	13.14	-172.94	56.49	68.98	670.60	644.28	26.33	25.472		
4,100.00	4,042.06	4,028.71	4,024.68	16.71	13.47	-172.80	59.41	72.54	691.18	664.18	27.00	25.596		
4,200.00	4,140.38	4,126.55	4,122.42	17.15	13.81	-172.66	62.32	76.11	711.76	684.08	27.68	25.714		
4,300.00	4,238.70	4,224.40	4,220.15	17.59	14.14	-172.54	65.23	79.67	732.35	703.99	28.36	25.826		
4,400.00	4,337.02	4,322.24	4,317.89	18.03	14.47	-172.41	68.14	83.23	752.94	723.90	29.03	25.933		
4,500.00	4,435.34	4,420.09	4,415.63	18.47	14.81	-172.30	71.06	86.79	773.53	743.82	29.71	26.036		
4,600.00	4,533.72	4,518.00	4,513.43	18.87	15.14	-172.21	73.97	90.36	793.80	763.43	30.37	26.137		
4,700.00	4,632.58	4,616.44	4,611.77	19.14	15.48	-172.12	76.90	93.94	811.24	780.26	30.97	26.190		
4,800.00	4,731.90	4,715.42	4,710.64	19.39	15.81	-172.00	79.85	97.55	825.26	793.68	31.58	26.132		
4,900.00	4,831.57	4,814.82	4,809.92	19.63	16.15	-171.84	82.81	101.16	835.86	803.67	32.19	25.969		
5,000.00	4,931.45	4,914.50	4,909.50	19.86	16.49	-171.64	85.77	104.79	843.03	810.24	32.79	25.708		

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 #30E-1936
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-1936	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 #30E-3135 - 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						
5,100.00	5,031.44	6,445.04	5,820.00	20.11	21.72	-90.10	-754.13	110.64	792.38	781.95	10.43	75.985						
5,200.00	5,131.44	6,445.04	5,820.00	20.32	21.72	-90.10	-754.13	110.64	692.93	682.17	10.76	64.384						
5,300.00	5,231.44	6,444.75	5,820.00	20.53	21.72	-104.32	-753.84	110.64	593.67	582.43	11.24	52.819						
5,400.00	5,330.45	6,431.86	5,820.00	20.69	21.63	-144.65	-740.95	110.62	495.68	483.83	11.85	41.827						
5,500.00	5,425.18	6,400.32	5,820.00	20.75	21.41	-154.10	-709.41	110.57	402.40	389.72	12.69	31.721						
5,600.00	5,512.16	6,351.29	5,820.00	20.75	21.10	-156.17	-660.38	110.49	317.53	303.51	14.02	22.654						
5,700.00	5,588.19	6,286.57	5,820.00	20.70	20.71	-154.92	-595.65	110.38	244.57	228.40	16.17	15.123						
5,800.00	5,650.47	6,208.53	5,820.00	20.62	20.29	-151.21	-517.62	110.25	186.65	167.25	19.40	9.621						
5,900.00	5,696.73	6,119.28	5,819.99	20.55	19.89	-145.53	-428.37	110.10	146.00	122.58	23.42	6.235						
6,000.00	5,725.25	6,004.60	5,806.72	20.51	19.48	-134.23	-314.69	109.91	114.60	85.37	29.23	3.921						
6,099.99	5,735.00	5,900.90	5,773.58	20.52	19.18	-116.13	-216.61	109.75	89.25	53.25	36.00	2.479						
6,187.12	5,735.09	5,821.22	5,735.29	20.60	18.98	-90.15	-146.82	109.64	78.70	39.52	39.18	2.009 ES, SF						
6,200.00	5,735.00	5,810.53	5,729.35	20.62	18.96	-85.90	-137.93	109.62	79.02	40.00	39.02	2.025						
6,300.00	5,735.00	5,737.35	5,684.00	20.82	18.78	-57.10	-80.57	109.53	104.82	70.65	34.17	3.068						
6,400.00	5,735.00	5,679.03	5,642.38	21.13	18.64	-40.42	-39.76	109.46	161.24	129.26	31.98	5.042						
6,500.00	5,735.00	5,632.54	5,606.10	21.54	18.53	-31.48	-10.72	109.41	232.58	200.28	32.30	7.200						
6,600.00	5,735.00	5,600.00	5,579.23	22.05	18.45	-26.88	7.63	109.38	311.90	278.55	33.35	9.352						
6,700.00	5,735.00	5,564.78	5,548.92	22.64	18.36	-23.00	25.56	109.35	395.99	362.16	33.83	11.706						
6,800.00	5,735.00	5,550.00	5,535.86	23.32	18.32	-21.64	32.46	109.34	483.64	448.92	34.72	13.931						
6,900.00	5,735.00	5,518.80	5,507.66	24.06	18.24	-19.17	45.80	109.32	573.23	538.33	34.90	16.425						
7,000.00	5,735.00	5,500.00	5,490.30	24.87	18.19	-17.90	53.02	109.30	664.78	629.53	35.25	18.856						
7,100.00	5,735.00	5,500.00	5,490.30	25.74	18.19	-17.90	53.02	109.30	757.99	722.22	35.77	21.191						
7,200.00	5,735.00	5,473.01	5,464.95	26.66	18.12	-16.32	62.28	109.29	851.61	815.79	35.82	23.775						
7,300.00	5,735.00	5,450.00	5,442.98	27.64	18.05	-15.15	69.12	109.28	946.58	910.68	35.90	26.364						
7,400.00	5,735.00	5,450.00	5,442.98	28.65	18.05	-15.15	69.12	109.28	1,041.83	1,005.65	36.18	28.798						
7,500.00	5,735.00	5,450.00	5,442.98	29.70	18.05	-15.15	69.12	109.28	1,137.89	1,101.50	36.39	31.270						
7,600.00	5,735.00	5,450.00	5,442.98	30.79	18.05	-15.15	69.12	109.28	1,234.58	1,198.02	36.56	33.770						
7,700.00	5,735.00	5,428.09	5,421.81	31.90	18.00	-14.17	74.73	109.27	1,331.11	1,294.53	36.58	36.390						
7,800.00	5,735.00	5,421.79	5,415.67	33.05	17.98	-13.91	76.18	109.26	1,428.28	1,391.60	36.68	38.936						
7,900.00	5,735.00	5,400.00	5,394.34	34.22	17.92	-13.07	80.61	109.26	1,526.05	1,489.35	36.70	41.579						



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1936
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-1936	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	-179.11	-49.59	-0.77	49.60					
100.00	100.00	100.00	100.00	0.13	0.13	-179.11	-49.59	-0.77	49.60	49.33	0.27	186.224		
200.00	200.00	200.00	200.00	0.47	0.47	-179.11	-49.59	-0.77	49.60	48.66	0.94	52.730		
300.00	300.00	300.00	300.00	0.81	0.81	-179.11	-49.59	-0.77	49.60	47.99	1.61	30.713		
400.00	399.98	400.46	400.44	1.11	1.14	13.44	-49.09	0.92	47.40	45.15	2.25	21.059		
500.00	499.84	500.54	500.37	1.41	1.47	8.09	-47.58	5.95	41.04	38.15	2.88	14.243		
600.00	599.45	599.85	599.30	1.73	1.81	-5.28	-45.09	14.25	31.64	28.12	3.52	8.979		
700.00	698.70	698.47	697.35	2.07	2.15	-35.46	-42.07	24.34	23.16	18.92	4.25	5.455		
744.74	742.95	742.43	741.07	2.22	2.30	-56.06	-40.72	28.84	21.83	17.20	4.63	4.713 CC, ES, SF		
800.00	797.47	796.59	794.91	2.43	2.49	-82.59	-39.06	34.39	24.18	19.09	5.09	4.752		
900.00	895.81	894.27	892.04	2.82	2.84	-113.55	-36.06	44.39	38.02	32.24	5.78	6.576		
1,000.00	994.13	991.94	989.15	3.23	3.19	-126.54	-33.07	54.39	56.82	50.38	6.44	8.829		
1,100.00	1,092.45	1,089.61	1,086.26	3.65	3.54	-132.94	-30.07	64.39	77.03	69.92	7.10	10.844		
1,200.00	1,190.77	1,187.27	1,183.36	4.07	3.90	-136.67	-27.07	74.39	97.78	90.00	7.78	12.563		
1,300.00	1,289.09	1,284.94	1,280.47	4.49	4.25	-139.09	-24.08	84.39	118.79	110.32	8.47	14.022		
1,400.00	1,387.41	1,382.61	1,377.58	4.92	4.61	-140.78	-21.08	94.39	139.94	130.77	9.17	15.269		
1,500.00	1,485.73	1,480.27	1,474.68	5.35	4.96	-142.03	-18.08	104.39	161.18	151.31	9.86	16.342		
1,600.00	1,584.05	1,577.94	1,571.79	5.78	5.32	-142.99	-15.08	114.39	182.47	171.91	10.56	17.273		
1,700.00	1,682.37	1,675.61	1,668.90	6.21	5.67	-143.74	-12.09	124.39	203.80	192.53	11.27	18.088		
1,800.00	1,780.69	1,773.27	1,766.01	6.65	6.03	-144.36	-9.09	134.39	225.16	213.19	11.97	18.807		
1,900.00	1,879.01	1,870.94	1,863.11	7.08	6.39	-144.86	-6.09	144.39	246.54	233.86	12.68	19.445		
2,000.00	1,977.33	1,968.61	1,960.22	7.52	6.74	-145.29	-3.10	154.39	267.93	254.55	13.39	20.014		
2,100.00	2,075.65	2,066.27	2,057.33	7.95	7.10	-145.65	-0.10	164.39	289.34	275.24	14.10	20.526		
2,200.00	2,173.97	2,163.94	2,154.43	8.39	7.46	-145.96	2.90	174.39	310.76	295.95	14.81	20.988		
2,300.00	2,272.29	2,261.61	2,251.54	8.82	7.81	-146.24	5.89	184.39	332.18	316.66	15.52	21.408		
2,400.00	2,370.61	2,359.27	2,348.65	9.26	8.17	-146.48	8.89	194.39	353.61	337.38	16.23	21.790		
2,500.00	2,468.93	2,456.94	2,445.76	9.70	8.53	-146.69	11.89	204.39	375.05	358.11	16.94	22.140		
2,600.00	2,567.25	2,554.61	2,542.86	10.14	8.89	-146.88	14.88	214.39	396.49	378.83	17.65	22.461		
2,700.00	2,665.57	2,652.27	2,639.97	10.57	9.24	-147.05	17.88	224.39	417.93	399.56	18.37	22.756		
2,800.00	2,763.89	2,749.94	2,737.08	11.01	9.60	-147.20	20.88	234.39	439.38	420.30	19.08	23.030		
2,900.00	2,862.22	2,847.61	2,834.18	11.45	9.96	-147.34	23.87	244.39	460.83	441.03	19.79	23.283		
3,000.00	2,960.54	2,945.27	2,931.29	11.89	10.32	-147.47	26.87	254.39	482.28	461.77	20.51	23.519		
3,100.00	3,058.86	3,042.94	3,028.40	12.33	10.67	-147.58	29.87	264.39	503.73	482.51	21.22	23.738		
3,200.00	3,157.18	3,140.61	3,125.51	12.76	11.03	-147.69	32.86	274.39	525.19	503.25	21.93	23.944		
3,300.00	3,255.50	3,238.27	3,222.61	13.20	11.39	-147.79	35.86	284.39	546.64	524.00	22.65	24.135		
3,400.00	3,353.82	3,335.94	3,319.72	13.64	11.75	-147.88	38.86	294.39	568.10	544.74	23.36	24.316		
3,500.00	3,452.14	3,433.61	3,416.83	14.08	12.10	-147.96	41.85	304.39	589.56	565.48	24.08	24.485		
3,600.00	3,550.46	3,531.27	3,513.93	14.52	12.46	-148.04	44.85	314.39	611.02	586.23	24.79	24.644		
3,700.00	3,648.78	3,628.94	3,611.04	14.96	12.82	-148.11	47.85	324.39	632.49	606.98	25.51	24.794		
3,800.00	3,747.10	3,726.61	3,708.15	15.40	13.18	-148.18	50.84	334.39	653.95	627.72	26.22	24.936		
3,900.00	3,845.42	3,824.27	3,805.26	15.84	13.54	-148.25	53.84	344.40	675.41	648.47	26.94	25.071		
4,000.00	3,943.74	3,921.94	3,902.36	16.27	13.89	-148.30	56.84	354.40	696.88	669.22	27.66	25.198		
4,100.00	4,042.06	4,019.61	3,999.47	16.71	14.25	-148.36	59.83	364.40	718.34	689.97	28.37	25.319		
4,200.00	4,140.38	4,117.28	4,096.58	17.15	14.61	-148.41	62.83	374.40	739.81	710.72	29.09	25.434		
4,300.00	4,238.70	4,214.94	4,193.68	17.59	14.97	-148.46	65.83	384.40	761.28	731.47	29.80	25.543		
4,400.00	4,337.02	4,312.61	4,290.79	18.03	15.33	-148.51	68.83	394.40	782.74	752.22	30.52	25.647		
4,500.00	4,435.34	4,410.28	4,387.90	18.47	15.68	-148.56	71.82	404.40	804.21	772.97	31.24	25.746		
4,600.00	4,533.72	4,508.00	4,485.06	18.87	16.04	-148.68	74.82	414.40	825.41	793.47	31.93	25.848		
4,700.00	4,632.58	4,606.22	4,582.72	19.14	16.40	-148.80	77.83	424.46	844.15	811.59	32.56	25.926		
4,800.00	4,731.90	4,704.91	4,680.85	19.39	16.76	-148.77	80.86	434.57	859.96	826.77	33.19	25.911		
4,900.00	4,831.57	4,818.74	4,794.15	19.63	17.13	-148.62	83.98	444.97	872.22	838.36	33.87	25.755		
5,000.00	4,931.45	6,375.44	5,735.00	19.86	22.34	-80.93	-752.85	453.06	846.12	832.45	13.66	61.920		

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 #30E-1936
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-1936	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	5,031.44	6,376.60	5,735.00	20.11	22.35	90.00	-754.00	453.06	751.71	736.73	14.98	50.165		
5,200.00	5,131.44	6,376.60	5,735.00	20.32	22.35	90.00	-754.00	453.06	659.06	642.31	16.75	39.350		
5,300.00	5,231.44	6,376.30	5,735.00	20.53	22.35	93.64	-753.71	453.06	568.90	549.76	19.14	29.724		
5,400.00	5,330.45	6,363.42	5,735.00	20.69	22.26	108.86	-740.82	453.06	483.47	461.20	22.27	21.714		
5,500.00	5,425.18	6,331.88	5,735.00	20.75	22.05	115.38	-709.28	453.06	407.51	381.36	26.15	15.581		
5,600.00	5,512.16	6,282.84	5,735.00	20.75	21.73	115.72	-660.25	453.06	346.03	315.44	30.59	11.311		
5,700.00	5,588.19	6,218.12	5,735.00	20.70	21.35	111.72	-595.52	453.06	302.71	267.88	34.82	8.692		
5,800.00	5,650.47	6,140.08	5,735.00	20.62	20.93	104.98	-517.49	453.06	277.89	240.06	37.83	7.347		
5,900.00	5,696.73	6,051.15	5,734.97	20.55	20.53	97.59	-428.55	453.06	267.47	228.30	39.17	6.828		
5,999.51	5,725.16	5,955.75	5,725.16	20.51	20.16	90.00	-333.80	453.06	264.72	225.23	39.50	6.702		
6,000.00	5,725.25	5,955.30	5,725.07	20.51	20.16	89.96	-333.35	453.06	264.72	225.23	39.50	6.703		
6,099.99	5,735.00	5,865.67	5,700.19	20.52	19.87	82.51	-247.36	453.06	267.34	228.23	39.11	6.836		
6,200.00	5,735.00	5,784.51	5,665.25	20.62	19.64	75.24	-174.19	453.06	276.70	238.42	38.28	7.229		
6,300.00	5,735.00	5,715.65	5,627.00	20.82	19.47	67.81	-116.99	453.06	297.72	260.55	37.17	8.010		
6,400.00	5,735.00	5,658.37	5,589.67	21.13	19.33	61.23	-73.60	453.06	332.72	296.51	36.22	9.187		
6,500.00	5,735.00	5,611.06	5,555.38	21.54	19.21	55.84	-41.02	453.06	381.08	345.35	35.72	10.667		
6,600.00	5,735.00	5,571.93	5,524.88	22.05	19.12	51.56	-16.51	453.06	440.54	404.88	35.66	12.355		
6,700.00	5,735.00	5,550.00	5,507.02	22.64	19.07	49.26	-3.80	453.06	508.77	472.67	36.10	14.093		
6,800.00	5,735.00	5,500.00	5,464.39	23.32	18.94	44.37	22.29	453.06	583.30	547.44	35.86	16.267		
6,900.00	5,735.00	5,500.00	5,464.39	24.06	18.94	44.37	22.29	453.06	662.56	625.93	36.63	18.086		
7,000.00	5,735.00	5,469.14	5,436.91	24.87	18.87	41.61	36.31	453.06	745.33	708.60	36.72	20.296		
7,100.00	5,735.00	5,450.00	5,419.46	25.74	18.82	39.99	44.18	453.06	831.11	794.14	36.97	22.482		
7,200.00	5,735.00	5,450.00	5,419.46	26.66	18.82	39.99	44.18	453.06	919.30	881.94	37.37	24.603		
7,300.00	5,735.00	5,424.34	5,395.64	27.64	18.75	37.96	53.72	453.06	1,008.77	971.34	37.43	26.951		
7,400.00	5,735.00	5,400.00	5,372.63	28.65	18.69	36.15	61.67	453.06	1,100.08	1,062.59	37.50	29.338		
7,500.00	5,735.00	5,400.00	5,372.63	29.70	18.69	36.15	61.67	453.06	1,192.08	1,154.34	37.74	31.584		
7,600.00	5,735.00	5,400.00	5,372.63	30.79	18.69	36.15	61.67	453.06	1,285.28	1,247.34	37.94	33.875		
7,700.00	5,735.00	5,400.00	5,372.63	31.90	18.69	36.15	61.67	453.06	1,379.43	1,341.32	38.11	36.199		
7,800.00	5,735.00	5,378.20	5,351.73	33.05	18.64	34.63	67.87	453.06	1,473.74	1,435.60	38.14	38.644		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1936
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-1936	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	129.95	-49.59	59.21	77.23					
100.00	100.00	100.00	100.00	0.13	0.13	129.95	-49.59	59.21	77.23	76.96	0.27	289.962		
200.00	200.00	200.00	200.00	0.47	0.47	129.95	-49.59	59.21	77.23	76.29	0.94	82.104		
300.00	300.00	300.00	300.00	0.81	0.81	129.95	-49.59	59.21	77.23	75.62	1.61	47.823		
400.00	399.98	398.27	398.25	1.11	1.13	-37.76	-49.27	60.86	76.94	74.68	2.26	34.077		
500.00	499.84	496.20	496.05	1.41	1.45	-42.96	-48.33	65.81	76.50	73.58	2.93	26.135		
512.95	512.75	508.84	508.66	1.45	1.49	-43.88	-48.17	66.68	76.49	73.47	3.02	25.320	CC, ES	
600.00	599.45	593.49	592.97	1.73	1.78	-51.52	-46.78	73.97	77.20	73.53	3.67	21.012		
700.00	698.70	689.80	688.60	2.07	2.12	-62.67	-44.64	85.22	81.05	76.55	4.49	18.037		
800.00	797.47	785.14	782.82	2.43	2.47	-74.78	-41.93	99.47	90.12	84.79	5.33	16.906		
900.00	895.81	881.95	878.25	2.82	2.84	-85.99	-38.88	115.50	104.20	98.18	6.02	17.316		
1,000.00	994.13	979.04	973.95	3.23	3.22	-94.50	-35.83	131.57	121.39	114.71	6.69	18.154		
1,100.00	1,092.45	1,076.13	1,069.65	3.65	3.60	-100.84	-32.77	147.65	140.58	133.21	7.37	19.081		
1,200.00	1,190.77	1,173.21	1,165.35	4.07	3.99	-105.64	-29.71	163.72	161.05	152.99	8.06	19.985		
1,300.00	1,289.09	1,270.30	1,261.05	4.49	4.38	-109.36	-26.66	179.80	182.37	173.60	8.76	20.807		
1,400.00	1,387.41	1,367.39	1,356.75	4.92	4.77	-112.29	-23.60	195.87	204.27	194.79	9.48	21.545		
1,500.00	1,485.73	1,464.48	1,452.45	5.35	5.16	-114.66	-20.54	211.95	226.59	216.38	10.21	22.202		
1,600.00	1,584.05	1,561.57	1,548.15	5.78	5.56	-116.60	-17.49	228.02	249.21	238.27	10.94	22.786		
1,700.00	1,682.37	1,658.66	1,643.85	6.21	5.95	-118.22	-14.43	244.10	272.06	260.39	11.67	23.306		
1,800.00	1,780.69	1,755.75	1,739.55	6.65	6.35	-119.59	-11.37	260.17	295.09	282.67	12.41	23.771		
1,900.00	1,879.01	1,852.84	1,835.25	7.08	6.74	-120.76	-8.32	276.25	318.25	305.09	13.16	24.188		
2,000.00	1,977.33	1,949.93	1,930.95	7.52	7.14	-121.77	-5.26	292.32	341.52	327.62	13.90	24.564		
2,100.00	2,075.65	2,047.01	2,026.65	7.95	7.54	-122.66	-2.20	308.40	364.88	350.23	14.65	24.903		
2,200.00	2,173.97	2,144.10	2,122.35	8.39	7.93	-123.43	0.85	324.47	388.31	372.91	15.40	25.211		
2,300.00	2,272.29	2,241.19	2,218.05	8.82	8.33	-124.12	3.91	340.55	411.80	395.65	16.15	25.492		
2,400.00	2,370.61	2,338.28	2,313.75	9.26	8.73	-124.74	6.97	356.62	435.35	418.44	16.91	25.749		
2,500.00	2,468.93	2,435.37	2,409.45	9.70	9.13	-125.29	10.02	372.70	458.93	441.27	17.66	25.984		
2,600.00	2,567.25	2,532.46	2,505.15	10.14	9.52	-125.79	13.08	388.77	482.55	464.13	18.42	26.201		
2,700.00	2,665.57	2,629.55	2,600.85	10.57	9.92	-126.24	16.14	404.85	506.20	487.03	19.17	26.402		
2,800.00	2,763.89	2,726.64	2,696.55	11.01	10.32	-126.65	19.19	420.92	529.88	509.95	19.93	26.587		
2,900.00	2,862.22	2,823.72	2,792.25	11.45	10.72	-127.02	22.25	437.00	553.59	532.90	20.69	26.759		
3,000.00	2,960.54	2,920.81	2,887.95	11.89	11.12	-127.37	25.31	453.07	577.31	555.86	21.45	26.920		
3,100.00	3,058.86	3,017.90	2,983.65	12.33	11.52	-127.69	28.36	469.15	601.05	578.85	22.20	27.069		
3,200.00	3,157.18	3,114.99	3,079.35	12.76	11.92	-127.98	31.42	485.22	624.81	601.85	22.96	27.209		
3,300.00	3,255.50	3,212.08	3,175.05	13.20	12.32	-128.25	34.48	501.30	648.58	624.86	23.72	27.340		
3,400.00	3,353.82	3,309.17	3,270.75	13.64	12.71	-128.51	37.53	517.37	672.37	647.88	24.48	27.463		
3,500.00	3,452.14	3,406.26	3,366.45	14.08	13.11	-128.74	40.59	533.45	696.16	670.92	25.24	27.579		
3,600.00	3,550.46	3,503.35	3,462.15	14.52	13.51	-128.96	43.65	549.52	719.97	693.97	26.00	27.688		
3,700.00	3,648.78	3,600.44	3,557.85	14.96	13.91	-129.17	46.70	565.60	743.79	717.02	26.76	27.791		
3,800.00	3,747.10	3,697.52	3,653.55	15.40	14.31	-129.36	49.76	581.67	767.61	740.09	27.52	27.888		
3,900.00	3,845.42	3,794.61	3,749.25	15.84	14.71	-129.54	52.82	597.75	791.45	763.16	28.29	27.980		
4,000.00	3,943.74	3,891.70	3,844.95	16.27	15.11	-129.71	55.87	613.82	815.29	786.24	29.05	28.067		
4,100.00	4,042.06	3,988.79	3,940.65	16.71	15.51	-129.88	58.93	629.90	839.13	809.32	29.81	28.150		
4,200.00	4,140.38	4,085.88	4,036.35	17.15	15.91	-130.03	61.99	645.97	862.98	832.41	30.57	28.229		
4,300.00	4,238.70	4,182.97	4,132.05	17.59	16.31	-130.17	65.04	662.05	886.84	855.51	31.33	28.304		
4,400.00	4,337.02	4,280.06	4,227.75	18.03	16.71	-130.31	68.10	678.12	910.70	878.61	32.10	28.375		
4,500.00	4,435.34	4,377.15	4,323.45	18.47	17.11	-130.44	71.16	694.20	934.57	901.71	32.86	28.443		
4,600.00	4,533.72	4,474.29	4,419.20	18.87	17.51	-130.70	74.22	710.28	958.24	924.64	33.59	28.524		
4,700.00	4,632.58	4,571.88	4,515.39	19.14	17.91	-131.01	77.29	726.44	980.04	945.80	34.24	28.625		
4,800.00	4,731.90	4,669.26	4,639.31	19.39	18.31	-131.15	80.84	745.13	998.47	963.52	34.95	28.565		
4,900.00	4,831.57	4,829.37	4,770.65	19.63	18.67	-131.23	83.50	759.09	1,011.46	975.83	35.63	28.387		
5,000.00	4,931.45	6,407.67	5,734.00	19.86	23.53	-78.21	-752.85	769.17	990.85	968.09	22.75	43.547		

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 #30E-1936
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-1936	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 #30E-3137 Dropped - 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					
5,100.00	5,031.44	6,408.82	5,734.00	20.11	23.53	90.00	-754.01	769.17	911.57	886.65	24.91	36.592					
5,200.00	5,131.44	6,408.82	5,734.00	20.32	23.53	90.00	-754.01	769.17	836.92	809.56	27.37	30.581					
5,300.00	5,231.44	6,408.53	5,734.00	20.53	23.53	91.66	-753.71	769.17	768.07	737.94	30.13	25.490					
5,400.00	5,330.45	6,395.64	5,734.00	20.69	23.45	98.83	-740.83	769.17	707.26	674.28	32.98	21.444					
5,500.00	5,425.18	6,364.10	5,734.00	20.75	23.25	102.16	-709.29	769.17	657.82	622.22	35.60	18.478					
5,600.00	5,512.16	6,315.07	5,734.00	20.75	22.96	102.33	-660.25	769.17	621.75	584.09	37.67	16.506					
5,700.00	5,588.19	6,250.34	5,734.00	20.70	22.60	100.22	-595.53	769.17	598.85	559.84	39.01	15.351					
5,800.00	5,650.47	6,172.31	5,734.00	20.62	22.22	96.87	-517.49	769.17	586.81	547.19	39.62	14.811					
5,900.00	5,696.73	6,083.31	5,733.95	20.55	21.85	93.38	-428.50	769.17	582.03	542.32	39.70	14.659 SF					
5,996.39	5,724.54	5,991.07	5,724.56	20.51	21.53	90.00	-336.86	769.17	580.83	541.25	39.59	14.672					
6,000.00	5,725.25	5,987.74	5,723.92	20.51	21.52	89.88	-333.59	769.17	580.84	541.26	39.58	14.675					
6,099.99	5,735.00	5,900.00	5,699.60	20.52	21.26	86.51	-249.40	769.18	582.12	542.77	39.35	14.793					
6,200.00	5,735.00	5,817.41	5,664.10	20.62	21.06	83.04	-174.92	769.18	586.58	547.43	39.15	14.984					
6,300.00	5,735.00	5,750.00	5,626.70	20.82	20.90	79.44	-118.89	769.18	596.92	557.93	39.00	15.307					
6,400.00	5,735.00	5,691.57	5,588.66	21.13	20.78	75.86	-74.58	769.18	615.28	576.37	38.91	15.812					
6,500.00	5,735.00	5,650.00	5,558.69	21.54	20.69	73.11	-45.79	769.18	642.91	603.92	38.99	16.488					
6,600.00	5,735.00	5,600.00	5,519.75	22.05	20.58	69.67	-14.46	769.18	680.00	640.97	39.03	17.423					
6,700.00	5,735.00	5,572.73	5,497.30	22.64	20.52	67.74	1.01	769.18	726.04	686.71	39.33	18.460					
6,800.00	5,735.00	5,550.00	5,477.98	23.32	20.47	66.13	13.00	769.18	780.19	740.55	39.64	19.680					
6,900.00	5,735.00	5,522.31	5,453.78	24.06	20.41	64.17	26.44	769.18	841.22	801.33	39.88	21.092					
7,000.00	5,735.00	5,500.00	5,433.78	24.87	20.36	62.59	36.32	769.18	908.11	867.96	40.15	22.615					
7,100.00	5,735.00	5,500.00	5,433.78	25.74	20.36	62.59	36.32	769.18	980.11	939.55	40.56	24.163					
7,200.00	5,735.00	5,470.72	5,406.93	26.66	20.29	60.54	47.98	769.18	1,055.58	1,014.90	40.68	25.948					
7,300.00	5,735.00	5,450.00	5,387.55	27.64	20.25	59.11	55.31	769.18	1,134.71	1,093.87	40.84	27.784					
7,400.00	5,735.00	5,450.00	5,387.55	28.65	20.25	59.11	55.31	769.18	1,216.44	1,175.33	41.10	29.595					
7,500.00	5,735.00	5,450.00	5,387.55	29.70	20.25	59.11	55.31	769.18	1,300.72	1,259.40	41.32	31.481					
7,600.00	5,735.00	5,427.09	5,365.80	30.79	20.19	57.56	62.51	769.18	1,386.44	1,345.06	41.38	33.502					
7,700.00	5,735.00	5,418.94	5,357.99	31.90	20.17	57.01	64.83	769.18	1,474.01	1,432.49	41.51	35.509					



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1936
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-1936	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	119.07	-49.59	89.20	102.06					
100.00	100.00	100.00	100.00	0.13	0.13	119.07	-49.59	89.20	102.06	101.79	0.27	383.178		
200.00	200.00	200.00	200.00	0.47	0.47	119.07	-49.59	89.20	102.06	101.12	0.94	108.499		
300.00	300.00	300.00	300.00	0.81	0.81	119.07	-49.59	89.20	102.06	100.44	1.61	63.197 CC		
400.00	399.98	397.16	397.14	1.11	1.12	-48.14	-49.38	90.83	102.26	99.99	2.27	45.104 ES		
500.00	499.84	494.03	493.88	1.41	1.44	-51.80	-48.75	95.71	103.14	100.19	2.95	34.937		
600.00	599.45	590.29	589.79	1.73	1.77	-57.65	-47.71	103.77	105.56	101.86	3.70	28.518		
700.00	698.70	685.67	684.51	2.07	2.10	-65.17	-46.27	114.91	110.76	106.26	4.50	24.614		
800.00	797.47	779.89	777.65	2.43	2.45	-73.52	-44.46	128.97	120.09	114.76	5.33	22.548		
900.00	895.81	872.86	869.05	2.82	2.81	-81.62	-42.28	145.81	134.73	128.58	6.15	21.909 SF		
1,000.00	994.13	964.72	958.78	3.23	3.19	-88.02	-39.76	165.34	154.87	147.92	6.95	22.291		
1,100.00	1,092.45	1,056.82	1,048.07	3.65	3.60	-92.82	-36.88	187.66	179.52	171.84	7.68	23.371		
1,200.00	1,190.77	1,152.48	1,140.64	4.07	4.04	-96.56	-33.79	211.62	205.96	197.62	8.33	24.712		
1,300.00	1,289.09	1,248.15	1,233.20	4.49	4.48	-99.45	-30.69	235.59	233.04	224.04	9.00	25.907		
1,400.00	1,387.41	1,343.82	1,325.77	4.92	4.94	-101.74	-27.60	259.55	260.55	250.86	9.69	26.877		
1,500.00	1,485.73	1,439.49	1,418.34	5.35	5.39	-103.59	-24.50	283.52	288.38	277.97	10.41	27.709		
1,600.00	1,584.05	1,535.15	1,510.90	5.78	5.85	-105.12	-21.41	307.48	316.44	305.31	11.14	28.417		
1,700.00	1,682.37	1,630.82	1,603.47	6.21	6.32	-106.40	-18.31	331.45	344.68	332.80	11.88	29.024		
1,800.00	1,780.69	1,726.49	1,696.03	6.65	6.78	-107.49	-15.22	355.41	373.05	360.42	12.63	29.547		
1,900.00	1,879.01	1,822.16	1,788.60	7.08	7.25	-108.42	-12.12	379.38	401.53	388.15	13.38	30.002		
2,000.00	1,977.33	1,917.83	1,881.16	7.52	7.71	-109.23	-9.03	403.34	430.09	415.94	14.15	30.400		
2,100.00	2,075.65	2,013.49	1,973.73	7.95	8.18	-109.94	-5.93	427.31	458.72	443.81	14.92	30.751		
2,200.00	2,173.97	2,109.16	2,066.30	8.39	8.65	-110.57	-2.84	451.27	487.41	471.72	15.69	31.062		
2,300.00	2,272.29	2,204.83	2,158.86	8.82	9.12	-111.12	0.25	475.23	516.15	499.68	16.47	31.340		
2,400.00	2,370.61	2,300.50	2,251.43	9.26	9.60	-111.62	3.35	499.20	544.93	527.68	17.25	31.588		
2,500.00	2,468.93	2,396.16	2,343.99	9.70	10.07	-112.07	6.44	523.16	573.74	555.70	18.04	31.812		
2,600.00	2,567.25	2,491.83	2,436.56	10.14	10.54	-112.48	9.54	547.13	602.58	583.76	18.82	32.015		
2,700.00	2,665.57	2,587.50	2,529.13	10.57	11.01	-112.84	12.63	571.09	631.45	611.84	19.61	32.199		
2,800.00	2,763.89	2,683.17	2,621.69	11.01	11.49	-113.18	15.73	595.06	660.33	639.93	20.40	32.367		
2,900.00	2,862.22	2,778.83	2,714.26	11.45	11.96	-113.49	18.82	619.02	689.24	668.05	21.19	32.521		
3,000.00	2,960.54	2,874.50	2,806.82	11.89	12.43	-113.77	21.92	642.99	718.17	696.18	21.99	32.662		
3,100.00	3,058.86	2,970.17	2,899.39	12.33	12.91	-114.03	25.01	666.95	747.10	724.32	22.78	32.792		
3,200.00	3,157.18	3,065.84	2,991.95	12.76	13.38	-114.27	28.11	690.92	776.06	752.48	23.58	32.913		
3,300.00	3,255.50	3,161.51	3,084.52	13.20	13.86	-114.50	31.20	714.88	805.02	780.64	24.38	33.024		
3,400.00	3,353.82	3,257.17	3,177.09	13.64	14.33	-114.71	34.29	738.84	833.99	808.82	25.17	33.128		
3,500.00	3,452.14	3,352.84	3,269.65	14.08	14.81	-114.90	37.39	762.81	862.98	837.00	25.97	33.225		
3,600.00	3,550.46	3,448.51	3,362.22	14.52	15.28	-115.09	40.48	786.77	891.97	865.20	26.77	33.315		
3,700.00	3,648.78	3,544.18	3,454.78	14.96	15.76	-115.26	43.58	810.74	920.97	893.39	27.57	33.399		
3,800.00	3,747.10	3,639.84	3,547.35	15.40	16.23	-115.42	46.67	834.70	949.98	921.60	28.38	33.479		
3,900.00	3,845.42	3,735.51	3,639.92	15.84	16.71	-115.57	49.77	858.67	978.99	949.81	29.18	33.553		
4,000.00	3,943.74	3,831.18	3,732.48	16.27	17.18	-115.71	52.86	882.63	1,008.01	978.03	29.98	33.623		
4,100.00	4,042.06	3,926.85	3,825.05	16.71	17.66	-115.84	55.96	906.60	1,037.03	1,006.25	30.78	33.689		
4,200.00	4,140.38	4,022.52	3,917.61	17.15	18.14	-115.97	59.05	930.56	1,066.06	1,034.48	31.59	33.751		
4,300.00	4,238.70	4,118.18	4,010.18	17.59	18.61	-116.09	62.15	954.53	1,095.10	1,062.71	32.39	33.810		
4,400.00	4,337.02	4,213.85	4,102.75	18.03	19.09	-116.20	65.24	978.49	1,124.13	1,090.94	33.19	33.865		
4,500.00	4,435.34	4,309.52	4,195.31	18.47	19.56	-116.31	68.33	1,002.45	1,153.18	1,119.18	34.00	33.918		
4,600.00	4,533.72	4,405.23	4,287.92	18.87	20.04	-116.63	71.43	1,026.43	1,182.08	1,147.31	34.77	33.994		
4,700.00	4,632.58	4,501.08	4,429.89	19.14	20.61	-117.14	75.70	1,059.51	1,207.80	1,172.11	35.70	33.834		
4,800.00	4,731.90	4,701.79	4,578.17	19.39	21.10	-117.51	79.14	1,086.13	1,227.81	1,191.31	36.50	33.636		
4,900.00	4,831.57	4,855.23	4,730.38	19.63	21.53	-117.77	81.61	1,105.24	1,241.92	1,204.70	37.22	33.365		
5,000.00	4,931.45	6,475.11	5,735.00	19.86	25.78	-77.24	-755.00	1,117.26	1,228.46	1,199.42	29.04	42.305		
5,100.00	5,031.44	6,476.26	5,735.00	20.11	25.79	90.13	-756.15	1,117.26	1,165.28	1,134.27	31.02	37.571		

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 #30E-1936
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-1936	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 #30E-3138 - 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	5,131.44	6,476.26	5,735.00	20.32	25.79	90.13	-756.15	1,117.26	1,107.78	1,074.73	33.05	33.515						
5,300.00	5,231.44	6,475.97	5,735.00	20.53	25.79	91.17	-755.86	1,117.26	1,056.63	1,021.50	35.13	30.078						
5,400.00	5,330.45	6,463.08	5,735.00	20.69	25.71	95.69	-742.97	1,117.29	1,013.22	976.20	37.02	27.371						
5,500.00	5,425.18	6,431.54	5,735.00	20.75	25.54	97.82	-711.43	1,117.36	979.32	940.82	38.50	25.438						
5,600.00	5,512.16	6,382.51	5,735.00	20.75	25.29	97.92	-662.40	1,117.47	955.48	916.00	39.49	24.198						
5,700.00	5,588.19	6,317.79	5,735.00	20.70	24.99	96.56	-597.67	1,117.62	940.81	900.82	39.99	23.526						
5,800.00	5,650.47	6,239.75	5,735.00	20.62	24.67	94.43	-519.64	1,117.80	933.30	893.20	40.11	23.271						
5,900.00	5,696.73	6,150.75	5,734.95	20.55	24.36	92.22	-430.64	1,118.01	930.46	890.49	39.96	23.282						
5,984.74	5,722.09	6,069.16	5,727.49	20.52	24.12	90.34	-349.47	1,118.20	929.87	890.07	39.80	23.364						
6,000.00	5,725.25	6,054.98	5,724.91	20.51	24.09	90.01	-335.53	1,118.23	929.89	890.13	39.76	23.386						
6,099.99	5,735.00	5,965.45	5,699.93	20.52	23.87	87.84	-249.67	1,118.43	930.88	891.32	39.57	23.527						
6,200.00	5,735.00	5,884.39	5,664.94	20.62	23.71	85.69	-176.64	1,118.60	933.87	894.40	39.47	23.660						
6,300.00	5,735.00	5,815.63	5,626.68	20.82	23.58	83.36	-119.57	1,118.73	940.58	901.06	39.52	23.800						
6,400.00	5,735.00	5,758.45	5,589.36	21.13	23.48	81.10	-76.28	1,118.83	952.51	912.80	39.71	23.987						
6,500.00	5,735.00	5,711.21	5,555.11	21.54	23.39	79.06	-43.78	1,118.90	970.74	930.70	40.04	24.245						
6,600.00	5,735.00	5,672.14	5,524.64	22.05	23.32	77.26	-19.33	1,118.96	995.87	955.37	40.50	24.591						
6,700.00	5,735.00	5,650.00	5,506.59	22.64	23.28	76.21	-6.51	1,118.99	1,028.15	987.06	41.08	25.026						
6,800.00	5,735.00	5,600.00	5,463.94	23.32	23.19	73.76	19.54	1,119.05	1,067.27	1,025.71	41.56	25.678						
6,900.00	5,735.00	5,600.00	5,463.94	24.06	23.19	73.76	19.54	1,119.05	1,112.82	1,070.52	42.30	26.306						
7,000.00	5,735.00	5,569.50	5,436.77	24.87	23.13	72.23	33.38	1,119.08	1,164.26	1,121.41	42.85	27.172						
7,100.00	5,735.00	5,550.00	5,418.99	25.74	23.09	71.25	41.39	1,119.10	1,221.20	1,177.78	43.41	28.129						
7,200.00	5,735.00	5,550.00	5,418.99	26.66	23.09	71.25	41.39	1,119.10	1,283.07	1,239.05	44.01	29.151						
7,300.00	5,735.00	5,524.75	5,395.54	27.64	23.04	69.96	50.76	1,119.12	1,348.84	1,304.40	44.44	30.355						
7,400.00	5,735.00	5,500.00	5,372.15	28.65	22.99	68.70	58.83	1,119.14	1,418.65	1,373.84	44.81	31.658						
7,500.00	5,735.00	5,500.00	5,372.15	29.70	22.99	68.70	58.83	1,119.14	1,491.31	1,446.07	45.24	32.963						



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1936
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-1936	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: 138-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		
0.00	0.00	0.00	0.00	0.00	0.00	90.35	-7.16	1,169.42	1,169.84					
100.00	100.00	74.76	74.76	0.13	0.12	90.35	-7.21	1,169.26	1,169.29	1,169.04	0.25	4,667.261		
200.00	200.00	181.91	181.91	0.47	0.36	90.37	-7.45	1,168.45	1,168.54	1,167.71	0.83	1,402.383		
300.00	300.00	286.82	286.81	0.81	0.70	90.38	-7.72	1,167.09	1,167.24	1,165.72	1.52	768.376		
400.00	399.98	394.84	394.81	1.11	1.06	-75.73	-7.77	1,165.19	1,165.06	1,162.87	2.18	534.369		
500.00	499.84	507.88	507.81	1.41	1.45	-76.07	-8.19	1,162.12	1,161.07	1,158.20	2.87	404.982		
600.00	599.45	634.11	633.89	1.73	1.89	-76.63	-10.14	1,156.35	1,154.38	1,150.72	3.66	314.984		
700.00	698.70	755.02	754.48	2.07	2.35	-77.35	-13.87	1,148.58	1,145.14	1,140.68	4.47	256.467		
800.00	797.47	875.41	874.27	2.43	2.83	-78.22	-20.09	1,138.41	1,133.17	1,127.87	5.30	213.886		
900.00	895.81	1,001.46	999.13	2.82	3.42	-78.90	-31.05	1,125.12	1,118.57	1,112.35	6.22	179.829		
1,000.00	994.13	1,138.98	1,134.28	3.23	4.16	-79.29	-48.99	1,107.29	1,101.58	1,094.30	7.29	151.141		
1,100.00	1,092.45	1,241.44	1,234.07	3.65	4.80	-79.39	-66.23	1,091.71	1,082.08	1,073.91	8.16	132.543		
1,200.00	1,190.77	1,336.83	1,326.75	4.07	5.42	-79.41	-83.70	1,077.39	1,062.69	1,053.67	9.03	117.726		
1,300.00	1,289.09	1,447.93	1,434.17	4.49	6.21	-79.31	-106.09	1,060.03	1,042.57	1,032.49	10.07	103.524		
1,400.00	1,387.41	1,535.12	1,518.33	4.92	6.80	-79.18	-124.43	1,046.49	1,022.52	1,011.59	10.93	93.515		
1,500.00	1,485.73	1,627.24	1,607.58	5.35	7.32	-79.10	-142.87	1,033.05	1,003.46	991.68	11.78	85.181		
1,600.00	1,584.05	1,724.47	1,702.00	5.78	7.91	-79.07	-161.34	1,019.01	984.60	971.92	12.68	77.620		
1,700.00	1,682.37	1,818.60	1,793.27	6.21	8.54	-78.98	-180.10	1,005.71	966.01	952.38	13.63	70.866		
1,800.00	1,780.69	1,912.69	1,884.47	6.65	9.17	-78.86	-199.36	992.90	947.91	933.31	14.60	64.934		
1,900.00	1,879.01	2,008.07	1,976.97	7.08	9.80	-78.74	-218.83	980.16	930.06	914.50	15.57	59.749		
2,000.00	1,977.33	2,106.87	2,072.81	7.52	10.47	-78.59	-239.27	967.50	912.76	896.18	16.58	55.048		
2,100.00	2,075.65	2,223.88	2,186.24	7.95	11.28	-78.46	-262.60	950.82	894.04	876.34	17.70	50.521		
2,200.00	2,173.97	2,320.27	2,279.70	8.39	11.94	-78.42	-280.85	935.90	874.17	855.49	18.68	46.801		
2,300.00	2,272.29	2,438.58	2,394.43	8.82	12.77	-78.39	-302.81	917.14	854.02	834.26	19.77	43.209		
2,400.00	2,370.61	2,539.24	2,491.67	9.26	13.54	-78.35	-321.84	899.41	832.03	811.23	20.80	39.996		
2,500.00	2,468.93	2,635.92	2,584.99	9.70	14.28	-78.29	-340.23	882.06	809.71	787.89	21.83	37.097		
2,600.00	2,567.25	2,715.00	2,661.50	10.14	14.86	-78.23	-355.42	869.08	788.87	766.10	22.77	34.648		
2,700.00	2,665.57	2,809.97	2,753.58	10.57	15.52	-78.15	-373.75	854.76	769.39	745.62	23.77	32.374		
2,800.00	2,763.89	2,906.40	2,847.13	11.01	16.19	-78.08	-392.20	840.41	750.10	725.33	24.77	30.285		
2,900.00	2,862.22	3,002.24	2,940.25	11.45	16.85	-78.04	-410.12	826.46	731.15	705.39	25.77	28.376		
3,000.00	2,960.54	3,104.48	3,039.43	11.89	17.58	-77.95	-429.67	811.21	711.83	685.02	26.81	26.552		
3,100.00	3,058.86	3,198.13	3,130.34	12.33	18.24	-77.88	-447.52	797.56	692.85	665.03	27.82	24.903		
3,200.00	3,157.18	3,298.11	3,227.54	12.76	18.93	-77.85	-465.89	782.99	673.89	645.05	28.84	23.366		
3,300.00	3,255.50	3,396.83	3,323.07	13.20	19.65	-77.63	-486.13	768.55	654.83	624.92	29.91	21.894		
3,400.00	3,353.82	3,497.24	3,420.05	13.64	20.42	-77.32	-507.49	753.69	635.58	604.56	31.03	20.486		
3,500.00	3,452.14	3,599.42	3,518.51	14.08	21.21	-76.93	-529.86	738.05	615.84	583.67	32.17	19.145		
3,600.00	3,550.46	3,693.63	3,609.39	14.52	21.92	-76.60	-549.86	723.32	595.82	562.55	33.26	17.912		
3,700.00	3,648.78	3,786.15	3,699.14	14.96	22.58	-76.43	-567.89	709.87	576.90	542.58	34.31	16.813		
3,800.00	3,747.10	3,879.04	3,789.36	15.40	23.22	-76.25	-585.97	697.13	558.81	523.46	35.35	15.807		
3,900.00	3,845.42	3,989.81	3,897.13	15.84	23.98	-76.14	-606.42	681.83	540.69	504.30	36.40	14.855		
4,000.00	3,943.74	4,090.99	3,995.40	16.27	24.69	-76.11	-624.32	665.71	520.41	483.00	37.41	13.912		
4,100.00	4,042.06	4,191.27	4,092.69	16.71	25.41	-76.05	-642.31	649.37	499.76	461.33	38.43	13.005		
4,200.00	4,140.38	4,286.38	4,184.91	17.15	26.10	-75.96	-659.62	633.83	479.08	439.61	39.47	12.139		
4,300.00	4,238.70	4,373.39	4,269.33	17.59	26.72	-75.77	-676.31	620.99	459.96	419.43	40.53	11.348		
4,400.00	4,337.02	4,470.80	4,364.07	18.03	27.38	-75.58	-694.72	607.77	442.04	400.45	41.59	10.630		
4,500.00	4,435.34	4,563.73	4,454.99	18.47	27.96	-75.72	-709.86	595.96	424.94	382.39	42.54	9.988		
4,600.00	4,533.72	4,658.04	4,547.78	18.87	28.50	-76.09	-722.55	584.90	408.89	365.53	43.35	9.432		
4,700.00	4,632.58	4,744.49	4,633.24	19.14	28.93	-76.19	-732.65	576.74	395.82	351.82	44.00	8.996		
4,800.00	4,731.90	4,833.73	4,721.83	19.39	29.31	-76.16	-741.62	570.89	386.46	341.86	44.61	8.664		
4,900.00	4,831.57	4,926.84	4,814.50	19.63	29.66	-75.92	-749.76	566.83	380.14	334.93	45.21	8.408		
5,000.00	4,931.45	5,024.07	4,911.47	19.86	29.97	-75.55	-755.97	563.78	375.89	330.09	45.79	8.208		
5,100.00	5,031.44	5,121.27	5,008.60	20.11	30.21	90.71	-758.59	561.23	372.99	326.67	46.32	8.052		

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 #30E-1936
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-1936	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: 138-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)						
5,172.95	5,104.39	5,186.62	5,073.95	20.26	30.34	90.80	-759.22	560.56	372.26	325.64	46.61	7.986		
5,200.00	5,131.44	5,212.45	5,099.77	20.32	30.38	90.83	-759.37	560.62	372.32	325.60	46.72	7.969		
5,300.00	5,231.44	5,313.23	5,200.54	20.53	30.53	90.85	-759.24	561.09	372.79	325.68	47.11	7.913		
5,400.00	5,330.45	5,423.67	5,308.94	20.69	30.40	90.12	-739.55	559.99	371.76	324.81	46.95	7.918		
5,500.00	5,425.18	5,514.00	5,393.28	20.75	30.04	89.66	-707.54	558.01	369.68	323.14	46.53	7.944		
5,503.32	5,428.21	5,517.97	5,396.87	20.75	30.02	89.65	-705.84	558.00	369.67	323.17	46.50	7.950		
5,600.00	5,512.16	5,606.98	5,474.58	20.75	29.44	89.66	-662.56	559.18	370.92	325.00	45.92	8.078		
5,700.00	5,588.19	5,725.81	5,567.88	20.70	28.52	90.46	-589.40	557.85	369.70	325.03	44.66	8.277		
5,787.61	5,643.58	5,803.09	5,620.24	20.63	27.84	91.33	-532.62	556.75	368.51	324.48	44.03	8.370		
5,800.00	5,650.47	5,815.17	5,627.74	20.62	27.73	91.48	-523.17	556.74	368.52	324.61	43.91	8.392		
5,900.00	5,696.73	5,919.01	5,683.85	20.55	26.76	92.93	-435.95	556.77	368.91	326.11	42.80	8.619		
6,000.00	5,725.25	6,024.18	5,723.28	20.51	25.85	94.51	-338.62	554.99	367.79	326.01	41.77	8.804		
6,001.28	5,725.50	6,025.27	5,723.61	20.51	25.84	94.53	-337.58	554.98	367.79	326.02	41.77	8.806		
6,099.99	5,735.00	6,121.34	5,745.54	20.52	25.14	96.37	-244.14	555.43	369.51	328.36	41.15	8.979		
6,200.00	5,735.00	6,228.99	5,752.62	20.62	24.64	97.43	-136.84	556.38	371.17	330.33	40.83	9.090		
6,300.00	5,735.00	6,333.12	5,753.49	20.82	24.56	97.56	-32.72	556.49	371.38	330.56	40.82	9.097		
6,400.00	5,735.00	6,440.24	5,755.20	21.13	24.93	97.86	74.37	554.96	370.19	328.80	41.38	8.945		
6,500.00	5,735.00	6,537.59	5,754.11	21.54	25.58	97.73	171.69	553.24	368.29	325.77	42.51	8.663		
6,600.00	5,735.00	6,634.05	5,752.32	22.05	26.41	97.47	268.13	552.36	367.14	323.44	43.70	8.402		
6,624.69	5,735.00	6,656.66	5,752.04	22.19	26.62	97.43	290.74	552.33	367.07	323.09	43.97	8.348		
6,700.00	5,735.00	6,726.85	5,751.60	22.64	27.31	97.34	360.93	552.97	367.69	322.80	44.89	8.191		
6,800.00	5,735.00	6,825.68	5,752.77	23.32	28.43	97.50	459.74	554.43	369.30	322.61	46.69	7.910		
6,900.00	5,735.00	6,924.17	5,753.79	24.06	29.77	97.62	558.21	556.07	371.09	322.15	48.93	7.583		
7,000.00	5,735.00	7,028.00	5,754.39	24.87	31.36	97.67	662.02	558.13	373.15	321.44	51.71	7.216		
7,100.00	5,735.00	7,133.72	5,755.08	25.74	33.10	97.77	767.73	558.19	373.28	318.58	54.70	6.824		
7,166.81	5,735.00	7,198.86	5,755.54	26.36	34.27	97.85	832.87	557.91	373.07	316.50	56.57	6.595		
7,200.00	5,735.00	7,230.77	5,755.34	26.66	34.86	97.82	864.78	558.00	373.13	315.64	57.48	6.491		
7,300.00	5,735.00	7,324.19	5,755.91	27.64	36.59	97.88	958.19	559.05	374.33	314.21	60.12	6.227		
7,400.00	5,735.00	7,429.60	5,759.92	28.65	38.58	98.46	1,063.51	560.05	375.81	312.35	63.46	5.922		
7,500.00	5,735.00	7,537.53	5,763.27	29.70	40.83	98.99	1,171.38	558.98	375.30	308.10	67.19	5.585		
7,600.00	5,735.00	7,636.19	5,765.80	30.79	42.98	99.43	1,269.98	556.93	373.65	303.19	70.46	5.303		
7,700.00	5,735.00	7,732.63	5,768.27	31.90	45.06	99.82	1,366.39	556.17	373.30	299.71	73.58	5.073		
7,800.00	5,735.00	7,832.99	5,770.68	33.05	47.28	100.20	1,466.72	555.65	373.21	296.19	77.02	4.846		
7,900.00	5,735.00	7,938.27	5,771.49	34.22	49.74	100.35	1,571.99	554.68	372.44	291.51	80.93	4.602		
7,985.38	5,735.00	8,017.73	5,771.29	35.24	51.62	100.34	1,651.44	554.00	371.70	288.03	83.66	4.443		
8,000.00	5,735.00	8,032.00	5,771.06	35.41	51.96	100.30	1,665.71	554.07	371.72	287.54	84.18	4.416		
8,100.00	5,735.00	8,130.49	5,770.10	36.62	54.26	100.14	1,764.19	554.72	372.19	284.48	87.71	4.243		
8,200.00	5,735.00	8,234.06	5,770.55	37.85	56.71	100.21	1,867.76	554.47	372.03	280.44	91.59	4.062		
8,300.00	5,735.00	8,335.05	5,770.12	39.10	59.20	100.15	1,968.75	554.20	371.69	276.26	95.43	3.895		
8,400.00	5,735.00	8,435.97	5,770.78	40.36	61.70	100.29	2,069.65	552.85	370.48	271.24	99.25	3.733		
8,500.00	5,735.00	8,532.63	5,771.36	41.64	64.07	100.40	2,166.31	552.28	370.01	267.25	102.76	3.601		
8,509.22	5,735.00	8,541.59	5,771.43	41.76	64.28	100.41	2,175.27	552.26	370.01	266.92	103.09	3.589		
8,600.00	5,735.00	8,630.26	5,771.89	42.93	66.46	100.47	2,263.94	552.45	370.28	263.93	106.35	3.482		
8,700.00	5,735.00	8,729.20	5,771.56	44.23	68.90	100.40	2,362.87	553.27	371.04	260.95	110.09	3.370		
8,800.00	5,735.00	8,829.14	5,771.35	45.54	71.38	100.34	2,462.81	554.21	371.92	258.02	113.90	3.265		
8,900.00	5,735.00	8,926.59	5,771.15	46.86	73.81	100.28	2,560.25	555.39	373.09	255.52	117.57	3.173		
9,000.00	5,735.00	9,027.09	5,771.20	48.19	76.30	100.24	2,660.74	556.95	374.62	253.18	121.44	3.085		
9,100.00	5,735.00	9,133.81	5,770.18	49.52	79.01	100.07	2,767.45	557.72	375.16	249.34	125.82	2.982		
9,200.00	5,735.00	9,235.16	5,769.83	50.87	81.61	100.04	2,868.78	556.60	374.01	244.19	129.82	2.881		
9,218.66	5,735.00	9,251.09	5,769.74	51.12	82.02	100.03	2,884.72	556.56	373.94	243.56	130.38	2.868		
9,300.00	5,735.00	9,325.80	5,768.38	52.22	83.95	99.79	2,959.40	557.92	375.10	241.92	133.18	2.816		
9,400.00	5,735.00	9,434.32	5,769.57	53.58	86.77	99.97	3,067.90	558.05	375.39	237.71	137.68	2.726		

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 #30E-1936
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-1936	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: 138-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	
9,500.00	5,735.00	9,537.82	5,772.11	54.94	89.46	100.39	3,171.36	556.73	374.57	232.83	141.73	2.643	
9,600.00	5,735.00	9,638.39	5,773.02	56.31	92.09	100.58	3,271.91	554.76	372.80	227.14	145.67	2.559	
9,695.17	5,735.00	9,727.73	5,771.57	57.62	94.41	100.37	3,361.23	554.17	371.91	222.80	149.11	2.494	
9,700.00	5,735.00	9,732.17	5,771.60	57.68	94.52	100.36	3,365.67	554.18	371.91	222.64	149.28	2.491	
9,800.00	5,735.00	9,824.57	5,770.44	59.06	96.86	100.17	3,458.05	555.45	373.06	220.37	152.69	2.443	
9,900.00	5,735.00	9,926.33	5,769.86	60.44	99.43	100.01	3,559.78	557.95	375.38	218.61	156.77	2.394	
10,000.00	5,735.00	10,015.89	5,769.53	61.83	101.72	99.90	3,649.31	560.32	377.98	218.05	159.93	2.363	
10,100.00	5,735.00	10,124.35	5,769.48	63.22	104.50	99.78	3,757.66	564.82	382.13	217.53	164.60	2.322	
10,200.00	5,735.00	10,240.86	5,768.85	64.62	107.55	99.67	3,874.16	565.37	382.56	212.83	169.72	2.254	
10,300.00	5,735.00	10,342.08	5,768.64	66.01	110.25	99.70	3,975.35	563.08	380.29	206.47	173.82	2.188	
10,400.00	5,735.00	10,450.38	5,770.84	67.41	113.16	100.14	4,083.53	558.53	376.48	198.35	178.13	2.113	
10,500.00	5,735.00	10,545.60	5,773.57	68.82	115.73	100.69	4,178.58	553.65	371.98	190.25	181.73	2.047	
10,580.81	5,735.00	10,613.92	5,774.40	69.95	117.57	100.86	4,246.87	552.10	370.40	186.24	184.17	2.011	
10,600.00	5,735.00	10,628.97	5,774.30	70.22	117.98	100.84	4,261.92	552.21	370.51	185.85	184.65	2.007	
10,700.00	5,735.00	10,728.09	5,774.35	71.63	120.61	100.82	4,361.03	553.37	371.67	183.03	188.64	1.970	
10,800.00	5,735.00	10,830.05	5,774.16	73.05	123.30	100.75	4,462.98	554.87	373.09	180.26	192.83	1.935	
10,900.00	5,735.00	10,931.19	5,773.04	74.46	125.97	100.56	4,564.11	555.55	373.54	176.52	197.02	1.896	
11,000.00	5,735.00	11,031.37	5,771.55	75.88	128.65	100.31	4,664.27	556.38	374.09	172.88	201.21	1.859	
11,100.00	5,735.00	11,120.13	5,769.76	77.29	131.02	99.99	4,762.99	558.23	375.81	171.28	204.53	1.837	
11,200.00	5,735.00	11,226.27	5,768.31	78.71	133.83	99.68	4,859.04	561.93	379.05	169.83	209.23	1.812	
11,300.00	5,735.00	11,327.92	5,768.91	80.14	136.54	99.73	4,960.67	563.51	380.69	167.30	213.39	1.784	
11,400.00	5,735.00	11,436.42	5,769.50	81.56	139.45	99.82	5,069.17	563.40	380.65	162.66	217.99	1.746	
11,500.00	5,735.00	11,535.22	5,770.60	82.99	142.05	100.00	5,167.96	562.72	380.16	158.31	221.85	1.714	
11,600.00	5,735.00	11,641.06	5,771.13	84.41	144.83	100.11	5,273.79	561.48	379.10	152.95	226.15	1.676	
11,700.00	5,735.00	11,742.12	5,772.26	85.84	147.56	100.36	5,374.80	558.50	376.40	146.24	230.16	1.635	
11,800.00	5,735.00	11,845.63	5,772.61	87.27	150.38	100.48	5,478.28	556.04	374.14	139.77	234.37	1.596	
11,900.00	5,735.00	11,941.75	5,773.17	88.70	152.96	100.66	5,574.33	552.75	370.90	132.76	238.14	1.558	
12,000.00	5,735.00	12,033.76	5,773.33	90.14	155.41	100.72	5,666.34	551.27	369.39	127.73	241.66	1.529	
12,001.25	5,735.00	12,034.74	5,773.32	90.15	155.44	100.72	5,667.31	551.28	369.39	127.70	241.69	1.528	
12,100.00	5,735.00	12,135.57	5,771.49	91.57	158.16	100.42	5,768.12	552.16	369.93	123.89	246.04	1.504	
12,200.00	5,735.00	12,233.51	5,769.37	93.00	160.81	100.10	5,866.03	552.12	369.50	119.31	250.20	1.477	Level 3
12,250.01	5,735.00	12,284.82	5,767.15	93.72	162.21	99.75	5,917.29	552.46	369.46	116.92	252.54	1.463	Level 3
12,300.00	5,735.00	12,336.85	5,765.13	94.44	163.62	99.44	5,969.29	552.49	369.16	114.26	254.91	1.448	Level 3
12,400.00	5,735.00	12,440.64	5,761.57	95.88	166.44	98.91	6,073.01	551.63	367.80	108.26	259.53	1.417	Level 3
12,500.00	5,735.00	12,542.83	5,758.90	97.32	169.21	98.55	6,175.14	549.51	365.35	101.39	263.96	1.384	Level 3
12,600.00	5,735.00	12,637.75	5,757.29	98.76	171.69	98.33	6,270.03	548.06	363.59	95.78	267.81	1.358	Level 3
12,700.00	5,735.00	12,736.51	5,756.01	100.20	174.23	98.14	6,368.78	547.63	362.96	91.15	271.82	1.335	Level 3
12,797.60	5,735.00	12,831.40	5,754.84	101.60	176.71	97.98	6,463.66	546.83	362.00	86.34	275.65	1.313	Level 3
12,800.00	5,735.00	12,833.48	5,754.82	101.64	176.77	97.97	6,465.74	546.83	362.00	86.27	275.73	1.313	Level 3
12,900.00	5,735.00	12,926.58	5,754.48	103.08	179.20	97.89	6,558.83	548.38	363.56	84.27	279.28	1.302	Level 3
13,000.00	5,735.00	13,027.41	5,755.09	104.52	181.87	97.95	6,659.64	550.08	365.31	81.91	283.39	1.289	Level 3
13,100.00	5,735.00	13,127.61	5,756.43	105.97	184.50	98.12	6,759.82	551.70	367.10	79.73	287.36	1.277	Level 3
13,200.00	5,735.00	13,224.60	5,757.75	107.41	187.01	98.28	6,856.78	553.40	369.03	78.00	291.03	1.268	Level 3
13,300.00	5,735.00	13,324.19	5,759.09	108.85	189.59	98.43	6,956.33	555.96	371.77	76.85	294.93	1.261	Level 3
13,400.00	5,735.00	13,436.45	5,760.28	110.30	192.56	98.58	7,068.57	557.17	373.02	73.20	299.82	1.244	Level 2
13,500.00	5,735.00	13,538.52	5,762.18	111.75	195.32	98.90	7,170.62	555.98	372.15	68.29	303.86	1.225	Level 2
13,600.00	5,735.00	13,645.14	5,763.51	113.19	198.17	99.17	7,277.20	553.32	369.88	61.77	308.11	1.200	Level 2
13,700.00	5,735.00	13,752.75	5,763.96	114.64	201.04	99.34	7,384.72	549.33	366.32	53.98	312.34	1.173	Level 2
13,800.00	5,735.00	13,859.02	5,764.99	116.09	203.94	99.69	7,490.73	542.04	359.67	43.34	316.33	1.137	Level 2
13,849.49	5,735.00	13,907.64	5,765.43	116.81	205.27	99.85	7,539.23	538.65	356.34	38.10	318.25	1.120	Level 2, CC, ES, SF

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



WOG

Anticollision Report

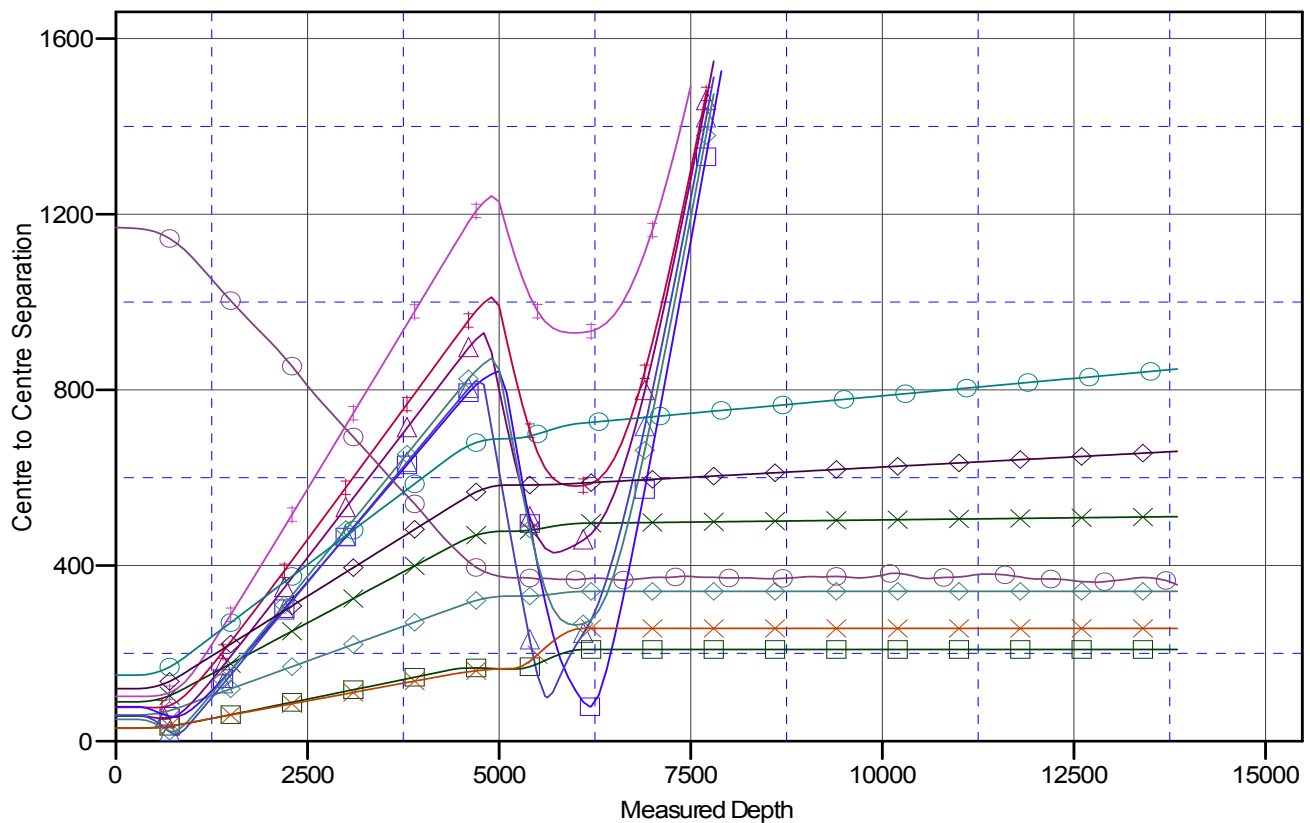
Company: Whiting Petroleum Corp.
Project: Weld County, CO
Reference Site: Sec 30-T10N-R57W
Site Error: 0.00 usft
Reference Well: Horsetail #30E-1936
Well Error: 0.00 usft
Reference Wellbore: Hz
Reference Design: APD

Local Co-ordinate Reference: Well Horsetail #30E-1936
TVD Reference: KBE @ 4827.40usft (Original Well Elev)
MD Reference: KBE @ 4827.40usft (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 @ 4827.40usft (Original Well Ele)
Offset Depths are relative to Offset Datum
Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: Horsetail #30E-1936
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 1.10°

Ladder Plot



LEGEND

- Horsetail #30E-1935, Hz, APDV0
- Horsetail #30E-1902, Hz, APDV0
- Horsetail #30E-3104, Hz, APDV0
- Horsetail #30E-3137 Dropped, Hz, APDV0
- Horsetail #30E-3135, Hz, APDV0
- Horsetail #30E-3138, Hz, APDV0
- Horsetail #30E-3103, Hz, APDV0
- Horsetail #30E-1904, Hz, APDV0
- Horsetail #30E-1941, Hz, HzV0
- Horsetail #30E-3136, Hz, APDV0
- Horsetail #30E-1901, Hz, APDV0
- Horsetail #30E-1903, Hz, APDV0
- Horsetail #30E-1934, Hz, APDV0



WOG

Anticollision Report

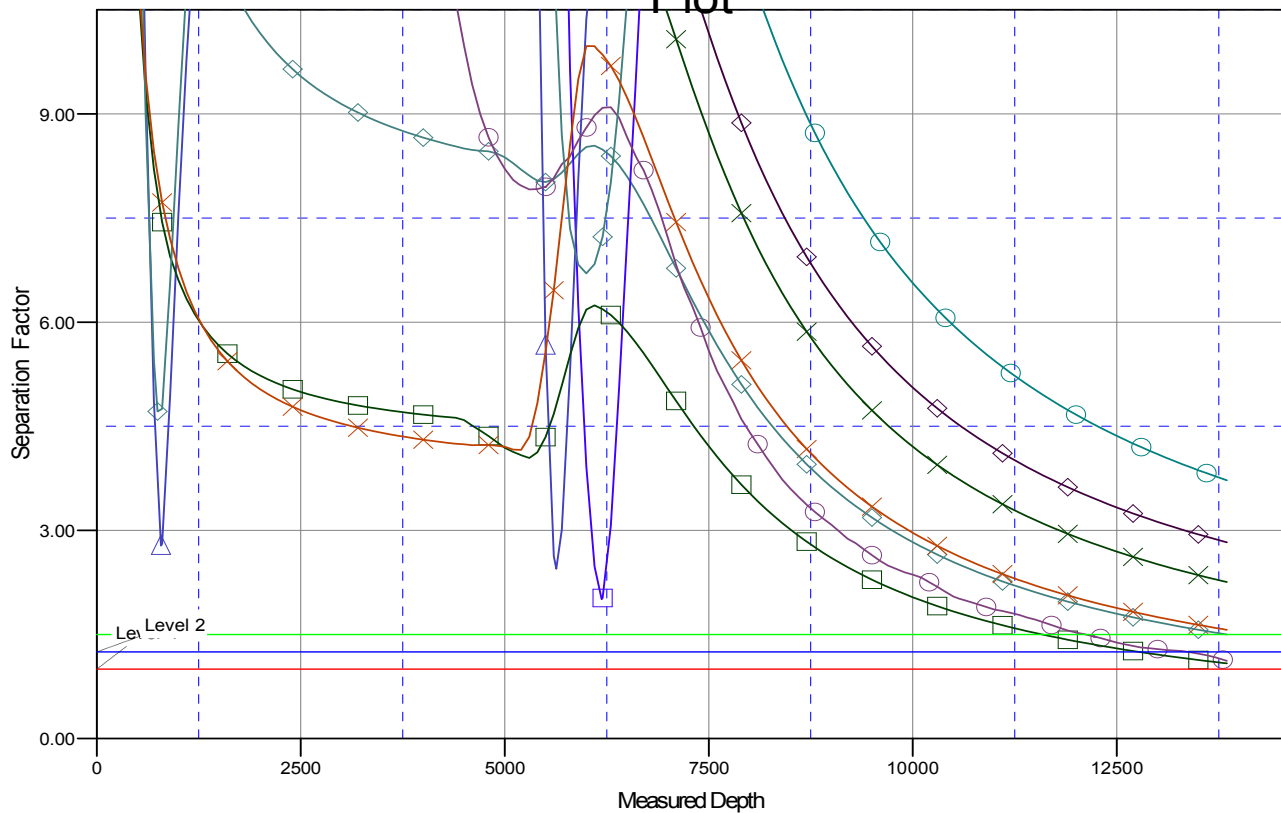
Company: Whiting Petroleum Corp.
Project: Weld County, CO
Reference Site: Sec 30-T10N-R57W
Site Error: 0.00 usft
Reference Well: Horsetail #30E-1936
Well Error: 0.00 usft
Reference Wellbore: Hz
Reference Design: APD

Local Co-ordinate Reference: Well Horsetail #30E-1936
TVD Reference: KBE @ 4827.40usft (Original Well Elev)
MD Reference: KBE @ 4827.40usft (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 @ 4827.40usft (Original Well Ele)
Offset Depths are relative to Offset Datum
Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: Horsetail #30E-1936
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 1.10°

Separation Factor Plot



LEGEND

- | | | |
|---|-----------------------------------|-----------------------------------|
| ◆ Horsetail #30E-1935, Hz, APD V0 | ✱ Horsetail #30E-3138, Hz, APD V0 | ● Horsetail #30E-1901, Hz, APD V0 |
| ✱ Horsetail #30E-1902, Hz, APD V0 | ▲ Horsetail #30E-3103, Hz, APD V0 | ✱ Horsetail #30E-1903, Hz, APD V0 |
| ▲ Horsetail #30E-3104, Hz, APD V0 | ■ Horsetail #30E-1904, Hz, APD V0 | ◆ Horsetail #30E-1934, Hz, APD V0 |
| ✱ Horsetail #30E-3137 Dropped, Hz, APD V0 | ○ Horsetail #30F-1941, Hz, Hz V0 | |
| ■ Horsetail #30E-3135, Hz, APD V0 | ◆ Horsetail #30E-3136, Hz, APD V0 | |