



Whiting Petroleum Corp.

Weld County, CO

Sec 30-T10N-R57W

Horsetail #30H-1916

Hz

APD

Anticollision Report

24 August, 2015



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30H-1916
Project:	Weld County, CO	TVD Reference:	KBE @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	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	8/18/2015		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	13,759.00	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 19-T10N-R57W						
Mertens #1-19 - Wellbore #1 - Gyro						Out of range
Sec 30-T10N-R57W						
Horsetail #30H-1913 - Hz - APD	300.00	300.00	179.94	178.32	111.419	CC, ES
Horsetail #30H-1913 - Hz - APD	13,759.87	13,772.92	991.67	758.67	4.256	SF
Horsetail #30H-1914 - Hz - APD	300.00	300.00	119.96	118.34	74.279	CC, ES
Horsetail #30H-1914 - Hz - APD	13,759.87	13,743.52	659.56	425.80	2.821	SF
Horsetail #30H-1915 - Hz - APD	300.00	300.00	59.98	58.36	37.140	CC, ES
Horsetail #30H-1915 - Hz - APD	13,759.87	13,675.75	336.71	107.39	1.468	Level 3, SF
Horsetail #30H-1945 - Hz - APD	300.00	300.00	209.92	208.31	129.989	CC, ES
Horsetail #30H-1945 - Hz - APD	13,759.87	13,905.26	1,161.80	929.82	5.008	SF
Horsetail #30H-1946 - Hz - APD	300.00	300.00	149.95	148.33	92.849	CC, ES
Horsetail #30H-1946 - Hz - APD	13,759.87	13,960.61	852.14	624.56	3.744	SF
Horsetail #30H-1947 - Hz - APD	300.00	300.00	89.97	88.35	55.709	CC, ES
Horsetail #30H-1947 - Hz - APD	13,759.87	13,867.75	510.84	283.00	2.242	SF
Horsetail #30H-1948 - Hz - APD	300.00	300.00	29.99	28.37	18.570	CC
Horsetail #30H-1948 - Hz - APD	400.00	400.30	30.23	28.01	13.619	ES
Horsetail #30H-1948 - Hz - APD	13,759.87	13,959.36	269.92	109.20	1.679	SF
Horsetail #30H-3113 - Hz - APD	300.00	299.00	186.64	185.03	115.815	CC, ES
Horsetail #30H-3113 - Hz - APD	5,600.00	5,938.22	759.34	719.91	19.259	SF
Horsetail #30H-3114 - Hz - APD	521.27	521.74	128.29	125.27	42.424	CC, ES
Horsetail #30H-3114 - Hz - APD	5,800.00	5,890.45	470.93	432.12	12.135	SF
Horsetail #30H-3115 - Hz - APD	753.08	753.74	57.92	53.31	12.549	CC, ES
Horsetail #30H-3115 - Hz - APD	5,700.00	5,914.86	210.03	170.71	5.341	SF
Horsetail #30H-3116 - Hz - APD	790.87	787.54	15.88	10.91	3.199	CC, ES
Horsetail #30H-3116 - Hz - APD	5,886.92	5,822.74	70.29	31.59	1.816	SF
Horsetail #30H-3145 - Hz - APD	300.00	299.00	215.70	214.09	133.846	CC, ES
Horsetail #30H-3145 - Hz - APD	6,090.96	5,671.60	922.77	884.52	24.125	SF
Horsetail #30H-3146 - Hz - APD	300.00	299.00	157.93	156.32	98.000	CC, ES
Horsetail #30H-3146 - Hz - APD	6,211.83	5,628.77	609.44	570.81	15.777	SF
Horsetail #30H-3147 - Hz - APD	677.60	678.88	93.33	89.26	22.894	CC
Horsetail #30H-3147 - Hz - APD	700.00	701.01	93.42	89.20	22.115	ES
Horsetail #30H-3147 - Hz - APD	6,133.35	5,659.69	319.52	281.09	8.315	SF
Horsetail #30H-3148 - Hz - APD	795.43	794.49	21.54	16.60	4.363	CC
Horsetail #30H-3148 - Hz - APD	800.00	798.98	21.56	16.60	4.344	ES
Horsetail #30H-3148 - Hz - APD	6,207.24	5,638.97	69.49	30.86	1.799	SF

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



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Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-90.00	-0.01	-179.94	179.94					
100.00	100.00	100.00	100.00	0.13	0.13	-90.00	-0.01	-179.94	179.94	179.67	0.27	675.564		
200.00	200.00	200.00	200.00	0.47	0.47	-90.00	-0.01	-179.94	179.94	178.99	0.94	191.289		
300.00	300.00	300.00	300.00	0.81	0.81	-90.00	-0.01	-179.94	179.94	178.32	1.61	111.419 CC, ES		
400.00	399.98	396.93	396.91	1.11	1.10	115.47	-1.43	-180.75	181.53	179.31	2.22	81.636		
500.00	499.84	493.72	493.57	1.41	1.40	115.48	-5.68	-183.21	186.32	183.48	2.83	65.750		
600.00	599.45	590.21	589.72	1.74	1.71	115.49	-12.73	-187.28	194.28	190.78	3.50	55.566		
700.00	698.70	686.28	685.11	2.07	2.03	115.50	-22.53	-192.94	205.39	201.19	4.20	48.918		
800.00	797.47	781.78	779.52	2.44	2.37	115.50	-35.01	-200.14	219.63	214.70	4.94	44.491		
900.00	895.63	876.59	872.71	2.84	2.75	115.49	-50.09	-208.85	236.96	231.24	5.71	41.465		
1,000.00	993.49	971.64	965.53	3.26	3.15	115.42	-67.81	-219.08	256.46	249.95	6.50	39.451		
1,100.00	1,091.36	1,069.62	1,060.99	3.69	3.58	115.18	-86.90	-230.10	276.43	269.13	7.29	37.896		
1,200.00	1,189.23	1,167.60	1,156.46	4.13	4.02	114.98	-105.99	-241.12	296.40	288.30	8.11	36.570		
1,300.00	1,287.10	1,265.58	1,251.93	4.58	4.47	114.80	-125.07	-252.14	316.38	307.45	8.93	35.420		
1,400.00	1,384.97	1,363.56	1,347.40	5.02	4.93	114.64	-144.16	-263.16	336.37	326.60	9.77	34.429		
1,500.00	1,482.84	1,461.54	1,442.87	5.47	5.38	114.49	-163.25	-274.18	356.35	345.73	10.61	33.571		
1,600.00	1,580.70	1,559.52	1,538.33	5.92	5.84	114.37	-182.34	-285.20	376.34	364.87	11.47	32.821		
1,700.00	1,678.57	1,657.50	1,633.80	6.38	6.30	114.25	-201.42	-296.23	396.32	384.00	12.32	32.162		
1,800.00	1,776.44	1,755.48	1,729.27	6.83	6.76	114.15	-220.51	-307.25	416.31	403.13	13.18	31.579		
1,900.00	1,874.31	1,853.46	1,824.74	7.29	7.23	114.06	-239.60	-318.27	436.30	422.26	14.05	31.060		
2,000.00	1,972.18	1,951.44	1,920.21	7.74	7.69	113.97	-258.69	-329.29	456.29	441.38	14.91	30.596		
2,100.00	2,070.05	2,049.41	2,015.67	8.20	8.16	113.89	-277.77	-340.31	476.29	460.50	15.78	30.179		
2,200.00	2,167.92	2,147.39	2,111.14	8.66	8.62	113.82	-296.86	-351.33	496.28	479.63	16.65	29.801		
2,300.00	2,265.78	2,245.37	2,206.61	9.12	9.09	113.76	-315.95	-362.35	516.27	498.75	17.53	29.459		
2,400.00	2,363.65	2,343.35	2,302.08	9.57	9.56	113.70	-335.04	-373.37	536.27	517.87	18.40	29.147		
2,500.00	2,461.52	2,441.33	2,397.55	10.03	10.02	113.64	-354.12	-384.39	556.26	536.99	19.27	28.861		
2,600.00	2,559.39	2,539.31	2,493.01	10.49	10.49	113.59	-373.21	-395.41	576.26	556.11	20.15	28.599		
2,700.00	2,657.26	2,637.29	2,588.48	10.95	10.96	113.54	-392.30	-406.43	596.25	575.23	21.03	28.357		
2,800.00	2,755.13	2,735.27	2,683.95	11.41	11.43	113.49	-411.39	-417.45	616.25	594.35	21.90	28.134		
2,900.00	2,852.99	2,833.25	2,779.42	11.87	11.90	113.45	-430.47	-428.47	636.25	613.47	22.78	27.927		
3,000.00	2,950.86	2,931.23	2,874.89	12.33	12.37	113.41	-449.56	-439.49	656.24	632.58	23.66	27.735		
3,100.00	3,048.73	3,029.21	2,970.35	12.79	12.84	113.37	-468.65	-450.51	676.24	651.70	24.54	27.556		
3,200.00	3,146.60	3,127.19	3,065.82	13.25	13.31	113.33	-487.74	-461.53	696.24	670.82	25.42	27.388		
3,300.00	3,244.47	3,225.17	3,161.29	13.71	13.78	113.30	-506.83	-472.55	716.24	689.94	26.30	27.232		
3,400.00	3,342.34	3,323.14	3,256.76	14.17	14.25	113.27	-525.91	-483.57	736.23	709.05	27.18	27.085		
3,500.00	3,440.20	3,421.12	3,352.23	14.63	14.72	113.23	-545.00	-494.59	756.23	728.17	28.06	26.947		
3,600.00	3,538.07	3,519.10	3,447.69	15.09	15.19	113.21	-564.09	-505.61	776.23	747.29	28.95	26.817		
3,700.00	3,635.94	3,617.08	3,543.16	15.56	15.66	113.18	-583.18	-516.63	796.23	766.40	29.83	26.694		
3,800.00	3,733.81	3,715.06	3,638.63	16.02	16.13	113.15	-602.26	-527.65	816.23	785.52	30.71	26.579		
3,900.00	3,831.68	3,813.04	3,734.10	16.48	16.60	113.13	-621.35	-538.67	836.23	804.64	31.59	26.469		
4,000.00	3,929.55	3,911.02	3,829.57	16.94	17.07	113.10	-640.44	-549.69	856.23	823.75	32.48	26.366		
4,100.00	4,027.42	4,009.00	3,925.03	17.40	17.54	113.08	-659.53	-560.71	876.23	842.87	33.36	26.267		
4,200.00	4,125.28	4,106.98	4,020.50	17.86	18.01	113.06	-678.61	-571.74	896.23	861.98	34.24	26.174		
4,300.00	4,223.15	4,204.96	4,115.97	18.32	18.48	113.04	-697.70	-582.76	916.22	881.10	35.13	26.085		
4,400.00	4,321.04	4,302.94	4,211.45	18.76	18.95	113.11	-716.79	-593.78	936.18	900.19	35.99	26.014		
4,500.00	4,419.41	4,413.33	4,319.19	19.05	19.40	113.31	-737.56	-605.77	954.80	918.08	36.73	25.998		
4,600.00	4,518.34	4,533.21	4,437.09	19.32	19.74	113.44	-756.29	-616.58	970.10	932.73	37.37	25.958		
4,700.00	4,617.72	4,654.12	4,556.82	19.57	20.06	113.54	-770.84	-624.98	981.85	943.87	37.98	25.853		
4,800.00	4,717.43	4,775.82	4,677.94	19.81	20.35	113.60	-781.05	-630.88	990.00	951.46	38.54	25.687		
4,900.00	4,817.34	4,898.03	4,799.96	20.03	20.62	113.62	-786.82	-634.21	994.52	955.46	39.05	25.465		
5,000.00	4,917.34	5,015.42	4,917.34	20.27	20.86	-91.85	-788.18	-634.99	995.51	955.97	39.54	25.175		

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Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
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Reference Well:	Horsetail #30H-1916	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	5,017.34	5,115.42	5,017.34	20.48	21.07	-91.85	-788.18	-634.99	995.51	955.55	39.97	24.907		
5,100.00	5,017.34	5,115.42	5,017.34	20.48	21.07	-91.85	-788.18	-634.99	995.51	955.55	39.97	24.907		
5,200.00	5,117.31	5,217.19	5,119.09	20.69	21.27	-91.84	-787.52	-634.99	995.53	955.13	40.39	24.646		
5,300.00	5,215.92	5,324.97	5,224.94	20.82	21.41	-91.73	-768.67	-634.99	995.46	954.80	40.66	24.482		
5,400.00	5,309.71	5,431.39	5,321.97	20.88	21.41	-91.34	-725.58	-634.99	995.25	954.53	40.72	24.444		
5,500.00	5,395.25	5,535.09	5,404.02	20.85	21.32	-90.69	-662.55	-634.99	995.00	954.40	40.61	24.504		
5,600.00	5,469.40	5,635.14	5,467.25	20.78	21.16	-89.83	-585.29	-634.99	994.88	954.48	40.40	24.627		
5,602.57	5,471.13	5,637.66	5,468.60	20.77	21.15	-89.80	-583.17	-634.99	994.88	954.49	40.39	24.630		
5,700.00	5,529.43	5,731.06	5,510.15	20.67	20.97	-88.82	-499.71	-634.99	995.04	954.88	40.16	24.778		
5,800.00	5,573.13	5,822.76	5,533.06	20.55	20.77	-87.70	-411.08	-634.99	995.59	955.65	39.94	24.926		
5,900.00	5,598.91	5,913.44	5,538.00	20.45	20.60	-86.54	-320.65	-634.99	996.56	956.76	39.80	25.041		
6,000.00	5,606.00	6,013.05	5,538.00	20.39	20.46	-86.09	-221.05	-634.99	996.95	957.14	39.81	25.042		
6,100.00	5,606.00	6,113.05	5,538.00	20.41	20.41	-86.09	-121.05	-634.99	996.88	956.84	40.05	24.892		
6,200.00	5,606.00	6,213.05	5,538.00	20.55	20.46	-86.09	-21.05	-634.99	996.82	956.32	40.50	24.615		
6,300.00	5,606.00	6,313.05	5,538.00	20.81	20.65	-86.09	78.95	-634.99	996.75	955.60	41.15	24.222		
6,400.00	5,606.00	6,413.05	5,538.00	21.19	20.98	-86.09	178.95	-634.99	996.68	954.68	42.00	23.731		
6,500.00	5,606.00	6,513.05	5,538.00	21.69	21.44	-86.09	278.95	-634.99	996.61	953.58	43.03	23.159		
6,600.00	5,606.00	6,613.05	5,538.00	22.28	22.03	-86.09	378.95	-634.99	996.54	952.31	44.24	22.527		
6,700.00	5,606.00	6,713.05	5,538.00	22.96	22.71	-86.09	478.95	-634.99	996.48	950.88	45.60	21.853		
6,800.00	5,606.00	6,813.05	5,538.00	23.72	23.47	-86.09	578.95	-634.99	996.41	949.30	47.11	21.152		
6,900.00	5,606.00	6,913.05	5,538.00	24.55	24.31	-86.09	678.95	-634.99	996.34	947.60	48.74	20.441		
7,000.00	5,606.00	7,013.05	5,538.00	25.43	25.20	-86.09	778.95	-634.99	996.27	945.77	50.50	19.729		
7,100.00	5,606.00	7,113.05	5,538.00	26.37	26.15	-86.09	878.95	-634.99	996.20	943.85	52.36	19.027		
7,200.00	5,606.00	7,213.05	5,538.00	27.35	27.14	-86.09	978.95	-634.99	996.14	941.82	54.31	18.340		
7,300.00	5,606.00	7,313.05	5,538.00	28.38	28.17	-86.09	1,078.95	-634.99	996.07	939.71	56.36	17.675		
7,400.00	5,606.00	7,413.05	5,538.00	29.45	29.24	-86.09	1,178.95	-634.99	996.00	937.53	58.47	17.034		
7,500.00	5,606.00	7,513.05	5,538.00	30.54	30.35	-86.08	1,278.95	-634.99	995.93	935.27	60.66	16.419		
7,600.00	5,606.00	7,613.05	5,538.00	31.67	31.48	-86.08	1,378.95	-634.99	995.86	932.96	62.91	15.831		
7,700.00	5,606.00	7,713.05	5,538.00	32.83	32.64	-86.08	1,478.95	-634.99	995.80	930.59	65.21	15.271		
7,800.00	5,606.00	7,813.05	5,538.00	34.01	33.82	-86.08	1,578.95	-634.98	995.73	928.17	67.56	14.739		
7,900.00	5,606.00	7,913.05	5,538.00	35.21	35.03	-86.08	1,678.95	-634.98	995.66	925.70	69.95	14.233		
8,000.00	5,606.00	8,013.05	5,538.00	36.43	36.25	-86.08	1,778.95	-634.98	995.59	923.20	72.39	13.753		
8,100.00	5,606.00	8,113.05	5,538.00	37.67	37.49	-86.08	1,878.95	-634.98	995.52	920.66	74.86	13.298		
8,200.00	5,606.00	8,213.05	5,538.00	38.92	38.75	-86.08	1,978.95	-634.98	995.46	918.09	77.37	12.867		
8,300.00	5,606.00	8,313.05	5,538.00	40.19	40.02	-86.08	2,078.95	-634.98	995.39	915.49	79.90	12.458		
8,400.00	5,606.00	8,413.05	5,538.00	41.47	41.31	-86.08	2,178.95	-634.98	995.32	912.86	82.46	12.070		
8,500.00	5,606.00	8,513.05	5,538.00	42.77	42.60	-86.08	2,278.95	-634.98	995.25	910.21	85.04	11.703		
8,600.00	5,606.00	8,613.05	5,538.00	44.07	43.91	-86.08	2,378.95	-634.98	995.18	907.53	87.65	11.354		
8,700.00	5,606.00	8,713.05	5,538.00	45.39	45.23	-86.08	2,478.95	-634.98	995.11	904.84	90.28	11.023		
8,800.00	5,606.00	8,813.05	5,538.00	46.71	46.56	-86.08	2,578.95	-634.98	995.05	902.12	92.92	10.708		
8,900.00	5,606.00	8,913.05	5,538.00	48.05	47.89	-86.08	2,678.95	-634.98	994.98	899.39	95.59	10.409		
9,000.00	5,606.00	9,013.05	5,538.00	49.39	49.23	-86.08	2,778.95	-634.98	994.91	896.65	98.26	10.125		
9,100.00	5,606.00	9,113.05	5,538.00	50.74	50.58	-86.08	2,878.95	-634.98	994.84	893.89	100.96	9.854		
9,200.00	5,606.00	9,213.05	5,538.00	52.09	51.94	-86.08	2,978.95	-634.98	994.77	891.11	103.66	9.596		
9,300.00	5,606.00	9,313.05	5,538.00	53.45	53.30	-86.08	3,078.95	-634.98	994.71	888.33	106.38	9.350		
9,400.00	5,606.00	9,413.05	5,538.00	54.82	54.67	-86.08	3,178.95	-634.98	994.64	885.53	109.11	9.116		
9,500.00	5,606.00	9,513.05	5,538.00	56.19	56.04	-86.08	3,278.95	-634.98	994.57	882.72	111.85	8.892		
9,600.00	5,606.00	9,613.05	5,538.00	57.57	57.42	-86.08	3,378.95	-634.98	994.50	879.90	114.60	8.678		
9,700.00	5,606.00	9,713.05	5,538.00	58.95	58.80	-86.08	3,478.95	-634.98	994.43	877.08	117.36	8.473		
9,800.00	5,606.00	9,813.05	5,538.00	60.33	60.19	-86.08	3,578.95	-634.98	994.37	874.24	120.13	8.278		
9,900.00	5,606.00	9,913.05	5,538.00	61.72	61.58	-86.08	3,678.95	-634.98	994.30	871.40	122.90	8.090		
10,000.00	5,606.00	10,013.05	5,538.00	63.12	62.97	-86.08	3,778.95	-634.98	994.23	868.55	125.68	7.911		

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 #30H-1916
Project:	Weld County, CO	TVD Reference:	KBE @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	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		
10,100.00	5,606.00	10,113.05	5,538.00	64.51	64.37	-86.08	3,878.95	-634.98	994.16	865.69	128.47	7.738		
10,200.00	5,606.00	10,213.05	5,538.00	65.91	65.77	-86.08	3,978.95	-634.98	994.09	862.82	131.27	7.573		
10,300.00	5,606.00	10,313.05	5,538.00	67.32	67.17	-86.08	4,078.95	-634.97	994.03	859.96	134.07	7.414		
10,400.00	5,606.00	10,413.05	5,538.00	68.72	68.58	-86.08	4,178.95	-634.97	993.96	857.08	136.88	7.262		
10,500.00	5,606.00	10,513.05	5,538.00	70.13	69.99	-86.08	4,278.95	-634.97	993.89	854.20	139.69	7.115		
10,600.00	5,606.00	10,613.05	5,538.00	71.54	71.40	-86.08	4,378.95	-634.97	993.82	851.31	142.51	6.974		
10,700.00	5,606.00	10,713.05	5,538.00	72.95	72.81	-86.08	4,478.95	-634.97	993.75	848.42	145.33	6.838		
10,800.00	5,606.00	10,813.05	5,538.00	74.37	74.23	-86.08	4,578.95	-634.97	993.69	845.53	148.16	6.707		
10,900.00	5,606.00	10,913.05	5,538.00	75.79	75.65	-86.08	4,678.95	-634.97	993.62	842.63	150.99	6.581		
11,000.00	5,606.00	11,013.05	5,538.00	77.21	77.07	-86.08	4,778.95	-634.97	993.55	839.72	153.83	6.459		
11,100.00	5,606.00	11,113.05	5,538.00	78.63	78.49	-86.08	4,878.95	-634.97	993.48	836.82	156.67	6.341		
11,200.00	5,606.00	11,213.05	5,538.00	80.05	79.91	-86.07	4,978.95	-634.97	993.41	833.91	159.51	6.228		
11,300.00	5,606.00	11,313.05	5,538.00	81.48	81.34	-86.07	5,078.95	-634.97	993.35	830.99	162.35	6.118		
11,400.00	5,606.00	11,413.05	5,538.00	82.90	82.77	-86.07	5,178.95	-634.97	993.28	828.08	165.20	6.012		
11,500.00	5,606.00	11,513.05	5,538.00	84.33	84.19	-86.07	5,278.95	-634.97	993.21	825.16	168.05	5.910		
11,600.00	5,606.00	11,613.05	5,538.00	85.76	85.62	-86.07	5,378.95	-634.97	993.14	822.23	170.91	5.811		
11,700.00	5,606.00	11,713.05	5,538.00	87.19	87.06	-86.07	5,478.95	-634.97	993.07	819.31	173.77	5.715		
11,800.00	5,606.00	11,813.04	5,538.00	88.63	88.49	-86.07	5,578.95	-634.97	993.01	816.38	176.63	5.622		
11,900.00	5,606.00	11,913.04	5,538.00	90.06	89.92	-86.07	5,678.95	-634.97	992.94	813.45	179.49	5.532		
12,000.00	5,606.00	12,013.04	5,538.00	91.49	91.36	-86.07	5,778.95	-634.97	992.87	810.51	182.36	5.445		
12,100.00	5,606.00	12,113.04	5,538.00	92.93	92.79	-86.07	5,878.95	-634.97	992.80	807.58	185.22	5.360		
12,200.00	5,606.00	12,213.04	5,538.00	94.37	94.23	-86.07	5,978.95	-634.97	992.73	804.64	188.09	5.278		
12,300.00	5,606.00	12,313.04	5,538.00	95.81	95.67	-86.07	6,078.95	-634.97	992.67	801.70	190.96	5.198		
12,400.00	5,606.00	12,413.04	5,538.00	97.25	97.11	-86.07	6,178.95	-634.97	992.60	798.76	193.84	5.121		
12,500.00	5,606.00	12,513.04	5,538.00	98.69	98.55	-86.07	6,278.95	-634.97	992.53	795.82	196.71	5.046		
12,600.00	5,606.00	12,613.04	5,538.00	100.13	99.99	-86.07	6,378.95	-634.97	992.46	792.87	199.59	4.973		
12,700.00	5,606.00	12,713.04	5,538.00	101.57	101.43	-86.07	6,478.95	-634.96	992.39	789.93	202.47	4.901		
12,800.00	5,606.00	12,813.04	5,538.00	103.01	102.88	-86.07	6,578.95	-634.96	992.33	786.98	205.35	4.832		
12,900.00	5,606.00	12,913.04	5,538.00	104.46	104.32	-86.07	6,678.95	-634.96	992.26	784.03	208.23	4.765		
13,000.00	5,606.00	13,013.04	5,538.00	105.90	105.76	-86.07	6,778.95	-634.96	992.19	781.08	211.12	4.700		
13,100.00	5,606.00	13,113.04	5,538.00	107.35	107.21	-86.07	6,878.95	-634.96	992.12	778.12	214.00	4.636		
13,200.00	5,606.00	13,213.04	5,538.00	108.79	108.66	-86.07	6,978.95	-634.96	992.05	775.17	216.89	4.574		
13,300.00	5,606.00	13,313.04	5,538.00	110.24	110.10	-86.07	7,078.95	-634.96	991.99	772.21	219.77	4.514		
13,400.00	5,606.00	13,413.04	5,538.00	111.68	111.55	-86.07	7,178.95	-634.96	991.92	769.25	222.66	4.455		
13,500.00	5,606.00	13,513.04	5,538.00	113.13	113.00	-86.07	7,278.95	-634.96	991.85	766.30	225.55	4.397		
13,600.00	5,606.00	13,613.04	5,538.00	114.58	114.45	-86.07	7,378.95	-634.96	991.78	763.34	228.45	4.341		
13,700.00	5,606.00	13,713.04	5,538.00	116.03	115.89	-86.07	7,478.95	-634.96	991.71	760.38	231.34	4.287		
13,759.87	5,606.00	13,772.92	5,538.00	116.80	116.76	-86.07	7,538.82	-634.96	991.67	758.67	233.00	4.256 SF		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30H-1916
Project:	Weld County, CO	TVD Reference:	KBE @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	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	-90.01	-0.02	-119.96	119.96					
100.00	100.00	100.00	100.00	0.13	0.13	-90.01	-0.02	-119.96	119.96	119.69	0.27	450.376		
200.00	200.00	200.00	200.00	0.47	0.47	-90.01	-0.02	-119.96	119.96	119.02	0.94	127.526		
300.00	300.00	300.00	300.00	0.81	0.81	-90.01	-0.02	-119.96	119.96	118.34	1.61	74.279 CC, ES		
400.00	399.98	398.99	398.97	1.11	1.11	115.38	-1.68	-120.37	121.12	118.91	2.21	54.684		
500.00	499.84	497.91	497.75	1.41	1.40	115.18	-6.66	-121.59	124.61	121.81	2.80	44.461		
600.00	599.45	596.66	596.13	1.74	1.72	114.87	-14.92	-123.63	130.42	126.97	3.45	37.838		
700.00	698.70	695.18	693.93	2.07	2.05	114.47	-26.45	-126.47	138.54	134.40	4.14	33.476		
800.00	797.47	793.39	790.96	2.44	2.40	114.01	-41.18	-130.10	148.96	144.08	4.88	30.543		
900.00	895.63	891.93	887.81	2.84	2.79	113.67	-58.78	-134.43	161.55	155.89	5.66	28.554		
1,000.00	993.49	991.04	985.14	3.26	3.20	113.87	-76.90	-138.90	174.85	168.39	6.46	27.085		
1,100.00	1,091.36	1,090.15	1,082.48	3.69	3.61	114.05	-95.01	-143.36	188.14	180.87	7.27	25.869		
1,200.00	1,189.23	1,189.26	1,179.82	4.13	4.03	114.21	-113.13	-147.82	201.44	193.34	8.10	24.858		
1,300.00	1,287.10	1,288.37	1,277.16	4.58	4.46	114.34	-131.24	-152.28	214.74	205.80	8.94	24.009		
1,400.00	1,384.97	1,387.48	1,374.50	5.02	4.89	114.46	-149.36	-156.75	228.05	218.25	9.79	23.288		
1,500.00	1,482.84	1,486.59	1,471.84	5.47	5.32	114.57	-167.47	-161.21	241.35	230.70	10.65	22.671		
1,600.00	1,580.70	1,585.70	1,569.18	5.92	5.75	114.66	-185.58	-165.67	254.65	243.15	11.50	22.137		
1,700.00	1,678.57	1,684.81	1,666.51	6.38	6.18	114.75	-203.70	-170.13	267.96	255.59	12.36	21.671		
1,800.00	1,776.44	1,783.92	1,763.85	6.83	6.61	114.82	-221.81	-174.60	281.26	268.03	13.23	21.262		
1,900.00	1,874.31	1,883.03	1,861.19	7.29	7.05	114.89	-239.93	-179.06	294.57	280.47	14.09	20.900		
2,000.00	1,972.18	1,982.14	1,958.53	7.74	7.48	114.96	-258.04	-183.52	307.87	292.91	14.96	20.578		
2,100.00	2,070.05	2,081.25	2,055.87	8.20	7.92	115.02	-276.16	-187.99	321.18	305.35	15.83	20.288		
2,200.00	2,167.92	2,180.36	2,153.21	8.66	8.36	115.07	-294.27	-192.45	334.48	317.78	16.70	20.028		
2,300.00	2,265.78	2,279.47	2,250.55	9.12	8.79	115.12	-312.39	-196.91	347.79	330.22	17.57	19.792		
2,400.00	2,363.65	2,378.58	2,347.88	9.57	9.23	115.17	-330.50	-201.37	361.10	342.65	18.44	19.577		
2,500.00	2,461.52	2,477.69	2,445.22	10.03	9.67	115.21	-348.62	-205.84	374.40	355.08	19.32	19.381		
2,600.00	2,559.39	2,576.80	2,542.56	10.49	10.11	115.25	-366.73	-210.30	387.71	367.52	20.19	19.201		
2,700.00	2,657.26	2,675.91	2,639.90	10.95	10.55	115.29	-384.84	-214.76	401.02	379.95	21.07	19.036		
2,800.00	2,755.13	2,775.02	2,737.24	11.41	10.99	115.33	-402.96	-219.22	414.32	392.38	21.94	18.884		
2,900.00	2,852.99	2,874.13	2,834.58	11.87	11.42	115.36	-421.07	-223.69	427.63	404.82	22.82	18.742		
3,000.00	2,950.86	2,973.24	2,931.92	12.33	11.86	115.39	-439.19	-228.15	440.94	417.25	23.69	18.611		
3,100.00	3,048.73	3,072.35	3,029.25	12.79	12.30	115.42	-457.30	-232.61	454.25	429.68	24.57	18.489		
3,200.00	3,146.60	3,171.46	3,126.59	13.25	12.74	115.45	-475.42	-237.08	467.55	442.11	25.44	18.375		
3,300.00	3,244.47	3,270.57	3,223.93	13.71	13.18	115.47	-493.53	-241.54	480.86	454.54	26.32	18.269		
3,400.00	3,342.34	3,369.68	3,321.27	14.17	13.62	115.50	-511.65	-246.00	494.17	466.97	27.20	18.169		
3,500.00	3,440.20	3,468.79	3,418.61	14.63	14.06	115.52	-529.76	-250.46	507.48	479.40	28.08	18.075		
3,600.00	3,538.07	3,567.90	3,515.95	15.09	14.50	115.54	-547.87	-254.93	520.79	491.83	28.95	17.987		
3,700.00	3,635.94	3,667.01	3,613.29	15.56	14.94	115.56	-565.99	-259.39	534.10	504.26	29.83	17.904		
3,800.00	3,733.81	3,766.12	3,710.62	16.02	15.38	115.58	-584.10	-263.85	547.40	516.69	30.71	17.825		
3,900.00	3,831.68	3,865.23	3,807.96	16.48	15.82	115.60	-602.22	-268.31	560.71	529.12	31.59	17.751		
4,000.00	3,929.55	3,964.35	3,905.30	16.94	16.26	115.62	-620.33	-272.78	574.02	541.56	32.47	17.681		
4,100.00	4,027.42	4,063.46	4,002.64	17.40	16.70	115.64	-638.45	-277.24	587.33	553.99	33.34	17.614		
4,200.00	4,125.28	4,162.57	4,099.98	17.86	17.14	115.65	-656.56	-281.70	600.64	566.42	34.22	17.551		
4,300.00	4,223.15	4,261.68	4,197.32	18.32	17.58	115.67	-674.68	-286.17	613.95	578.85	35.10	17.491		
4,400.00	4,321.04	4,360.79	4,294.66	18.76	18.02	115.73	-692.79	-290.63	627.21	591.25	35.96	17.442		
4,500.00	4,419.41	4,462.53	4,394.66	19.05	18.43	115.79	-710.97	-295.11	639.30	602.65	36.65	17.444		
4,600.00	4,518.34	4,567.39	4,498.28	19.32	18.74	115.79	-726.56	-298.95	649.18	611.94	37.24	17.434		
4,700.00	4,617.72	4,672.61	4,602.78	19.57	19.00	115.80	-738.49	-301.89	656.71	618.95	37.77	17.388		
4,800.00	4,717.43	4,778.10	4,707.92	19.81	19.25	115.80	-746.70	-303.91	661.89	623.62	38.27	17.296		
4,900.00	4,817.34	4,883.76	4,813.47	20.03	19.49	115.81	-751.16	-305.01	664.69	625.95	38.74	17.158		
5,000.00	4,917.34	4,987.63	4,917.34	20.27	19.74	-89.66	-752.02	-305.22	665.23	625.99	39.24	16.953		
5,100.00	5,017.34	5,087.63	5,017.34	20.48	19.95	-89.66	-752.02	-305.22	665.23	625.57	39.67	16.771		

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 #30H-1916
Project:	Weld County, CO	TVD Reference:	KBE @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	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	5,117.31	5,187.39	5,117.07	20.69	20.15	-89.62	-751.03	-305.22	665.23	625.15	40.08	16.596		
5,300.00	5,215.92	5,286.64	5,214.96	20.82	20.29	-89.63	-735.55	-305.22	665.22	624.86	40.36	16.483		
5,400.00	5,309.71	5,385.93	5,308.17	20.88	20.34	-89.66	-701.80	-305.22	665.20	624.74	40.46	16.442		
5,500.00	5,395.25	5,485.28	5,393.36	20.85	20.32	-89.69	-650.97	-305.22	665.16	624.74	40.42	16.458		
5,600.00	5,469.40	5,584.71	5,467.42	20.78	20.26	-89.74	-584.85	-305.22	665.11	624.83	40.28	16.511		
5,700.00	5,529.43	5,684.25	5,527.66	20.67	20.17	-89.80	-505.79	-305.22	665.05	624.93	40.12	16.576		
5,800.00	5,573.13	5,783.92	5,571.82	20.55	20.09	-89.87	-416.62	-305.22	664.99	625.00	39.99	16.629		
5,900.00	5,598.91	5,883.72	5,598.25	20.45	20.04	-89.94	-320.54	-305.22	664.92	624.99	39.94	16.649		
6,000.00	5,606.00	5,983.66	5,606.00	20.39	20.05	-90.00	-221.05	-305.22	664.86	624.86	40.00	16.623		
6,100.00	5,606.00	6,083.66	5,606.00	20.41	20.16	-90.00	-121.05	-305.22	664.79	624.53	40.25	16.515		
6,200.00	5,606.00	6,183.66	5,606.00	20.55	20.37	-90.00	-21.05	-305.22	664.72	624.00	40.72	16.324		
6,300.00	5,606.00	6,283.66	5,606.00	20.81	20.69	-90.00	78.95	-305.22	664.65	623.26	41.39	16.058		
6,400.00	5,606.00	6,383.66	5,606.00	21.19	21.11	-90.00	178.95	-305.22	664.58	622.33	42.25	15.728		
6,500.00	5,606.00	6,483.66	5,606.00	21.69	21.63	-90.00	278.95	-305.22	664.51	621.21	43.30	15.346		
6,600.00	5,606.00	6,583.66	5,606.00	22.28	22.24	-90.00	378.95	-305.22	664.45	619.93	44.52	14.924		
6,700.00	5,606.00	6,683.66	5,606.00	22.96	22.93	-90.00	478.95	-305.21	664.38	618.48	45.90	14.476		
6,800.00	5,606.00	6,783.66	5,606.00	23.72	23.70	-90.00	578.95	-305.21	664.31	616.90	47.41	14.011		
6,900.00	5,606.00	6,883.66	5,606.00	24.55	24.53	-90.00	678.95	-305.21	664.24	615.18	49.06	13.539		
7,000.00	5,606.00	6,983.66	5,606.00	25.43	25.41	-90.00	778.95	-305.21	664.17	613.35	50.83	13.068		
7,100.00	5,606.00	7,083.66	5,606.00	26.37	26.35	-90.00	878.95	-305.21	664.10	611.41	52.70	12.602		
7,200.00	5,606.00	7,183.66	5,606.00	27.35	27.34	-90.00	978.95	-305.21	664.04	609.37	54.66	12.148		
7,300.00	5,606.00	7,283.66	5,606.00	28.38	28.37	-90.00	1,078.95	-305.21	663.97	607.26	56.71	11.708		
7,400.00	5,606.00	7,383.66	5,606.00	29.45	29.44	-90.00	1,178.95	-305.21	663.90	605.06	58.84	11.284		
7,500.00	5,606.00	7,483.66	5,606.00	30.54	30.54	-90.00	1,278.95	-305.21	663.83	602.80	61.03	10.877		
7,600.00	5,606.00	7,583.66	5,606.00	31.67	31.67	-90.00	1,378.95	-305.21	663.76	600.48	63.28	10.488		
7,700.00	5,606.00	7,683.66	5,606.00	32.83	32.83	-90.00	1,478.95	-305.21	663.70	598.10	65.59	10.118		
7,800.00	5,606.00	7,783.66	5,606.00	34.01	34.01	-90.00	1,578.95	-305.21	663.63	595.67	67.95	9.766		
7,900.00	5,606.00	7,883.66	5,606.00	35.21	35.21	-90.00	1,678.95	-305.21	663.56	593.20	70.35	9.432		
8,000.00	5,606.00	7,983.66	5,606.00	36.43	36.44	-90.00	1,778.95	-305.21	663.49	590.69	72.80	9.114		
8,100.00	5,606.00	8,083.66	5,606.00	37.67	37.68	-90.00	1,878.95	-305.21	663.42	588.15	75.27	8.813		
8,200.00	5,606.00	8,183.66	5,606.00	38.92	38.93	-90.00	1,978.95	-305.21	663.35	585.57	77.79	8.528		
8,300.00	5,606.00	8,283.66	5,606.00	40.19	40.21	-90.00	2,078.95	-305.21	663.29	582.96	80.32	8.258		
8,400.00	5,606.00	8,383.66	5,606.00	41.47	41.49	-90.00	2,178.95	-305.21	663.22	580.33	82.89	8.001		
8,500.00	5,606.00	8,483.66	5,606.00	42.77	42.79	-90.00	2,278.95	-305.21	663.15	577.67	85.48	7.758		
8,600.00	5,606.00	8,583.66	5,606.00	44.07	44.10	-90.00	2,378.95	-305.21	663.08	574.99	88.10	7.527		
8,700.00	5,606.00	8,683.66	5,606.00	45.39	45.41	-90.00	2,478.95	-305.20	663.01	572.28	90.73	7.308		
8,800.00	5,606.00	8,783.66	5,606.00	46.71	46.74	-90.00	2,578.95	-305.20	662.94	569.56	93.38	7.099		
8,900.00	5,606.00	8,883.66	5,606.00	48.05	48.08	-90.00	2,678.95	-305.20	662.88	566.83	96.05	6.901		
9,000.00	5,606.00	8,983.66	5,606.00	49.39	49.42	-90.00	2,778.95	-305.20	662.81	564.07	98.73	6.713		
9,100.00	5,606.00	9,083.66	5,606.00	50.74	50.77	-90.00	2,878.95	-305.20	662.74	561.31	101.43	6.534		
9,200.00	5,606.00	9,183.66	5,606.00	52.09	52.13	-90.00	2,978.95	-305.20	662.67	558.53	104.14	6.363		
9,300.00	5,606.00	9,283.66	5,606.00	53.45	53.49	-90.00	3,078.95	-305.20	662.60	555.73	106.87	6.200		
9,400.00	5,606.00	9,383.66	5,606.00	54.82	54.86	-90.00	3,178.95	-305.20	662.53	552.93	109.60	6.045		
9,500.00	5,606.00	9,483.66	5,606.00	56.19	56.23	-90.00	3,278.95	-305.20	662.47	550.12	112.35	5.896		
9,600.00	5,606.00	9,583.66	5,606.00	57.57	57.61	-90.00	3,378.95	-305.20	662.40	547.29	115.11	5.755		
9,700.00	5,606.00	9,683.66	5,606.00	58.95	58.99	-90.00	3,478.95	-305.20	662.33	544.46	117.87	5.619		
9,800.00	5,606.00	9,783.66	5,606.00	60.33	60.38	-90.00	3,578.95	-305.20	662.26	541.62	120.64	5.489		
9,900.00	5,606.00	9,883.66	5,606.00	61.72	61.77	-90.00	3,678.95	-305.20	662.19	538.77	123.43	5.365		
10,000.00	5,606.00	9,983.66	5,606.00	63.12	63.17	-90.00	3,778.95	-305.20	662.13	535.91	126.21	5.246		
10,100.00	5,606.00	10,083.66	5,606.00	64.51	64.56	-90.00	3,878.95	-305.20	662.06	533.05	129.01	5.132		
10,200.00	5,606.00	10,183.66	5,606.00	65.91	65.96	-90.00	3,978.95	-305.20	661.99	530.18	131.81	5.022		
10,300.00	5,606.00	10,283.66	5,606.00	67.32	67.37	-90.00	4,078.95	-305.20	661.92	527.30	134.62	4.917		

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 #30H-1916
Project:	Weld County, CO	TVD Reference:	KBE @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
10,400.00	5,606.00	10,383.66	5,606.00	68.72	68.78	-90.00	4,178.95	-305.20	661.85	524.42	137.43	4.816		
10,500.00	5,606.00	10,483.66	5,606.00	70.13	70.19	-90.00	4,278.95	-305.20	661.78	521.53	140.25	4.719		
10,600.00	5,606.00	10,583.66	5,606.00	71.54	71.60	-90.00	4,378.95	-305.20	661.72	518.64	143.08	4.625		
10,700.00	5,606.00	10,683.66	5,606.00	72.95	73.01	-90.00	4,478.95	-305.20	661.65	515.74	145.90	4.535		
10,800.00	5,606.00	10,783.66	5,606.00	74.37	74.43	-90.00	4,578.95	-305.19	661.58	512.84	148.74	4.448		
10,900.00	5,606.00	10,883.66	5,606.00	75.79	75.85	-90.00	4,678.95	-305.19	661.51	509.94	151.58	4.364		
11,000.00	5,606.00	10,983.66	5,606.00	77.21	77.27	-90.00	4,778.95	-305.19	661.44	507.03	154.42	4.283		
11,100.00	5,606.00	11,083.66	5,606.00	78.63	78.69	-90.00	4,878.95	-305.19	661.37	504.11	157.26	4.206		
11,200.00	5,606.00	11,183.66	5,606.00	80.05	80.12	-90.00	4,978.95	-305.19	661.31	501.20	160.11	4.130		
11,300.00	5,606.00	11,283.66	5,606.00	81.48	81.54	-90.00	5,078.95	-305.19	661.24	498.28	162.96	4.058		
11,400.00	5,606.00	11,383.66	5,606.00	82.90	82.97	-90.00	5,178.95	-305.19	661.17	495.35	165.82	3.987		
11,500.00	5,606.00	11,483.66	5,606.00	84.33	84.40	-90.00	5,278.95	-305.19	661.10	492.43	168.68	3.919		
11,600.00	5,606.00	11,583.66	5,606.00	85.76	85.83	-90.00	5,378.95	-305.19	661.03	489.50	171.54	3.854		
11,700.00	5,606.00	11,683.66	5,606.00	87.19	87.26	-90.00	5,478.95	-305.19	660.97	486.56	174.40	3.790		
11,800.00	5,606.00	11,783.66	5,606.00	88.63	88.70	-90.00	5,578.95	-305.19	660.90	483.63	177.27	3.728		
11,900.00	5,606.00	11,883.66	5,606.00	90.06	90.13	-90.00	5,678.95	-305.19	660.83	480.69	180.14	3.668		
12,000.00	5,606.00	11,983.66	5,606.00	91.49	91.57	-90.00	5,778.95	-305.19	660.76	477.75	183.01	3.611		
12,100.00	5,606.00	12,083.66	5,606.00	92.93	93.00	-90.00	5,878.95	-305.19	660.69	474.81	185.88	3.554		
12,200.00	5,606.00	12,183.66	5,606.00	94.37	94.44	-90.00	5,978.95	-305.19	660.62	471.87	188.76	3.500		
12,300.00	5,606.00	12,283.66	5,606.00	95.81	95.88	-90.00	6,078.95	-305.19	660.56	468.92	191.63	3.447		
12,400.00	5,606.00	12,383.66	5,606.00	97.25	97.32	-90.00	6,178.95	-305.19	660.49	465.97	194.51	3.396		
12,500.00	5,606.00	12,483.66	5,606.00	98.69	98.76	-90.00	6,278.95	-305.19	660.42	463.02	197.40	3.346		
12,600.00	5,606.00	12,583.66	5,606.00	100.13	100.20	-90.00	6,378.95	-305.19	660.35	460.07	200.28	3.297		
12,700.00	5,606.00	12,683.66	5,606.00	101.57	101.64	-90.00	6,478.95	-305.19	660.28	457.12	203.16	3.250		
12,800.00	5,606.00	12,783.66	5,606.00	103.01	103.09	-90.00	6,578.95	-305.19	660.21	454.16	206.05	3.204		
12,900.00	5,606.00	12,883.66	5,606.00	104.46	104.53	-90.00	6,678.95	-305.18	660.15	451.21	208.94	3.160		
13,000.00	5,606.00	12,983.66	5,606.00	105.90	105.98	-90.00	6,778.95	-305.18	660.08	448.25	211.83	3.116		
13,100.00	5,606.00	13,083.66	5,606.00	107.35	107.42	-90.00	6,878.95	-305.18	660.01	445.29	214.72	3.074		
13,200.00	5,606.00	13,183.66	5,606.00	108.79	108.87	-90.00	6,978.95	-305.18	659.94	442.33	217.61	3.033		
13,300.00	5,606.00	13,283.66	5,606.00	110.24	110.32	-90.00	7,078.95	-305.18	659.87	439.37	220.51	2.993		
13,400.00	5,606.00	13,383.66	5,606.00	111.68	111.76	-90.00	7,178.95	-305.18	659.81	436.40	223.40	2.953		
13,500.00	5,606.00	13,483.66	5,606.00	113.13	113.21	-90.00	7,278.95	-305.18	659.74	433.44	226.30	2.915		
13,600.00	5,606.00	13,583.66	5,606.00	114.58	114.66	-90.00	7,378.95	-305.18	659.67	430.47	229.20	2.878		
13,700.00	5,606.00	13,683.66	5,606.00	116.03	116.11	-90.00	7,478.95	-305.18	659.60	427.50	232.10	2.842		
13,759.87	5,606.00	13,743.52	5,606.00	116.80	116.98	-90.00	7,538.82	-305.18	659.56	425.80	233.76	2.821 SF		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30H-1916
Project:	Weld County, CO	TVD Reference:	KBE @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	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	400.11	400.09	1.11	1.11	115.29	-1.75	-59.89	60.64	58.42	2.21	27.397		
500.00	499.84	500.19	500.02	1.41	1.41	114.80	-6.98	-59.61	62.61	59.82	2.79	22.412		
600.00	599.45	600.21	599.66	1.74	1.73	114.04	-15.69	-59.15	65.91	62.48	3.43	19.210		
700.00	698.70	700.15	698.85	2.07	2.06	113.09	-27.86	-58.50	70.54	66.42	4.12	17.125		
800.00	797.47	799.98	797.45	2.44	2.42	112.03	-43.46	-57.67	76.50	71.64	4.86	15.744		
900.00	895.63	899.70	895.47	2.84	2.82	111.41	-61.79	-56.70	83.78	78.13	5.65	14.826		
1,000.00	993.49	999.40	993.41	3.26	3.23	111.71	-80.35	-55.72	91.61	85.14	6.47	14.160		
1,100.00	1,091.36	1,099.09	1,091.35	3.69	3.64	111.96	-98.92	-54.73	99.44	92.14	7.31	13.613		
1,200.00	1,189.23	1,198.78	1,189.30	4.13	4.07	112.18	-117.48	-53.75	107.28	99.13	8.15	13.159		
1,300.00	1,287.10	1,298.47	1,287.24	4.58	4.49	112.37	-136.05	-52.76	115.12	106.11	9.01	12.779		
1,400.00	1,384.97	1,398.16	1,385.18	5.02	4.92	112.53	-154.61	-51.78	122.95	113.08	9.87	12.457		
1,500.00	1,482.84	1,497.86	1,483.12	5.47	5.35	112.68	-173.17	-50.79	130.79	120.06	10.74	12.182		
1,600.00	1,580.70	1,597.55	1,581.07	5.92	5.79	112.80	-191.74	-49.81	138.63	127.02	11.61	11.944		
1,700.00	1,678.57	1,697.24	1,679.01	6.38	6.22	112.92	-210.30	-48.82	146.47	133.99	12.48	11.737		
1,800.00	1,776.44	1,796.93	1,776.95	6.83	6.65	113.02	-228.87	-47.84	154.31	140.96	13.35	11.555		
1,900.00	1,874.31	1,896.62	1,874.90	7.29	7.09	113.11	-247.43	-46.85	162.15	147.92	14.23	11.394		
2,000.00	1,972.18	1,996.31	1,972.84	7.74	7.53	113.20	-265.99	-45.87	169.99	154.88	15.11	11.250		
2,100.00	2,070.05	2,096.01	2,070.78	8.20	7.96	113.27	-284.56	-44.88	177.84	161.85	15.99	11.122		
2,200.00	2,167.92	2,195.70	2,168.73	8.66	8.40	113.34	-303.12	-43.90	185.68	168.81	16.87	11.006		
2,300.00	2,265.78	2,295.39	2,266.67	9.12	8.84	113.41	-321.69	-42.91	193.52	175.77	17.75	10.901		
2,400.00	2,363.65	2,395.08	2,364.61	9.57	9.28	113.47	-340.25	-41.93	201.36	182.73	18.63	10.806		
2,500.00	2,461.52	2,494.77	2,462.56	10.03	9.72	113.52	-358.81	-40.94	209.21	189.69	19.52	10.719		
2,600.00	2,559.39	2,594.47	2,560.50	10.49	10.16	113.57	-377.38	-39.96	217.05	196.65	20.40	10.639		
2,700.00	2,657.26	2,694.16	2,658.44	10.95	10.60	113.62	-395.94	-38.97	224.89	203.61	21.29	10.566		
2,800.00	2,755.13	2,793.85	2,756.39	11.41	11.04	113.66	-414.51	-37.99	232.73	210.56	22.17	10.498		
2,900.00	2,852.99	2,893.54	2,854.33	11.87	11.48	113.70	-433.07	-37.00	240.58	217.52	23.05	10.435		
3,000.00	2,950.86	2,993.23	2,952.27	12.33	11.92	113.74	-451.64	-36.02	248.42	224.48	23.94	10.377		
3,100.00	3,048.73	3,092.92	3,050.21	12.79	12.36	113.78	-470.20	-35.04	256.26	231.44	24.83	10.323		
3,200.00	3,146.60	3,192.62	3,148.16	13.25	12.80	113.81	-488.76	-34.05	264.11	238.40	25.71	10.272		
3,300.00	3,244.47	3,292.31	3,246.10	13.71	13.24	113.85	-507.33	-33.07	271.95	245.35	26.60	10.225		
3,400.00	3,342.34	3,392.00	3,344.04	14.17	13.68	113.88	-525.89	-32.08	279.80	252.31	27.48	10.180		
3,500.00	3,440.20	3,491.69	3,441.99	14.63	14.12	113.90	-544.46	-31.10	287.64	259.27	28.37	10.139		
3,600.00	3,538.07	3,591.38	3,539.93	15.09	14.56	113.93	-563.02	-30.11	295.48	266.23	29.26	10.100		
3,700.00	3,635.94	3,691.08	3,637.87	15.56	15.00	113.96	-581.58	-29.13	303.33	273.18	30.14	10.063		
3,800.00	3,733.81	3,790.77	3,735.82	16.02	15.44	113.98	-600.15	-28.14	311.17	280.14	31.03	10.028		
3,900.00	3,831.68	3,890.46	3,833.76	16.48	15.88	114.01	-618.71	-27.16	319.02	287.10	31.92	9.995		
4,000.00	3,929.55	3,990.15	3,931.70	16.94	16.33	114.03	-637.28	-26.17	326.86	294.05	32.81	9.964		
4,100.00	4,027.42	4,089.84	4,029.65	17.40	16.77	114.05	-655.84	-25.19	334.70	301.01	33.69	9.934		
4,200.00	4,125.28	4,189.53	4,127.59	17.86	17.21	114.07	-674.40	-24.20	342.55	307.97	34.58	9.906		
4,300.00	4,223.15	4,289.23	4,225.53	18.32	17.65	114.09	-692.97	-23.22	350.39	314.92	35.47	9.879		
4,400.00	4,321.04	4,388.73	4,323.35	18.76	18.05	114.17	-711.21	-22.25	358.20	321.91	36.30	9.869		
4,500.00	4,419.41	4,488.01	4,421.41	19.05	18.33	114.44	-726.59	-21.43	365.10	328.26	36.83	9.912		
4,600.00	4,518.34	4,587.32	4,519.99	19.32	18.58	114.72	-738.58	-20.80	370.69	333.35	37.34	9.927		
4,700.00	4,617.72	4,686.64	4,618.93	19.57	18.82	115.01	-747.15	-20.34	374.98	337.16	37.82	9.915		
4,800.00	4,717.43	4,785.94	4,718.10	19.81	19.05	115.32	-752.29	-20.07	377.96	339.70	38.27	9.877		
4,900.00	4,817.34	4,885.20	4,817.34	20.03	19.29	115.65	-754.00	-19.98	379.64	340.92	38.72	9.806		
5,000.00	4,917.34	4,985.20	4,917.34	20.27	19.51	-89.70	-754.00	-19.98	379.99	340.82	39.17	9.701		
5,100.00	5,017.34	5,085.20	5,017.34	20.48	19.72	-89.70	-754.00	-19.98	379.99	340.39	39.59	9.597		

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 #30H-1916
Project:	Weld County, CO	TVD Reference:	KBE @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	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		
5,140.52	5,057.85	5,125.67	5,057.77	20.56	19.79	-89.50	-752.40	-19.97	379.98	340.24	39.75	9.561		
5,200.00	5,117.31	5,184.16	5,115.70	20.69	19.88	-88.38	-744.57	-19.93	380.08	340.18	39.89	9.528		
5,300.00	5,215.92	5,280.62	5,208.19	20.82	19.95	-86.51	-717.65	-19.78	380.47	340.49	39.98	9.517		
5,400.00	5,309.71	5,375.06	5,292.42	20.88	19.96	-84.79	-675.25	-19.56	381.08	341.20	39.89	9.554		
5,500.00	5,395.25	5,467.75	5,366.34	20.85	19.91	-83.27	-619.53	-19.26	381.81	342.14	39.67	9.625		
5,600.00	5,469.40	5,559.00	5,428.35	20.78	19.84	-81.98	-552.74	-18.90	382.51	343.13	39.38	9.714		
5,700.00	5,529.43	5,650.00	5,477.65	20.67	19.77	-80.96	-476.39	-18.49	383.06	343.97	39.09	9.800		
5,800.00	5,573.13	5,738.40	5,512.14	20.55	19.73	-80.25	-395.12	-18.05	383.35	344.47	38.88	9.860		
5,900.00	5,598.91	5,827.13	5,532.45	20.45	19.72	-79.85	-308.85	-17.59	383.28	344.47	38.81	9.876		
6,000.00	5,606.00	5,917.23	5,538.00	20.39	19.76	-79.77	-219.02	-17.10	382.83	343.93	38.91	9.840		
6,100.00	5,606.00	6,017.23	5,538.00	20.41	19.90	-79.75	-119.03	-16.57	382.24	343.08	39.16	9.761		
6,200.00	5,606.00	6,117.23	5,538.00	20.55	20.15	-79.74	-19.03	-16.03	381.64	342.02	39.62	9.632		
6,300.00	5,606.00	6,217.22	5,538.00	20.81	20.50	-79.72	80.97	-15.49	381.05	340.76	40.29	9.458		
6,400.00	5,606.00	6,317.22	5,538.00	21.19	20.94	-79.70	180.96	-14.95	380.45	339.30	41.15	9.246		
6,500.00	5,606.00	6,417.22	5,538.00	21.69	21.48	-79.69	280.96	-14.42	379.86	337.66	42.19	9.003		
6,600.00	5,606.00	6,517.22	5,538.00	22.28	22.11	-79.67	380.96	-13.88	379.26	335.86	43.40	8.738		
6,700.00	5,606.00	6,617.22	5,538.00	22.96	22.81	-79.65	480.95	-13.34	378.67	333.89	44.77	8.458		
6,800.00	5,606.00	6,717.21	5,538.00	23.72	23.58	-79.64	580.95	-12.80	378.07	331.79	46.28	8.169		
6,900.00	5,606.00	6,817.21	5,538.00	24.55	24.42	-79.62	680.95	-12.27	377.47	329.56	47.91	7.878		
7,000.00	5,606.00	6,917.21	5,538.00	25.43	25.31	-79.61	780.94	-11.73	376.88	327.21	49.67	7.588		
7,100.00	5,606.00	7,017.21	5,538.00	26.37	26.26	-79.59	880.94	-11.19	376.28	324.76	51.52	7.304		
7,200.00	5,606.00	7,117.21	5,538.00	27.35	27.25	-79.57	980.94	-10.65	375.69	322.22	53.47	7.026		
7,300.00	5,606.00	7,217.21	5,538.00	28.38	28.28	-79.56	1,080.93	-10.12	375.09	319.60	55.50	6.759		
7,400.00	5,606.00	7,317.20	5,538.00	29.45	29.36	-79.54	1,180.93	-9.58	374.50	316.90	57.60	6.502		
7,500.00	5,606.00	7,417.20	5,538.00	30.54	30.46	-79.52	1,280.93	-9.04	373.90	314.13	59.77	6.256		
7,600.00	5,606.00	7,517.20	5,538.00	31.67	31.60	-79.50	1,380.92	-8.50	373.31	311.31	62.00	6.021		
7,700.00	5,606.00	7,617.20	5,538.00	32.83	32.76	-79.49	1,480.92	-7.97	372.71	308.43	64.28	5.798		
7,800.00	5,606.00	7,717.20	5,538.00	34.01	33.94	-79.47	1,580.92	-7.43	372.12	305.50	66.61	5.586		
7,900.00	5,606.00	7,817.19	5,538.00	35.21	35.15	-79.45	1,680.91	-6.89	371.52	302.54	68.99	5.386		
8,000.00	5,606.00	7,917.19	5,538.00	36.43	36.38	-79.44	1,780.91	-6.35	370.93	299.53	71.40	5.195		
8,100.00	5,606.00	8,017.19	5,538.00	37.67	37.62	-79.42	1,880.91	-5.82	370.33	296.49	73.84	5.015		
8,200.00	5,606.00	8,117.19	5,538.00	38.92	38.88	-79.40	1,980.90	-5.28	369.74	293.42	76.32	4.845		
8,300.00	5,606.00	8,217.19	5,538.00	40.19	40.16	-79.38	2,080.90	-4.74	369.14	290.32	78.82	4.683		
8,400.00	5,606.00	8,317.19	5,538.00	41.47	41.44	-79.37	2,180.90	-4.20	368.55	287.19	81.35	4.530		
8,500.00	5,606.00	8,417.18	5,538.00	42.77	42.74	-79.35	2,280.89	-3.67	367.95	284.05	83.91	4.385		
8,600.00	5,606.00	8,517.18	5,538.00	44.07	44.05	-79.33	2,380.89	-3.13	367.36	280.88	86.48	4.248		
8,700.00	5,606.00	8,617.18	5,538.00	45.39	45.37	-79.32	2,480.89	-2.59	366.76	277.69	89.08	4.117		
8,800.00	5,606.00	8,717.18	5,538.00	46.71	46.70	-79.30	2,580.88	-2.05	366.17	274.48	91.69	3.994		
8,900.00	5,606.00	8,817.18	5,538.00	48.05	48.04	-79.28	2,680.88	-1.52	365.57	271.26	94.32	3.876		
9,000.00	5,606.00	8,917.17	5,538.00	49.39	49.38	-79.26	2,780.88	-0.98	364.98	268.02	96.96	3.764		
9,100.00	5,606.00	9,017.17	5,538.00	50.74	50.73	-79.24	2,880.87	-0.44	364.38	264.77	99.61	3.658		
9,200.00	5,606.00	9,117.17	5,538.00	52.09	52.09	-79.23	2,980.87	0.10	363.79	261.51	102.28	3.557		
9,300.00	5,606.00	9,217.17	5,538.00	53.45	53.45	-79.21	3,080.87	0.63	363.19	258.23	104.96	3.460		
9,400.00	5,606.00	9,317.17	5,538.00	54.82	54.82	-79.19	3,180.86	1.17	362.60	254.95	107.65	3.368		
9,500.00	5,606.00	9,417.17	5,538.00	56.19	56.20	-79.17	3,280.86	1.71	362.00	251.65	110.35	3.280		
9,600.00	5,606.00	9,517.16	5,538.00	57.57	57.58	-79.15	3,380.86	2.25	361.41	248.35	113.06	3.197		
9,700.00	5,606.00	9,617.16	5,538.00	58.95	58.96	-79.14	3,480.85	2.78	360.82	245.03	115.78	3.116		
9,800.00	5,606.00	9,717.16	5,538.00	60.33	60.35	-79.12	3,580.85	3.32	360.22	241.71	118.51	3.040		
9,900.00	5,606.00	9,817.16	5,538.00	61.72	61.74	-79.10	3,680.85	3.86	359.63	238.39	121.24	2.966		
10,000.00	5,606.00	9,917.16	5,538.00	63.12	63.14	-79.08	3,780.84	4.40	359.03	235.05	123.98	2.896		
10,100.00	5,606.00	10,017.15	5,538.00	64.51	64.53	-79.06	3,880.84	4.94	358.44	231.71	126.73	2.828		
10,200.00	5,606.00	10,117.15	5,538.00	65.91	65.94	-79.05	3,980.84	5.47	357.84	228.37	129.48	2.764		

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 #30H-1916
Project:	Weld County, CO	TVD Reference:	KBE @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	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	5,606.00	10,217.15	5,538.00	67.32	67.34	-79.03	4,080.83	6.01	357.25	225.01	132.24	2.702	
10,400.00	5,606.00	10,317.15	5,538.00	68.72	68.75	-79.01	4,180.83	6.55	356.66	221.66	135.00	2.642	
10,500.00	5,606.00	10,417.15	5,538.00	70.13	70.16	-78.99	4,280.83	7.09	356.06	218.30	137.77	2.585	
10,600.00	5,606.00	10,517.15	5,538.00	71.54	71.57	-78.97	4,380.82	7.62	355.47	214.93	140.54	2.529	
10,700.00	5,606.00	10,617.14	5,538.00	72.95	72.99	-78.95	4,480.82	8.16	354.87	211.56	143.31	2.476	
10,800.00	5,606.00	10,717.14	5,538.00	74.37	74.40	-78.93	4,580.82	8.70	354.28	208.19	146.09	2.425	
10,900.00	5,606.00	10,817.14	5,538.00	75.79	75.82	-78.92	4,680.82	9.24	353.68	204.81	148.88	2.376	
11,000.00	5,606.00	10,917.14	5,538.00	77.21	77.24	-78.90	4,780.81	9.77	353.09	201.43	151.66	2.328	
11,100.00	5,606.00	11,017.14	5,538.00	78.63	78.66	-78.88	4,880.81	10.31	352.50	198.04	154.45	2.282	
11,200.00	5,606.00	11,117.13	5,538.00	80.05	80.09	-78.86	4,980.81	10.85	351.90	194.66	157.25	2.238	
11,300.00	5,606.00	11,217.13	5,538.00	81.48	81.52	-78.84	5,080.80	11.39	351.31	191.27	160.04	2.195	
11,400.00	5,606.00	11,317.13	5,538.00	82.90	82.94	-78.82	5,180.80	11.92	350.72	187.87	162.84	2.154	
11,500.00	5,606.00	11,417.13	5,538.00	84.33	84.37	-78.80	5,280.80	12.46	350.12	184.48	165.64	2.114	
11,600.00	5,606.00	11,517.13	5,538.00	85.76	85.80	-78.78	5,380.79	13.00	349.53	181.08	168.45	2.075	
11,700.00	5,606.00	11,617.13	5,538.00	87.19	87.23	-78.76	5,480.79	13.54	348.93	177.68	171.25	2.038	
11,800.00	5,606.00	11,717.12	5,538.00	88.63	88.67	-78.74	5,580.79	14.07	348.34	174.28	174.06	2.001	
11,900.00	5,606.00	11,817.12	5,538.00	90.06	90.10	-78.72	5,680.78	14.61	347.75	170.87	176.87	1.966	
12,000.00	5,606.00	11,917.12	5,538.00	91.49	91.54	-78.70	5,780.78	15.15	347.15	167.47	179.68	1.932	
12,100.00	5,606.00	12,017.12	5,538.00	92.93	92.97	-78.68	5,880.78	15.69	346.56	164.06	182.50	1.899	
12,200.00	5,606.00	12,117.12	5,538.00	94.37	94.41	-78.66	5,980.77	16.22	345.97	160.65	185.31	1.867	
12,300.00	5,606.00	12,217.11	5,538.00	95.81	95.85	-78.64	6,080.77	16.76	345.37	157.24	188.13	1.836	
12,400.00	5,606.00	12,317.11	5,538.00	97.25	97.29	-78.62	6,180.77	17.30	344.78	153.83	190.95	1.806	
12,500.00	5,606.00	12,417.11	5,538.00	98.69	98.73	-78.61	6,280.76	17.84	344.19	150.42	193.77	1.776	
12,600.00	5,606.00	12,517.11	5,538.00	100.13	100.17	-78.59	6,380.76	18.37	343.59	147.00	196.59	1.748	
12,700.00	5,606.00	12,617.11	5,538.00	101.57	101.61	-78.57	6,480.76	18.91	343.00	143.59	199.41	1.720	
12,800.00	5,606.00	12,717.11	5,538.00	103.01	103.06	-78.54	6,580.75	19.45	342.41	140.17	202.24	1.693	
12,900.00	5,606.00	12,817.10	5,538.00	104.46	104.50	-78.52	6,680.75	19.99	341.81	136.75	205.06	1.667	
13,000.00	5,606.00	12,917.10	5,538.00	105.90	105.94	-78.50	6,780.75	20.52	341.22	133.33	207.89	1.641	
13,100.00	5,606.00	13,017.10	5,538.00	107.35	107.39	-78.48	6,880.74	21.06	340.63	129.91	210.71	1.617	
13,200.00	5,606.00	13,117.10	5,538.00	108.79	108.84	-78.46	6,980.74	21.60	340.03	126.49	213.54	1.592	
13,300.00	5,606.00	13,217.10	5,538.00	110.24	110.28	-78.44	7,080.74	22.14	339.44	123.07	216.37	1.569	
13,400.00	5,606.00	13,317.09	5,538.00	111.68	111.73	-78.42	7,180.73	22.67	338.85	119.65	219.20	1.546	
13,500.00	5,606.00	13,417.09	5,538.00	113.13	113.18	-78.40	7,280.73	23.21	338.25	116.22	222.03	1.523	
13,600.00	5,606.00	13,517.09	5,538.00	114.58	114.62	-78.38	7,380.73	23.75	337.66	112.80	224.86	1.502	
13,700.00	5,606.00	13,617.09	5,538.00	116.03	116.07	-78.36	7,480.72	24.29	337.07	109.38	227.69	1.480 Level 3	
13,759.87	5,606.00	13,675.75	5,538.00	116.80	116.92	-78.35	7,539.38	24.60	336.71	107.39	229.33	1.468 Level 3, SF	



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30H-1916
Project:	Weld County, CO	TVD Reference:	KBE @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-90.00	0.00	-209.92	209.92					
100.00	100.00	100.00	100.00	0.13	0.13	-90.00	0.00	-209.92	209.92	209.66	0.27	788.158		
200.00	200.00	200.00	200.00	0.47	0.47	-90.00	0.00	-209.92	209.92	208.98	0.94	223.170		
300.00	300.00	300.00	300.00	0.81	0.81	-90.00	0.00	-209.92	209.92	208.31	1.61	129.989 CC, ES		
400.00	399.98	395.63	395.62	1.11	1.10	115.50	-1.25	-210.91	211.71	209.48	2.23	94.958		
500.00	499.84	491.09	490.95	1.41	1.39	115.60	-5.00	-213.86	217.05	214.20	2.85	76.063		
600.00	599.45	586.18	585.70	1.74	1.70	115.76	-11.22	-218.76	225.94	222.42	3.53	64.046		
700.00	698.70	680.74	679.62	2.07	2.02	115.95	-19.85	-225.55	238.36	234.12	4.24	56.258		
800.00	797.47	774.59	772.43	2.44	2.35	116.14	-30.82	-234.18	254.27	249.30	4.97	51.112		
900.00	895.63	867.59	863.88	2.84	2.72	116.35	-44.04	-244.59	273.63	267.89	5.75	47.619		
1,000.00	993.49	959.78	953.96	3.26	3.11	116.58	-59.43	-256.71	295.52	289.00	6.52	45.310		
1,100.00	1,091.36	1,056.90	1,048.49	3.69	3.54	116.54	-76.95	-270.50	318.41	311.12	7.29	43.687		
1,200.00	1,189.23	1,154.25	1,143.24	4.13	3.98	116.50	-94.50	-284.32	341.29	333.22	8.07	42.275		
1,300.00	1,287.10	1,251.59	1,237.99	4.58	4.43	116.47	-112.06	-298.14	364.17	355.30	8.88	41.032		
1,400.00	1,384.97	1,348.94	1,332.73	5.02	4.89	116.44	-129.62	-311.96	387.06	377.37	9.69	39.941		
1,500.00	1,482.84	1,446.29	1,427.48	5.47	5.34	116.41	-147.17	-325.78	409.94	399.43	10.52	38.984		
1,600.00	1,580.70	1,543.63	1,522.23	5.92	5.80	116.39	-164.73	-339.60	432.82	421.48	11.35	38.142		
1,700.00	1,678.57	1,640.98	1,616.98	6.38	6.27	116.37	-182.29	-353.42	455.71	443.52	12.19	37.397		
1,800.00	1,776.44	1,738.32	1,711.72	6.83	6.73	116.35	-199.84	-367.24	478.59	465.56	13.03	36.734		
1,900.00	1,874.31	1,835.67	1,806.47	7.29	7.20	116.33	-217.40	-381.06	501.48	487.60	13.88	36.142		
2,000.00	1,972.18	1,933.02	1,901.22	7.74	7.66	116.32	-234.95	-394.87	524.36	509.64	14.73	35.609		
2,100.00	2,070.05	2,030.36	1,995.97	8.20	8.13	116.31	-252.51	-408.69	547.25	531.67	15.58	35.129		
2,200.00	2,167.92	2,127.71	2,090.71	8.66	8.60	116.29	-270.07	-422.51	570.13	553.70	16.43	34.694		
2,300.00	2,265.78	2,225.06	2,185.46	9.12	9.07	116.28	-287.62	-436.33	593.01	575.72	17.29	34.298		
2,400.00	2,363.65	2,322.40	2,280.21	9.57	9.54	116.27	-305.18	-450.15	615.90	597.75	18.15	33.937		
2,500.00	2,461.52	2,419.75	2,374.96	10.03	10.01	116.26	-322.74	-463.97	638.78	619.77	19.01	33.605		
2,600.00	2,559.39	2,517.10	2,469.70	10.49	10.48	116.25	-340.29	-477.79	661.67	641.80	19.87	33.300		
2,700.00	2,657.26	2,614.44	2,564.45	10.95	10.95	116.24	-357.85	-491.61	684.55	663.82	20.73	33.019		
2,800.00	2,755.13	2,711.79	2,659.20	11.41	11.42	116.23	-375.40	-505.43	707.44	685.84	21.60	32.758		
2,900.00	2,852.99	2,809.13	2,753.95	11.87	11.89	116.22	-392.96	-519.25	730.32	707.86	22.46	32.517		
3,000.00	2,950.86	2,906.48	2,848.69	12.33	12.36	116.22	-410.52	-533.07	753.20	729.88	23.32	32.292		
3,100.00	3,048.73	3,003.83	2,943.44	12.79	12.83	116.21	-428.07	-546.89	776.09	751.90	24.19	32.082		
3,200.00	3,146.60	3,101.17	3,038.19	13.25	13.30	116.20	-445.63	-560.71	798.97	773.92	25.06	31.887		
3,300.00	3,244.47	3,198.52	3,132.94	13.71	13.78	116.20	-463.19	-574.53	821.86	795.93	25.92	31.703		
3,400.00	3,342.34	3,295.87	3,227.68	14.17	14.25	116.19	-480.74	-588.35	844.74	817.95	26.79	31.531		
3,500.00	3,440.20	3,393.21	3,322.43	14.63	14.72	116.19	-498.30	-602.17	867.63	839.97	27.66	31.369		
3,600.00	3,538.07	3,490.56	3,417.18	15.09	15.19	116.18	-515.85	-615.99	890.51	861.98	28.53	31.217		
3,700.00	3,635.94	3,587.90	3,511.93	15.56	15.67	116.18	-533.41	-629.81	913.40	884.00	29.40	31.073		
3,800.00	3,733.81	3,685.25	3,606.67	16.02	16.14	116.17	-550.97	-643.63	936.28	906.02	30.26	30.937		
3,900.00	3,831.68	3,782.60	3,701.42	16.48	16.61	116.17	-568.52	-657.45	959.16	928.03	31.13	30.808		
4,000.00	3,929.55	3,879.94	3,796.17	16.94	17.08	116.16	-586.08	-671.27	982.05	950.05	32.00	30.686		
4,100.00	4,027.42	3,977.29	3,890.92	17.40	17.56	116.16	-603.63	-685.09	1,004.93	972.06	32.87	30.570		
4,200.00	4,125.28	4,074.64	3,985.66	17.86	18.03	116.16	-621.19	-698.91	1,027.82	994.07	33.74	30.460		
4,300.00	4,223.15	4,171.98	4,080.41	18.32	18.50	116.15	-638.75	-712.73	1,050.70	1,016.09	34.61	30.355		
4,400.00	4,321.04	4,269.34	4,175.17	18.76	18.98	116.25	-656.31	-726.55	1,073.54	1,038.08	35.46	30.271		
4,500.00	4,419.41	4,366.91	4,270.13	19.05	19.45	116.52	-673.90	-740.40	1,095.30	1,059.13	36.17	30.286		
4,600.00	4,518.34	4,467.43	4,367.98	19.32	19.93	116.59	-692.01	-754.66	1,115.54	1,078.67	36.87	30.260		
4,700.00	4,617.72	4,566.01	4,463.86	19.57	20.33	116.47	-712.58	-770.85	1,132.73	1,095.14	37.59	30.137		
4,800.00	4,717.43	4,726.30	4,622.48	19.81	20.69	116.31	-728.87	-783.67	1,145.73	1,107.50	38.23	29.967		
4,900.00	4,817.34	4,857.92	4,753.23	20.03	21.02	116.12	-740.65	-792.94	1,154.48	1,115.65	38.83	29.733		
5,000.00	4,917.34	4,990.45	4,885.44	20.27	21.32	-89.59	-747.73	-798.52	1,158.98	1,119.59	39.40	29.417		
5,100.00	5,017.34	5,122.39	5,017.34	20.48	21.60	-89.70	-749.99	-800.30	1,160.32	1,120.42	39.90	29.082		

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 #30H-1916
Project:	Weld County, CO	TVD Reference:	KBE @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	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	5,117.31	5,222.37	5,117.31	20.69	21.82	-89.71	-749.99	-800.30	1,160.31	1,119.97	40.35	28.759		
5,251.88	5,168.85	5,273.91	5,168.85	20.76	21.93	-90.00	-749.99	-800.30	1,160.30	1,119.78	40.52	28.634		
5,300.00	5,215.92	5,321.01	5,215.96	20.82	22.03	-90.47	-749.99	-800.30	1,160.34	1,119.66	40.67	28.527		
5,400.00	5,309.71	5,422.43	5,316.69	20.88	22.19	-91.66	-739.77	-800.30	1,160.81	1,119.96	40.85	28.419		
5,500.00	5,395.25	5,529.28	5,418.57	20.85	22.27	-92.82	-708.15	-800.30	1,161.75	1,120.91	40.84	28.444		
5,600.00	5,469.40	5,642.12	5,516.76	20.78	22.26	-93.90	-653.00	-800.30	1,163.04	1,122.36	40.69	28.584		
5,700.00	5,529.43	5,761.17	5,604.93	20.67	22.14	-94.86	-573.40	-800.30	1,164.49	1,124.05	40.43	28.800		
5,800.00	5,573.13	5,886.05	5,675.52	20.55	21.95	-95.63	-470.74	-800.30	1,165.81	1,125.65	40.17	29.024		
5,900.00	5,598.91	6,015.65	5,720.83	20.45	21.71	-96.15	-349.68	-800.30	1,166.75	1,126.76	39.99	29.173		
6,000.00	5,606.00	6,145.39	5,735.00	20.39	21.47	-96.35	-221.04	-800.30	1,167.09	1,127.08	40.00	29.175		
6,100.00	5,606.00	6,245.39	5,735.00	20.41	21.32	-96.35	-121.04	-800.30	1,167.02	1,126.80	40.21	29.020		
6,200.00	5,606.00	6,345.39	5,735.00	20.55	21.24	-96.35	-21.04	-800.29	1,166.95	1,126.32	40.63	28.722		
6,300.00	5,606.00	6,445.39	5,735.00	20.81	21.24	-96.35	78.96	-800.29	1,166.88	1,125.63	41.25	28.290		
6,400.00	5,606.00	6,545.39	5,735.00	21.19	21.40	-96.35	178.96	-800.29	1,166.81	1,124.75	42.06	27.741		
6,500.00	5,606.00	6,645.39	5,735.00	21.69	21.76	-96.35	278.96	-800.29	1,166.74	1,123.69	43.06	27.096		
6,600.00	5,606.00	6,745.39	5,735.00	22.28	22.30	-96.35	378.96	-800.29	1,166.68	1,122.45	44.23	26.378		
6,700.00	5,606.00	6,845.39	5,735.00	22.96	22.95	-96.35	478.96	-800.29	1,166.61	1,121.05	45.56	25.608		
6,800.00	5,606.00	6,945.39	5,735.00	23.72	23.70	-96.35	578.96	-800.29	1,166.54	1,119.51	47.03	24.804		
6,900.00	5,606.00	7,045.39	5,735.00	24.55	24.51	-96.35	678.96	-800.29	1,166.47	1,117.84	48.64	23.984		
7,000.00	5,606.00	7,145.39	5,735.00	25.43	25.39	-96.35	778.96	-800.29	1,166.40	1,116.04	50.36	23.162		
7,100.00	5,606.00	7,245.39	5,735.00	26.37	26.32	-96.35	878.96	-800.29	1,166.34	1,114.14	52.19	22.347		
7,200.00	5,606.00	7,345.39	5,735.00	27.35	27.30	-96.35	978.96	-800.29	1,166.27	1,112.15	54.12	21.550		
7,300.00	5,606.00	7,445.39	5,735.00	28.38	28.31	-96.35	1,078.96	-800.29	1,166.20	1,110.06	56.13	20.775		
7,400.00	5,606.00	7,545.39	5,735.00	29.45	29.37	-96.35	1,178.96	-800.29	1,166.13	1,107.90	58.23	20.027		
7,500.00	5,606.00	7,645.39	5,735.00	30.54	30.46	-96.35	1,278.96	-800.28	1,166.06	1,105.67	60.39	19.309		
7,600.00	5,606.00	7,745.39	5,735.00	31.67	31.58	-96.35	1,378.96	-800.28	1,165.99	1,103.38	62.61	18.622		
7,700.00	5,606.00	7,845.39	5,735.00	32.83	32.72	-96.35	1,478.96	-800.28	1,165.93	1,101.03	64.90	17.966		
7,800.00	5,606.00	7,945.39	5,735.00	34.01	33.89	-96.35	1,578.96	-800.28	1,165.86	1,098.63	67.23	17.342		
7,900.00	5,606.00	8,045.39	5,735.00	35.21	35.08	-96.35	1,678.96	-800.28	1,165.79	1,096.19	69.60	16.749		
8,000.00	5,606.00	8,145.39	5,735.00	36.43	36.29	-96.35	1,778.96	-800.28	1,165.72	1,093.70	72.02	16.186		
8,100.00	5,606.00	8,245.39	5,735.00	37.67	37.52	-96.35	1,878.96	-800.28	1,165.65	1,091.18	74.47	15.652		
8,200.00	5,606.00	8,345.39	5,735.00	38.92	38.77	-96.35	1,978.96	-800.28	1,165.59	1,088.63	76.96	15.146		
8,300.00	5,606.00	8,445.39	5,735.00	40.19	40.03	-96.35	2,078.96	-800.28	1,165.52	1,086.04	79.48	14.665		
8,400.00	5,606.00	8,545.39	5,735.00	41.47	41.30	-96.35	2,178.96	-800.28	1,165.45	1,083.43	82.02	14.209		
8,500.00	5,606.00	8,645.39	5,735.00	42.77	42.59	-96.36	2,278.96	-800.28	1,165.38	1,080.79	84.59	13.777		
8,600.00	5,606.00	8,745.39	5,735.00	44.07	43.89	-96.36	2,378.96	-800.28	1,165.31	1,078.13	87.18	13.367		
8,700.00	5,606.00	8,845.39	5,735.00	45.39	45.19	-96.36	2,478.96	-800.28	1,165.25	1,075.45	89.79	12.977		
8,800.00	5,606.00	8,945.39	5,735.00	46.71	46.51	-96.36	2,578.96	-800.27	1,165.18	1,072.75	92.42	12.607		
8,900.00	5,606.00	9,045.39	5,735.00	48.05	47.84	-96.36	2,678.96	-800.27	1,165.11	1,070.04	95.07	12.255		
9,000.00	5,606.00	9,145.39	5,735.00	49.39	49.17	-96.36	2,778.96	-800.27	1,165.04	1,067.30	97.74	11.920		
9,100.00	5,606.00	9,245.39	5,735.00	50.74	50.51	-96.36	2,878.96	-800.27	1,164.97	1,064.56	100.42	11.601		
9,200.00	5,606.00	9,345.39	5,735.00	52.09	51.86	-96.36	2,978.96	-800.27	1,164.90	1,061.79	103.11	11.298		
9,300.00	5,606.00	9,445.39	5,735.00	53.45	53.22	-96.36	3,078.96	-800.27	1,164.84	1,059.02	105.82	11.008		
9,400.00	5,606.00	9,545.39	5,735.00	54.82	54.58	-96.36	3,178.96	-800.27	1,164.77	1,056.24	108.53	10.732		
9,500.00	5,606.00	9,645.39	5,735.00	56.19	55.94	-96.36	3,278.96	-800.27	1,164.70	1,053.44	111.26	10.468		
9,600.00	5,606.00	9,745.39	5,735.00	57.57	57.31	-96.36	3,378.96	-800.27	1,164.63	1,050.63	114.00	10.216		
9,700.00	5,606.00	9,845.39	5,735.00	58.95	58.69	-96.36	3,478.96	-800.27	1,164.56	1,047.82	116.75	9.975		
9,800.00	5,606.00	9,945.39	5,735.00	60.33	60.07	-96.36	3,578.96	-800.27	1,164.50	1,044.99	119.50	9.745		
9,900.00	5,606.00	10,045.39	5,735.00	61.72	61.46	-96.36	3,678.96	-800.27	1,164.43	1,042.16	122.26	9.524		
10,000.00	5,606.00	10,145.39	5,735.00	63.12	62.84	-96.36	3,778.96	-800.26	1,164.36	1,039.32	125.04	9.312		
10,100.00	5,606.00	10,245.39	5,735.00	64.51	64.24	-96.36	3,878.96	-800.26	1,164.29	1,036.48	127.81	9.109		
10,200.00	5,606.00	10,345.39	5,735.00	65.91	65.63	-96.36	3,978.96	-800.26	1,164.22	1,033.62	130.60	8.914		

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 #30H-1916
Project:	Weld County, CO	TVD Reference:	KBE @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	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	5,606.00	10,445.39	5,735.00	67.32	67.03	-96.36	4,078.96	-800.26	1,164.15	1,030.77	133.39	8.727		
10,400.00	5,606.00	10,545.39	5,735.00	68.72	68.43	-96.36	4,178.96	-800.26	1,164.09	1,027.90	136.19	8.548		
10,500.00	5,606.00	10,645.39	5,735.00	70.13	69.84	-96.36	4,278.96	-800.26	1,164.02	1,025.03	138.99	8.375		
10,600.00	5,606.00	10,745.39	5,735.00	71.54	71.24	-96.36	4,378.96	-800.26	1,163.95	1,022.15	141.80	8.209		
10,700.00	5,606.00	10,845.39	5,735.00	72.95	72.65	-96.36	4,478.96	-800.26	1,163.88	1,019.27	144.61	8.049		
10,800.00	5,606.00	10,945.39	5,735.00	74.37	74.07	-96.36	4,578.96	-800.26	1,163.81	1,016.39	147.42	7.894		
10,900.00	5,606.00	11,045.39	5,735.00	75.79	75.48	-96.36	4,678.96	-800.26	1,163.75	1,013.50	150.24	7.746		
11,000.00	5,606.00	11,145.39	5,735.00	77.21	76.90	-96.36	4,778.96	-800.26	1,163.68	1,010.61	153.07	7.602		
11,100.00	5,606.00	11,245.39	5,735.00	78.63	78.32	-96.37	4,878.96	-800.26	1,163.61	1,007.71	155.90	7.464		
11,200.00	5,606.00	11,345.39	5,735.00	80.05	79.74	-96.37	4,978.96	-800.26	1,163.54	1,004.81	158.73	7.330		
11,300.00	5,606.00	11,445.39	5,735.00	81.48	81.16	-96.37	5,078.96	-800.25	1,163.47	1,001.91	161.57	7.201		
11,400.00	5,606.00	11,545.39	5,735.00	82.90	82.58	-96.37	5,178.96	-800.25	1,163.41	999.00	164.41	7.076		
11,500.00	5,606.00	11,645.39	5,735.00	84.33	84.01	-96.37	5,278.96	-800.25	1,163.34	996.09	167.25	6.956		
11,600.00	5,606.00	11,745.39	5,735.00	85.76	85.43	-96.37	5,378.96	-800.25	1,163.27	993.18	170.09	6.839		
11,700.00	5,606.00	11,845.39	5,735.00	87.19	86.86	-96.37	5,478.96	-800.25	1,163.20	990.26	172.94	6.726		
11,800.00	5,606.00	11,945.39	5,735.00	88.63	88.29	-96.37	5,578.96	-800.25	1,163.13	987.34	175.79	6.617		
11,900.00	5,606.00	12,045.39	5,735.00	90.06	89.72	-96.37	5,678.96	-800.25	1,163.06	984.42	178.64	6.511		
12,000.00	5,606.00	12,145.39	5,735.00	91.49	91.16	-96.37	5,778.96	-800.25	1,163.00	981.50	181.50	6.408		
12,100.00	5,606.00	12,245.39	5,735.00	92.93	92.59	-96.37	5,878.96	-800.25	1,162.93	978.57	184.36	6.308		
12,200.00	5,606.00	12,345.39	5,735.00	94.37	94.02	-96.37	5,978.96	-800.25	1,162.86	975.64	187.22	6.211		
12,300.00	5,606.00	12,445.39	5,735.00	95.81	95.46	-96.37	6,078.96	-800.25	1,162.79	972.71	190.08	6.117		
12,400.00	5,606.00	12,545.39	5,735.00	97.25	96.90	-96.37	6,178.96	-800.25	1,162.72	969.78	192.94	6.026		
12,500.00	5,606.00	12,645.39	5,735.00	98.69	98.34	-96.37	6,278.96	-800.24	1,162.66	966.85	195.81	5.938		
12,600.00	5,606.00	12,745.39	5,735.00	100.13	99.77	-96.37	6,378.96	-800.24	1,162.59	963.91	198.67	5.852		
12,700.00	5,606.00	12,845.39	5,735.00	101.57	101.21	-96.37	6,478.96	-800.24	1,162.52	960.98	201.54	5.768		
12,800.00	5,606.00	12,945.39	5,735.00	103.01	102.66	-96.37	6,578.96	-800.24	1,162.45	958.04	204.41	5.687		
12,900.00	5,606.00	13,045.39	5,735.00	104.46	104.10	-96.37	6,678.96	-800.24	1,162.38	955.10	207.29	5.608		
13,000.00	5,606.00	13,145.39	5,735.00	105.90	105.54	-96.37	6,778.96	-800.24	1,162.32	952.15	210.16	5.531		
13,100.00	5,606.00	13,245.39	5,735.00	107.35	106.98	-96.37	6,878.96	-800.24	1,162.25	949.21	213.04	5.456		
13,200.00	5,606.00	13,345.39	5,735.00	108.79	108.43	-96.37	6,978.96	-800.24	1,162.18	946.26	215.91	5.383		
13,300.00	5,606.00	13,445.39	5,735.00	110.24	109.87	-96.37	7,078.96	-800.24	1,162.11	943.32	218.79	5.311		
13,400.00	5,606.00	13,545.39	5,735.00	111.68	111.32	-96.37	7,178.96	-800.24	1,162.04	940.37	221.67	5.242		
13,500.00	5,606.00	13,645.39	5,735.00	113.13	112.76	-96.37	7,278.96	-800.24	1,161.97	937.42	224.55	5.175		
13,600.00	5,606.00	13,745.39	5,735.00	114.58	114.21	-96.37	7,378.96	-800.24	1,161.91	934.47	227.44	5.109		
13,700.00	5,606.00	13,845.39	5,735.00	116.03	115.66	-96.37	7,478.96	-800.24	1,161.84	931.52	230.32	5.044		
13,759.87	5,606.00	13,905.26	5,735.00	116.80	116.52	-96.37	7,538.83	-800.23	1,161.80	929.82	231.97	5.008 SF		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30H-1916
Project:	Weld County, CO	TVD Reference:	KBE @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	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	-90.01	-0.02	-149.95	149.95					
100.00	100.00	100.00	100.00	0.13	0.13	-90.01	-0.02	-149.95	149.95	149.68	0.27	562.970		
200.00	200.00	200.00	200.00	0.47	0.47	-90.01	-0.02	-149.95	149.95	149.01	0.94	159.407		
300.00	300.00	300.00	300.00	0.81	0.81	-90.01	-0.02	-149.95	149.95	148.33	1.61	92.849 CC, ES		
400.00	399.98	397.97	397.95	1.11	1.10	115.43	-1.56	-150.60	151.37	149.15	2.22	68.199		
500.00	499.84	495.82	495.66	1.41	1.40	115.36	-6.17	-152.57	155.63	152.81	2.82	55.208		
600.00	599.45	593.44	592.92	1.74	1.71	115.24	-13.82	-155.84	162.72	159.25	3.47	46.854		
700.00	698.70	690.71	689.50	2.07	2.04	115.09	-24.48	-160.39	172.62	168.45	4.17	41.392		
800.00	797.47	787.53	785.18	2.44	2.39	114.90	-38.08	-166.19	185.32	180.41	4.91	37.752		
900.00	895.63	884.90	880.91	2.84	2.77	114.78	-54.47	-173.19	200.65	194.97	5.68	35.333		
1,000.00	993.49	983.58	977.81	3.26	3.18	115.12	-71.58	-180.49	216.83	210.37	6.46	33.585		
1,100.00	1,091.36	1,082.25	1,074.72	3.69	3.59	115.42	-88.68	-187.79	233.01	225.76	7.25	32.118		
1,200.00	1,189.23	1,180.93	1,171.63	4.13	4.01	115.68	-105.79	-195.10	249.20	241.13	8.07	30.888		
1,300.00	1,287.10	1,279.60	1,268.53	4.58	4.43	115.90	-122.90	-202.40	265.39	256.50	8.89	29.842		
1,400.00	1,384.97	1,378.28	1,365.44	5.02	4.86	116.11	-140.01	-209.70	281.59	271.86	9.73	28.951		
1,500.00	1,482.84	1,476.96	1,462.34	5.47	5.28	116.28	-157.11	-217.00	297.79	287.22	10.57	28.185		
1,600.00	1,580.70	1,575.63	1,559.25	5.92	5.71	116.45	-174.22	-224.31	313.99	302.58	11.41	27.520		
1,700.00	1,678.57	1,674.31	1,656.16	6.38	6.15	116.59	-191.33	-231.61	330.19	317.94	12.26	26.939		
1,800.00	1,776.44	1,772.98	1,753.06	6.83	6.58	116.72	-208.43	-238.91	346.40	333.29	13.11	26.427		
1,900.00	1,874.31	1,871.66	1,849.97	7.29	7.01	116.84	-225.54	-246.21	362.61	348.65	13.96	25.973		
2,000.00	1,972.18	1,970.33	1,946.87	7.74	7.45	116.95	-242.65	-253.51	378.82	364.00	14.82	25.568		
2,100.00	2,070.05	2,069.01	2,043.78	8.20	7.88	117.05	-259.76	-260.82	395.03	379.35	15.67	25.204		
2,200.00	2,167.92	2,167.68	2,140.69	8.66	8.32	117.14	-276.86	-268.12	411.24	394.71	16.53	24.876		
2,300.00	2,265.78	2,266.36	2,237.59	9.12	8.75	117.23	-293.97	-275.42	427.45	410.06	17.39	24.579		
2,400.00	2,363.65	2,365.03	2,334.50	9.57	9.19	117.31	-311.08	-282.72	443.66	425.41	18.25	24.309		
2,500.00	2,461.52	2,463.71	2,431.41	10.03	9.62	117.38	-328.19	-290.03	459.88	440.77	19.11	24.062		
2,600.00	2,559.39	2,562.38	2,528.31	10.49	10.06	117.45	-345.29	-297.33	476.09	456.12	19.97	23.835		
2,700.00	2,657.26	2,661.06	2,625.22	10.95	10.50	117.51	-362.40	-304.63	492.31	471.47	20.84	23.626		
2,800.00	2,755.13	2,759.73	2,722.12	11.41	10.94	117.57	-379.51	-311.93	508.52	486.82	21.70	23.434		
2,900.00	2,852.99	2,858.41	2,819.03	11.87	11.37	117.63	-396.62	-319.24	524.74	502.18	22.56	23.255		
3,000.00	2,950.86	2,957.08	2,915.94	12.33	11.81	117.68	-413.72	-326.54	540.96	517.53	23.43	23.089		
3,100.00	3,048.73	3,055.76	3,012.84	12.79	12.25	117.73	-430.83	-333.84	557.17	532.88	24.29	22.935		
3,200.00	3,146.60	3,154.43	3,109.75	13.25	12.69	117.78	-447.94	-341.14	573.39	548.23	25.16	22.791		
3,300.00	3,244.47	3,253.11	3,206.65	13.71	13.12	117.82	-465.05	-348.44	589.61	563.59	26.02	22.656		
3,400.00	3,342.34	3,351.78	3,303.56	14.17	13.56	117.87	-482.15	-355.75	605.83	578.94	26.89	22.530		
3,500.00	3,440.20	3,450.46	3,400.47	14.63	14.00	117.91	-499.26	-363.05	622.05	594.29	27.76	22.412		
3,600.00	3,538.07	3,549.13	3,497.37	15.09	14.44	117.94	-516.37	-370.35	638.27	609.64	28.62	22.300		
3,700.00	3,635.94	3,647.81	3,594.28	15.56	14.88	117.98	-533.47	-377.65	654.48	625.00	29.49	22.195		
3,800.00	3,733.81	3,746.48	3,691.18	16.02	15.32	118.01	-550.58	-384.96	670.70	640.35	30.35	22.095		
3,900.00	3,831.68	3,845.16	3,788.09	16.48	15.75	118.05	-567.69	-392.26	686.92	655.70	31.22	22.001		
4,000.00	3,929.55	3,943.83	3,885.00	16.94	16.19	118.08	-584.80	-399.56	703.14	671.05	32.09	21.912		
4,100.00	4,027.42	4,042.51	3,981.90	17.40	16.63	118.11	-601.90	-406.86	719.36	686.41	32.96	21.828		
4,200.00	4,125.28	4,141.18	4,078.81	17.86	17.07	118.14	-619.01	-414.17	735.58	701.76	33.82	21.748		
4,300.00	4,223.15	4,239.86	4,175.72	18.32	17.51	118.16	-636.12	-421.47	751.80	717.11	34.69	21.672		
4,400.00	4,321.04	4,338.54	4,272.63	18.76	17.95	118.25	-653.23	-428.77	767.97	732.44	35.54	21.610		
4,500.00	4,419.41	4,437.39	4,369.70	19.05	18.39	118.38	-670.36	-436.09	782.97	746.73	36.24	21.604		
4,600.00	4,518.34	4,536.36	4,466.90	19.32	18.83	118.25	-687.52	-443.41	796.35	759.41	36.94	21.559		
4,700.00	4,617.72	4,635.91	4,564.67	19.57	19.26	117.89	-704.78	-450.77	808.14	770.51	37.62	21.479		
4,800.00	4,717.43	4,746.24	4,673.43	19.81	19.61	117.35	-721.78	-458.03	817.65	779.40	38.25	21.378		
4,900.00	4,817.34	4,857.35	4,783.61	20.03	19.90	116.82	-735.00	-463.67	824.27	785.48	38.79	21.250		
5,000.00	4,917.34	4,969.11	4,894.89	20.27	20.17	-89.19	-744.32	-467.65	828.04	788.71	39.33	21.053		
5,100.00	5,017.34	5,081.44	5,007.06	20.48	20.42	-89.56	-749.66	-469.93	830.02	790.20	39.82	20.846		

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 #30H-1916
Project:	Weld County, CO	TVD Reference:	KBE @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	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	5,117.31	5,191.70	5,117.31	20.69	20.69	-89.69	-751.01	-470.51	830.52	790.21	40.31	20.606		
5,243.78	5,160.84	5,235.23	5,160.84	20.75	20.78	-90.00	-751.01	-470.51	830.51	790.04	40.46	20.525		
5,300.00	5,215.92	5,290.31	5,215.92	20.82	20.90	-90.75	-751.01	-470.51	830.58	789.92	40.66	20.428		
5,400.00	5,309.71	5,385.14	5,310.74	20.88	21.10	-92.85	-750.88	-470.51	831.74	790.84	40.90	20.334		
5,500.00	5,395.25	5,489.82	5,414.46	20.85	21.26	-95.43	-738.06	-470.51	834.95	793.95	41.00	20.364		
5,600.00	5,469.40	5,605.60	5,523.60	20.78	21.34	-97.96	-700.12	-470.51	839.86	798.98	40.88	20.544		
5,700.00	5,529.43	5,735.01	5,632.28	20.67	21.31	-100.37	-630.47	-470.51	845.76	805.24	40.52	20.873		
5,800.00	5,573.13	5,879.75	5,729.32	20.55	21.18	-102.46	-523.72	-470.51	851.54	811.55	39.99	21.293		
5,900.00	5,598.91	6,038.86	5,797.72	20.45	21.02	-103.93	-380.74	-470.51	855.80	816.26	39.54	21.643		
6,000.00	5,606.00	6,200.74	5,820.00	20.39	20.93	-104.46	-221.04	-470.51	857.28	817.78	39.50	21.703		
6,100.00	5,606.00	6,300.74	5,820.00	20.41	20.96	-104.46	-121.04	-470.51	857.22	817.47	39.75	21.566		
6,200.00	5,606.00	6,400.74	5,820.00	20.55	21.11	-104.46	-21.04	-470.51	857.15	816.95	40.20	21.322		
6,300.00	5,606.00	6,500.74	5,820.00	20.81	21.37	-104.46	78.96	-470.50	857.09	816.24	40.85	20.983		
6,400.00	5,606.00	6,600.74	5,820.00	21.19	21.75	-104.46	178.96	-470.50	857.02	815.34	41.68	20.561		
6,500.00	5,606.00	6,700.74	5,820.00	21.69	22.23	-104.46	278.96	-470.50	856.95	814.26	42.69	20.073		
6,600.00	5,606.00	6,800.74	5,820.00	22.28	22.81	-104.46	378.96	-470.50	856.89	813.02	43.87	19.533		
6,700.00	5,606.00	6,900.74	5,820.00	22.96	23.48	-104.46	478.96	-470.50	856.82	811.63	45.19	18.959		
6,800.00	5,606.00	7,000.74	5,820.00	23.72	24.22	-104.46	578.96	-470.50	856.75	810.10	46.66	18.362		
6,900.00	5,606.00	7,100.74	5,820.00	24.55	25.03	-104.47	678.96	-470.50	856.69	808.44	48.25	17.756		
7,000.00	5,606.00	7,200.74	5,820.00	25.43	25.90	-104.47	778.96	-470.50	856.62	806.67	49.95	17.149		
7,100.00	5,606.00	7,300.74	5,820.00	26.37	26.82	-104.47	878.96	-470.50	856.55	804.80	51.76	16.549		
7,200.00	5,606.00	7,400.74	5,820.00	27.35	27.79	-104.47	978.96	-470.50	856.49	802.83	53.66	15.962		
7,300.00	5,606.00	7,500.74	5,820.00	28.38	28.80	-104.47	1,078.96	-470.50	856.42	800.78	55.64	15.393		
7,400.00	5,606.00	7,600.74	5,820.00	29.45	29.85	-104.47	1,178.96	-470.50	856.36	798.66	57.69	14.843		
7,500.00	5,606.00	7,700.74	5,820.00	30.54	30.93	-104.47	1,278.96	-470.50	856.29	796.47	59.82	14.315		
7,600.00	5,606.00	7,800.74	5,820.00	31.67	32.05	-104.47	1,378.96	-470.50	856.22	794.23	62.00	13.811		
7,700.00	5,606.00	7,900.74	5,820.00	32.83	33.19	-104.47	1,478.96	-470.50	856.16	791.92	64.23	13.329		
7,800.00	5,606.00	8,000.74	5,820.00	34.01	34.36	-104.48	1,578.96	-470.49	856.09	789.57	66.52	12.870		
7,900.00	5,606.00	8,100.74	5,820.00	35.21	35.55	-104.48	1,678.96	-470.49	856.02	787.18	68.84	12.434		
8,000.00	5,606.00	8,200.74	5,820.00	36.43	36.76	-104.48	1,778.96	-470.49	855.96	784.75	71.21	12.020		
8,100.00	5,606.00	8,300.74	5,820.00	37.67	37.99	-104.48	1,878.96	-470.49	855.89	782.28	73.61	11.627		
8,200.00	5,606.00	8,400.74	5,820.00	38.92	39.23	-104.48	1,978.96	-470.49	855.83	779.78	76.04	11.254		
8,300.00	5,606.00	8,500.74	5,820.00	40.19	40.49	-104.48	2,078.96	-470.49	855.76	777.25	78.51	10.900		
8,400.00	5,606.00	8,600.74	5,820.00	41.47	41.76	-104.48	2,178.96	-470.49	855.69	774.70	81.00	10.565		
8,500.00	5,606.00	8,700.74	5,820.00	42.77	43.05	-104.48	2,278.96	-470.49	855.63	772.12	83.51	10.246		
8,600.00	5,606.00	8,800.74	5,820.00	44.07	44.35	-104.49	2,378.96	-470.49	855.56	769.52	86.04	9.943		
8,700.00	5,606.00	8,900.74	5,820.00	45.39	45.66	-104.49	2,478.96	-470.49	855.49	766.90	88.60	9.656		
8,800.00	5,606.00	9,000.74	5,820.00	46.71	46.97	-104.49	2,578.96	-470.49	855.43	764.26	91.17	9.383		
8,900.00	5,606.00	9,100.74	5,820.00	48.05	48.30	-104.49	2,678.96	-470.49	855.36	761.60	93.76	9.123		
9,000.00	5,606.00	9,200.74	5,820.00	49.39	49.64	-104.49	2,778.96	-470.49	855.30	758.93	96.37	8.875		
9,100.00	5,606.00	9,300.74	5,820.00	50.74	50.98	-104.49	2,878.96	-470.49	855.23	756.24	98.99	8.640		
9,200.00	5,606.00	9,400.74	5,820.00	52.09	52.33	-104.49	2,978.96	-470.49	855.16	753.54	101.62	8.415		
9,300.00	5,606.00	9,500.74	5,820.00	53.45	53.68	-104.49	3,078.96	-470.48	855.10	750.83	104.27	8.201		
9,400.00	5,606.00	9,600.74	5,820.00	54.82	55.04	-104.49	3,178.96	-470.48	855.03	748.11	106.92	7.997		
9,500.00	5,606.00	9,700.74	5,820.00	56.19	56.41	-104.50	3,278.96	-470.48	854.96	745.38	109.59	7.802		
9,600.00	5,606.00	9,800.74	5,820.00	57.57	57.78	-104.50	3,378.96	-470.48	854.90	742.63	112.26	7.615		
9,700.00	5,606.00	9,900.74	5,820.00	58.95	59.16	-104.50	3,478.96	-470.48	854.83	739.88	114.95	7.437		
9,800.00	5,606.00	10,000.74	5,820.00	60.33	60.54	-104.50	3,578.96	-470.48	854.77	737.12	117.64	7.266		
9,900.00	5,606.00	10,100.74	5,820.00	61.72	61.93	-104.50	3,678.95	-470.48	854.70	734.35	120.35	7.102		
10,000.00	5,606.00	10,200.74	5,820.00	63.12	63.32	-104.50	3,778.95	-470.48	854.63	731.58	123.05	6.945		
10,100.00	5,606.00	10,300.74	5,820.00	64.51	64.71	-104.50	3,878.95	-470.48	854.57	728.80	125.77	6.795		
10,200.00	5,606.00	10,400.74	5,820.00	65.91	66.10	-104.50	3,978.95	-470.48	854.50	726.01	128.49	6.650		

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 #30H-1916
Project:	Weld County, CO	TVD Reference:	KBE @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	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	5,606.00	10,500.74	5,820.00	67.32	67.50	-104.50	4,078.95	-470.48	854.43	723.21	131.22	6.511		
10,400.00	5,606.00	10,600.74	5,820.00	68.72	68.91	-104.51	4,178.95	-470.48	854.37	720.41	133.95	6.378		
10,500.00	5,606.00	10,700.74	5,820.00	70.13	70.31	-104.51	4,278.95	-470.48	854.30	717.61	136.69	6.250		
10,600.00	5,606.00	10,800.74	5,820.00	71.54	71.72	-104.51	4,378.95	-470.48	854.24	714.80	139.44	6.126		
10,700.00	5,606.00	10,900.74	5,820.00	72.95	73.13	-104.51	4,478.95	-470.48	854.17	711.98	142.19	6.007		
10,800.00	5,606.00	11,000.74	5,820.00	74.37	74.54	-104.51	4,578.95	-470.47	854.10	709.16	144.94	5.893		
10,900.00	5,606.00	11,100.74	5,820.00	75.79	75.96	-104.51	4,678.95	-470.47	854.04	706.34	147.70	5.782		
11,000.00	5,606.00	11,200.74	5,820.00	77.21	77.38	-104.51	4,778.95	-470.47	853.97	703.51	150.46	5.676		
11,100.00	5,606.00	11,300.74	5,820.00	78.63	78.79	-104.51	4,878.95	-470.47	853.90	700.68	153.22	5.573		
11,200.00	5,606.00	11,400.74	5,820.00	80.05	80.22	-104.51	4,978.95	-470.47	853.84	697.85	155.99	5.474		
11,300.00	5,606.00	11,500.74	5,820.00	81.48	81.64	-104.52	5,078.95	-470.47	853.77	695.01	158.76	5.378		
11,400.00	5,606.00	11,600.74	5,820.00	82.90	83.06	-104.52	5,178.95	-470.47	853.71	692.17	161.54	5.285		
11,500.00	5,606.00	11,700.74	5,820.00	84.33	84.49	-104.52	5,278.95	-470.47	853.64	689.32	164.32	5.195		
11,600.00	5,606.00	11,800.74	5,820.00	85.76	85.92	-104.52	5,378.95	-470.47	853.57	686.48	167.10	5.108		
11,700.00	5,606.00	11,900.74	5,820.00	87.19	87.35	-104.52	5,478.95	-470.47	853.51	683.63	169.88	5.024		
11,800.00	5,606.00	12,000.74	5,820.00	88.63	88.78	-104.52	5,578.95	-470.47	853.44	680.78	172.67	4.943		
11,900.00	5,606.00	12,100.74	5,820.00	90.06	90.21	-104.52	5,678.95	-470.47	853.37	677.92	175.45	4.864		
12,000.00	5,606.00	12,200.74	5,820.00	91.49	91.64	-104.52	5,778.95	-470.47	853.31	675.06	178.25	4.787		
12,100.00	5,606.00	12,300.74	5,820.00	92.93	93.07	-104.53	5,878.95	-470.47	853.24	672.20	181.04	4.713		
12,200.00	5,606.00	12,400.74	5,820.00	94.37	94.51	-104.53	5,978.95	-470.47	853.18	669.34	183.83	4.641		
12,300.00	5,606.00	12,500.74	5,820.00	95.81	95.95	-104.53	6,078.95	-470.46	853.11	666.48	186.63	4.571		
12,400.00	5,606.00	12,600.74	5,820.00	97.25	97.38	-104.53	6,178.95	-470.46	853.04	663.61	189.43	4.503		
12,500.00	5,606.00	12,700.74	5,820.00	98.69	98.82	-104.53	6,278.95	-470.46	852.98	660.75	192.23	4.437		
12,600.00	5,606.00	12,800.74	5,820.00	100.13	100.26	-104.53	6,378.95	-470.46	852.91	657.88	195.03	4.373		
12,700.00	5,606.00	12,900.74	5,820.00	101.57	101.70	-104.53	6,478.95	-470.46	852.84	655.01	197.84	4.311		
12,800.00	5,606.00	13,000.74	5,820.00	103.01	103.14	-104.53	6,578.95	-470.46	852.78	652.13	200.64	4.250		
12,900.00	5,606.00	13,100.74	5,820.00	104.46	104.59	-104.53	6,678.95	-470.46	852.71	649.26	203.45	4.191		
13,000.00	5,606.00	13,200.74	5,820.00	105.90	106.03	-104.54	6,778.95	-470.46	852.65	646.38	206.26	4.134		
13,100.00	5,606.00	13,300.74	5,820.00	107.35	107.47	-104.54	6,878.95	-470.46	852.58	643.51	209.07	4.078		
13,200.00	5,606.00	13,400.74	5,820.00	108.79	108.92	-104.54	6,978.95	-470.46	852.51	640.63	211.88	4.023		
13,300.00	5,606.00	13,500.74	5,820.00	110.24	110.36	-104.54	7,078.95	-470.46	852.45	637.75	214.70	3.970		
13,400.00	5,606.00	13,600.74	5,820.00	111.68	111.81	-104.54	7,178.95	-470.46	852.38	634.87	217.51	3.919		
13,500.00	5,606.00	13,700.74	5,820.00	113.13	113.25	-104.54	7,278.95	-470.46	852.31	631.99	220.33	3.868		
13,600.00	5,606.00	13,800.74	5,820.00	114.58	114.70	-104.54	7,378.95	-470.46	852.25	629.10	223.14	3.819		
13,700.00	5,606.00	13,900.74	5,820.00	116.03	116.15	-104.54	7,478.95	-470.46	852.18	626.22	225.96	3.771		
13,759.87	5,606.00	13,960.61	5,820.00	116.80	117.02	-104.54	7,538.82	-470.45	852.14	624.56	227.58	3.744 SF		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30H-1916
Project:	Weld County, CO	TVD Reference:	KBE @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	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	-0.03	-89.97	89.97					
100.00	100.00	100.00	100.00	0.13	0.13	-90.02	-0.03	-89.97	89.97	89.70	0.27	337.782		
200.00	200.00	200.00	200.00	0.47	0.47	-90.02	-0.03	-89.97	89.97	89.03	0.94	95.644		
300.00	300.00	300.00	300.00	0.81	0.81	-90.02	-0.03	-89.97	89.97	88.35	1.61	55.709 CC, ES		
400.00	399.98	399.78	399.76	1.11	1.11	115.33	-1.77	-90.08	90.83	88.62	2.21	41.050		
500.00	499.84	499.52	499.36	1.41	1.41	114.99	-6.96	-90.43	93.43	90.64	2.79	33.444		
600.00	599.45	599.17	598.62	1.74	1.73	114.46	-15.60	-91.00	97.76	94.33	3.43	28.488		
700.00	698.70	698.68	697.39	2.07	2.06	113.79	-27.67	-91.80	103.83	99.71	4.12	25.200		
800.00	797.47	798.00	795.50	2.44	2.42	113.02	-43.11	-92.83	111.62	106.76	4.86	22.964		
900.00	895.63	897.52	893.45	2.84	2.81	112.87	-60.64	-93.99	120.99	115.35	5.64	21.434		
1,000.00	993.49	997.01	991.38	3.26	3.21	113.46	-78.18	-95.15	130.95	124.50	6.45	20.301		
1,100.00	1,091.36	1,096.50	1,089.31	3.69	3.62	113.98	-95.72	-96.32	140.92	133.65	7.27	19.377		
1,200.00	1,189.23	1,196.00	1,187.24	4.13	4.03	114.42	-113.26	-97.48	150.90	142.79	8.11	18.616		
1,300.00	1,287.10	1,295.49	1,285.16	4.58	4.45	114.82	-130.80	-98.65	160.89	151.94	8.95	17.981		
1,400.00	1,384.97	1,394.99	1,383.09	5.02	4.87	115.16	-148.34	-99.81	170.88	161.09	9.79	17.446		
1,500.00	1,482.84	1,494.48	1,481.02	5.47	5.29	115.47	-165.89	-100.97	180.88	170.24	10.65	16.990		
1,600.00	1,580.70	1,593.98	1,578.95	5.92	5.72	115.74	-183.43	-102.14	190.89	179.38	11.50	16.597		
1,700.00	1,678.57	1,693.47	1,676.88	6.38	6.14	115.99	-200.97	-103.30	200.89	188.54	12.36	16.256		
1,800.00	1,776.44	1,792.96	1,774.81	6.83	6.57	116.21	-218.51	-104.47	210.91	197.69	13.22	15.956		
1,900.00	1,874.31	1,892.46	1,872.74	7.29	6.99	116.42	-236.05	-105.63	220.92	206.84	14.08	15.692		
2,000.00	1,972.18	1,991.95	1,970.67	7.74	7.42	116.60	-253.59	-106.80	230.94	216.00	14.94	15.456		
2,100.00	2,070.05	2,091.45	2,068.60	8.20	7.85	116.77	-271.13	-107.96	240.96	225.15	15.80	15.246		
2,200.00	2,167.92	2,190.94	2,166.52	8.66	8.28	116.93	-288.68	-109.12	250.98	234.31	16.67	15.057		
2,300.00	2,265.78	2,290.44	2,264.45	9.12	8.71	117.08	-306.22	-110.29	261.00	243.47	17.53	14.885		
2,400.00	2,363.65	2,389.93	2,362.38	9.57	9.13	117.21	-323.76	-111.45	271.03	252.63	18.40	14.730		
2,500.00	2,461.52	2,489.42	2,460.31	10.03	9.56	117.33	-341.30	-112.62	281.05	261.79	19.27	14.588		
2,600.00	2,559.39	2,588.92	2,558.24	10.49	9.99	117.45	-358.84	-113.78	291.08	270.95	20.13	14.458		
2,700.00	2,657.26	2,688.41	2,656.17	10.95	10.42	117.56	-376.38	-114.94	301.11	280.11	21.00	14.339		
2,800.00	2,755.13	2,787.91	2,754.10	11.41	10.85	117.66	-393.92	-116.11	311.14	289.27	21.87	14.228		
2,900.00	2,852.99	2,887.40	2,852.03	11.87	11.28	117.76	-411.47	-117.27	321.17	298.43	22.74	14.126		
3,000.00	2,950.86	2,986.90	2,949.96	12.33	11.71	117.84	-429.01	-118.44	331.20	307.60	23.60	14.032		
3,100.00	3,048.73	3,086.39	3,047.88	12.79	12.14	117.93	-446.55	-119.60	341.23	316.76	24.47	13.944		
3,200.00	3,146.60	3,185.89	3,145.81	13.25	12.58	118.01	-464.09	-120.76	351.26	325.92	25.34	13.862		
3,300.00	3,244.47	3,285.38	3,243.74	13.71	13.01	118.08	-481.63	-121.93	361.30	335.09	26.21	13.785		
3,400.00	3,342.34	3,384.87	3,341.67	14.17	13.44	118.15	-499.17	-123.09	371.33	344.25	27.08	13.714		
3,500.00	3,440.20	3,484.37	3,439.60	14.63	13.87	118.22	-516.71	-124.26	381.36	353.42	27.95	13.646		
3,600.00	3,538.07	3,583.86	3,537.53	15.09	14.30	118.28	-534.25	-125.42	391.40	362.58	28.82	13.583		
3,700.00	3,635.94	3,683.36	3,635.46	15.56	14.73	118.34	-551.80	-126.59	401.43	371.75	29.69	13.523		
3,800.00	3,733.81	3,782.85	3,733.39	16.02	15.16	118.40	-569.34	-127.75	411.47	380.92	30.55	13.467		
3,900.00	3,831.68	3,882.35	3,831.32	16.48	15.59	118.46	-586.88	-128.91	421.51	390.08	31.42	13.414		
4,000.00	3,929.55	3,981.84	3,929.24	16.94	16.02	118.51	-604.42	-130.08	431.54	399.25	32.29	13.363		
4,100.00	4,027.42	4,081.33	4,027.17	17.40	16.46	118.56	-621.96	-131.24	441.58	408.42	33.16	13.315		
4,200.00	4,125.28	4,180.83	4,125.10	17.86	16.89	118.61	-639.50	-132.41	451.62	417.58	34.03	13.270		
4,300.00	4,223.15	4,280.32	4,223.03	18.32	17.32	118.65	-657.04	-133.57	461.65	426.75	34.90	13.227		
4,400.00	4,321.04	4,379.82	4,320.97	18.76	17.75	118.73	-674.59	-134.73	471.64	435.89	35.75	13.192		
4,500.00	4,419.41	4,479.41	4,418.99	19.05	18.18	118.65	-692.15	-135.90	480.43	443.96	36.47	13.174		
4,600.00	4,518.34	4,579.05	4,517.06	19.32	18.61	118.19	-709.70	-137.06	487.58	450.40	37.18	13.113		
4,700.00	4,617.72	4,679.09	4,615.87	19.57	18.89	117.60	-725.29	-138.10	493.11	455.37	37.75	13.064		
4,800.00	4,717.43	4,779.43	4,715.46	19.81	19.14	117.04	-737.47	-138.91	497.00	458.73	38.27	12.987		
4,900.00	4,817.34	4,880.04	4,815.68	20.03	19.39	116.50	-746.17	-139.49	499.23	460.46	38.76	12.879		
5,000.00	4,917.34	4,980.86	4,916.36	20.27	19.62	-89.47	-751.37	-139.83	499.85	460.59	39.26	12.731		
5,100.00	5,017.34	5,081.85	5,017.34	20.48	19.87	-89.66	-753.03	-139.94	499.95	460.21	39.73	12.582		

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 #30H-1916
Project:	Weld County, CO	TVD Reference:	KBE @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	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	5,117.31	5,181.83	5,117.31	20.69	20.08	-89.74	-753.03	-139.94	499.94	459.78	40.17	12.446		
5,226.40	5,143.61	5,208.13	5,143.61	20.72	20.14	-90.00	-753.03	-139.94	499.94	459.67	40.27	12.415		
5,300.00	5,215.92	5,280.48	5,215.97	20.82	20.29	-91.49	-753.03	-139.94	500.12	459.54	40.58	12.324		
5,400.00	5,309.71	5,382.53	5,317.33	20.88	20.46	-94.23	-742.68	-139.94	501.38	460.50	40.88	12.265		
5,500.00	5,395.25	5,490.09	5,419.81	20.85	20.54	-96.87	-710.66	-139.94	503.72	462.77	40.95	12.301		
5,600.00	5,469.40	5,603.68	5,518.46	20.78	20.54	-99.31	-654.81	-139.94	506.83	466.06	40.77	12.432		
5,700.00	5,529.43	5,723.46	5,606.79	20.67	20.47	-101.42	-574.31	-139.94	510.20	469.82	40.37	12.637		
5,800.00	5,573.13	5,848.97	5,677.11	20.55	20.39	-103.07	-470.71	-139.94	513.22	473.32	39.89	12.865		
5,900.00	5,598.91	5,979.00	5,721.72	20.45	20.34	-104.12	-348.93	-139.94	515.29	475.75	39.55	13.030		
6,000.00	5,606.00	6,107.88	5,735.00	20.39	20.39	-104.48	-221.05	-139.94	515.96	476.44	39.52	13.056		
6,100.00	5,606.00	6,207.88	5,735.00	20.41	20.52	-104.48	-121.05	-139.94	515.90	476.10	39.79	12.965		
6,200.00	5,606.00	6,307.88	5,735.00	20.55	20.76	-104.48	-21.05	-139.94	515.83	475.56	40.27	12.810		
6,300.00	5,606.00	6,407.88	5,735.00	20.81	21.10	-104.48	78.95	-139.94	515.76	474.83	40.94	12.599		
6,400.00	5,606.00	6,507.88	5,735.00	21.19	21.54	-104.49	178.95	-139.94	515.70	473.91	41.79	12.339		
6,500.00	5,606.00	6,607.88	5,735.00	21.69	22.06	-104.49	278.95	-139.94	515.63	472.81	42.82	12.041		
6,600.00	5,606.00	6,707.88	5,735.00	22.28	22.67	-104.49	378.95	-139.94	515.57	471.55	44.02	11.713		
6,700.00	5,606.00	6,807.88	5,735.00	22.96	23.36	-104.49	478.95	-139.94	515.50	470.14	45.36	11.365		
6,800.00	5,606.00	6,907.88	5,735.00	23.72	24.12	-104.49	578.95	-139.93	515.43	468.59	46.84	11.004		
6,900.00	5,606.00	7,007.88	5,735.00	24.55	24.94	-104.50	678.95	-139.93	515.37	466.92	48.44	10.639		
7,000.00	5,606.00	7,107.88	5,735.00	25.43	25.82	-104.50	778.95	-139.93	515.30	465.14	50.16	10.273		
7,100.00	5,606.00	7,207.88	5,735.00	26.37	26.75	-104.50	878.95	-139.93	515.24	463.26	51.98	9.913		
7,200.00	5,606.00	7,307.88	5,735.00	27.35	27.73	-104.50	978.95	-139.93	515.17	461.28	53.89	9.560		
7,300.00	5,606.00	7,407.88	5,735.00	28.38	28.75	-104.50	1,078.95	-139.93	515.10	459.23	55.88	9.219		
7,400.00	5,606.00	7,507.88	5,735.00	29.45	29.81	-104.51	1,178.95	-139.93	515.04	457.10	57.94	8.889		
7,500.00	5,606.00	7,607.88	5,735.00	30.54	30.90	-104.51	1,278.95	-139.93	514.97	454.90	60.07	8.573		
7,600.00	5,606.00	7,707.88	5,735.00	31.67	32.02	-104.51	1,378.95	-139.93	514.91	452.65	62.26	8.271		
7,700.00	5,606.00	7,807.88	5,735.00	32.83	33.17	-104.51	1,478.95	-139.93	514.84	450.34	64.50	7.982		
7,800.00	5,606.00	7,907.88	5,735.00	34.01	34.34	-104.51	1,578.95	-139.93	514.77	447.99	66.79	7.708		
7,900.00	5,606.00	8,007.88	5,735.00	35.21	35.54	-104.51	1,678.95	-139.93	514.71	445.59	69.12	7.447		
8,000.00	5,606.00	8,107.88	5,735.00	36.43	36.76	-104.52	1,778.95	-139.93	514.64	443.16	71.49	7.199		
8,100.00	5,606.00	8,207.88	5,735.00	37.67	37.99	-104.52	1,878.95	-139.93	514.58	440.68	73.89	6.964		
8,200.00	5,606.00	8,307.88	5,735.00	38.92	39.24	-104.52	1,978.95	-139.93	514.51	438.18	76.33	6.741		
8,300.00	5,606.00	8,407.88	5,735.00	40.19	40.51	-104.52	2,078.95	-139.93	514.44	435.65	78.79	6.529		
8,400.00	5,606.00	8,507.88	5,735.00	41.47	41.79	-104.52	2,178.95	-139.93	514.38	433.09	81.28	6.328		
8,500.00	5,606.00	8,607.88	5,735.00	42.77	43.08	-104.53	2,278.95	-139.93	514.31	430.51	83.80	6.137		
8,600.00	5,606.00	8,707.88	5,735.00	44.07	44.38	-104.53	2,378.95	-139.93	514.25	427.91	86.34	5.956		
8,700.00	5,606.00	8,807.88	5,735.00	45.39	45.69	-104.53	2,478.95	-139.93	514.18	425.29	88.89	5.784		
8,800.00	5,606.00	8,907.88	5,735.00	46.71	47.02	-104.53	2,578.95	-139.93	514.11	422.65	91.47	5.621		
8,900.00	5,606.00	9,007.88	5,735.00	48.05	48.35	-104.53	2,678.95	-139.93	514.05	419.99	94.06	5.465		
9,000.00	5,606.00	9,107.88	5,735.00	49.39	49.69	-104.54	2,778.95	-139.93	513.98	417.32	96.67	5.317		
9,100.00	5,606.00	9,207.88	5,735.00	50.74	51.03	-104.54	2,878.95	-139.93	513.92	414.63	99.29	5.176		
9,200.00	5,606.00	9,307.88	5,735.00	52.09	52.39	-104.54	2,978.95	-139.93	513.85	411.93	101.92	5.042		
9,300.00	5,606.00	9,407.88	5,735.00	53.45	53.75	-104.54	3,078.95	-139.92	513.78	409.22	104.57	4.914		
9,400.00	5,606.00	9,507.88	5,735.00	54.82	55.11	-104.54	3,178.95	-139.92	513.72	406.50	107.22	4.791		
9,500.00	5,606.00	9,607.88	5,735.00	56.19	56.48	-104.55	3,278.95	-139.92	513.65	403.76	109.89	4.674		
9,600.00	5,606.00	9,707.88	5,735.00	57.57	57.86	-104.55	3,378.95	-139.92	513.59	401.02	112.57	4.563		
9,700.00	5,606.00	9,807.88	5,735.00	58.95	59.24	-104.55	3,478.95	-139.92	513.52	398.27	115.25	4.456		
9,800.00	5,606.00	9,907.88	5,735.00	60.33	60.62	-104.55	3,578.95	-139.92	513.45	395.51	117.95	4.353		
9,900.00	5,606.00	10,007.88	5,735.00	61.72	62.01	-104.55	3,678.95	-139.92	513.39	392.74	120.65	4.255		
10,000.00	5,606.00	10,107.88	5,735.00	63.12	63.40	-104.55	3,778.95	-139.92	513.32	389.97	123.36	4.161		
10,100.00	5,606.00	10,207.88	5,735.00	64.51	64.80	-104.56	3,878.95	-139.92	513.26	387.18	126.07	4.071		
10,200.00	5,606.00	10,307.88	5,735.00	65.91	66.19	-104.56	3,978.95	-139.92	513.19	384.40	128.79	3.985		

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 #30H-1916
Project:	Weld County, CO	TVD Reference:	KBE @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	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	5,606.00	10,407.88	5,735.00	67.32	67.60	-104.56	4,078.95	-139.92	513.12	381.60	131.52	3.901		
10,400.00	5,606.00	10,507.88	5,735.00	68.72	69.00	-104.56	4,178.95	-139.92	513.06	378.80	134.25	3.822		
10,500.00	5,606.00	10,607.88	5,735.00	70.13	70.41	-104.56	4,278.95	-139.92	512.99	376.00	136.99	3.745		
10,600.00	5,606.00	10,707.88	5,735.00	71.54	71.82	-104.57	4,378.95	-139.92	512.93	373.19	139.74	3.671		
10,700.00	5,606.00	10,807.88	5,735.00	72.95	73.23	-104.57	4,478.95	-139.92	512.86	370.38	142.48	3.599		
10,800.00	5,606.00	10,907.88	5,735.00	74.37	74.65	-104.57	4,578.95	-139.92	512.79	367.56	145.24	3.531		
10,900.00	5,606.00	11,007.88	5,735.00	75.79	76.06	-104.57	4,678.95	-139.92	512.73	364.73	147.99	3.465		
11,000.00	5,606.00	11,107.88	5,735.00	77.21	77.48	-104.57	4,778.95	-139.92	512.66	361.91	150.75	3.401		
11,100.00	5,606.00	11,207.88	5,735.00	78.63	78.90	-104.58	4,878.95	-139.92	512.60	359.08	153.52	3.339		
11,200.00	5,606.00	11,307.88	5,735.00	80.05	80.33	-104.58	4,978.95	-139.92	512.53	356.24	156.29	3.279		
11,300.00	5,606.00	11,407.88	5,735.00	81.48	81.75	-104.58	5,078.95	-139.92	512.46	353.41	159.06	3.222		
11,400.00	5,606.00	11,507.88	5,735.00	82.90	83.18	-104.58	5,178.95	-139.92	512.40	350.57	161.83	3.166		
11,500.00	5,606.00	11,607.88	5,735.00	84.33	84.61	-104.58	5,278.95	-139.92	512.33	347.72	164.61	3.112		
11,600.00	5,606.00	11,707.88	5,735.00	85.76	86.03	-104.59	5,378.95	-139.92	512.27	344.88	167.39	3.060		
11,700.00	5,606.00	11,807.88	5,735.00	87.19	87.47	-104.59	5,478.95	-139.91	512.20	342.03	170.17	3.010		
11,800.00	5,606.00	11,907.88	5,735.00	88.63	88.90	-104.59	5,578.95	-139.91	512.13	339.18	172.96	2.961		
11,900.00	5,606.00	12,007.88	5,735.00	90.06	90.33	-104.59	5,678.95	-139.91	512.07	336.32	175.74	2.914		
12,000.00	5,606.00	12,107.88	5,735.00	91.49	91.76	-104.59	5,778.95	-139.91	512.00	333.47	178.53	2.868		
12,100.00	5,606.00	12,207.88	5,735.00	92.93	93.20	-104.59	5,878.95	-139.91	511.94	330.61	181.33	2.823		
12,200.00	5,606.00	12,307.88	5,735.00	94.37	94.64	-104.60	5,978.95	-139.91	511.87	327.75	184.12	2.780		
12,300.00	5,606.00	12,407.88	5,735.00	95.81	96.07	-104.60	6,078.95	-139.91	511.80	324.89	186.92	2.738		
12,400.00	5,606.00	12,507.88	5,735.00	97.25	97.51	-104.60	6,178.95	-139.91	511.74	322.02	189.72	2.697		
12,500.00	5,606.00	12,607.88	5,735.00	98.69	98.95	-104.60	6,278.95	-139.91	511.67	319.16	192.52	2.658		
12,600.00	5,606.00	12,707.88	5,735.00	100.13	100.39	-104.60	6,378.95	-139.91	511.61	316.29	195.32	2.619		
12,700.00	5,606.00	12,807.88	5,735.00	101.57	101.84	-104.61	6,478.95	-139.91	511.54	313.42	198.12	2.582		
12,800.00	5,606.00	12,907.88	5,735.00	103.01	103.28	-104.61	6,578.95	-139.91	511.47	310.55	200.93	2.546		
12,900.00	5,606.00	13,007.88	5,735.00	104.46	104.72	-104.61	6,678.95	-139.91	511.41	307.68	203.73	2.510		
13,000.00	5,606.00	13,107.88	5,735.00	105.90	106.17	-104.61	6,778.95	-139.91	511.34	304.80	206.54	2.476		
13,100.00	5,606.00	13,207.88	5,735.00	107.35	107.61	-104.61	6,878.95	-139.91	511.28	301.93	209.35	2.442		
13,200.00	5,606.00	13,307.88	5,735.00	108.79	109.06	-104.62	6,978.95	-139.91	511.21	299.05	212.16	2.410		
13,300.00	5,606.00	13,407.88	5,735.00	110.24	110.50	-104.62	7,078.95	-139.91	511.14	296.17	214.97	2.378		
13,400.00	5,606.00	13,507.88	5,735.00	111.68	111.95	-104.62	7,178.95	-139.91	511.08	293.29	217.79	2.347		
13,500.00	5,606.00	13,607.88	5,735.00	113.13	113.40	-104.62	7,278.95	-139.91	511.01	290.41	220.60	2.316		
13,600.00	5,606.00	13,707.88	5,735.00	114.58	114.84	-104.62	7,378.95	-139.91	510.95	287.53	223.42	2.287		
13,700.00	5,606.00	13,807.88	5,735.00	116.03	116.29	-104.63	7,478.95	-139.91	510.88	284.65	226.23	2.258		
13,759.87	5,606.00	13,867.75	5,735.00	116.80	117.16	-104.63	7,538.82	-139.91	510.84	283.00	227.85	2.242 SF		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30H-1916
Project:	Weld County, CO	TVD Reference:	KBE @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	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	400.30	400.28	1.11	1.11	115.26	-1.69	-29.48	30.23	28.01	2.22	13.619 ES		
500.00	499.84	500.61	500.44	1.41	1.41	114.70	-6.72	-27.94	30.95	28.14	2.81	11.014		
600.00	599.45	600.90	600.34	1.74	1.74	113.82	-15.11	-25.39	32.16	28.71	3.46	9.306		
700.00	698.70	701.18	699.87	2.07	2.07	112.70	-26.83	-21.82	33.86	29.71	4.15	8.161		
800.00	797.47	801.44	798.88	2.44	2.44	111.42	-41.88	-17.23	36.07	31.17	4.89	7.372		
900.00	895.63	901.45	897.25	2.84	2.83	111.58	-59.18	-11.96	39.00	33.32	5.68	6.867		
1,000.00	993.49	1,001.38	995.51	3.26	3.24	113.54	-76.53	-6.68	42.49	36.00	6.49	6.544		
1,100.00	1,091.36	1,101.31	1,093.78	3.69	3.65	115.19	-93.89	-1.39	46.02	38.71	7.32	6.290		
1,200.00	1,189.23	1,201.24	1,192.05	4.13	4.07	116.61	-111.25	3.90	49.59	41.44	8.15	6.088		
1,300.00	1,287.10	1,301.17	1,290.32	4.58	4.50	117.83	-128.60	9.19	53.18	44.20	8.98	5.924		
1,400.00	1,384.97	1,401.10	1,388.59	5.02	4.92	118.91	-145.96	14.47	56.79	46.98	9.81	5.788		
1,500.00	1,482.84	1,501.03	1,486.86	5.47	5.35	119.85	-163.32	19.76	60.43	49.78	10.65	5.675		
1,600.00	1,580.70	1,600.96	1,585.12	5.92	5.78	120.68	-180.68	25.05	64.07	52.59	11.48	5.580		
1,700.00	1,678.57	1,700.89	1,683.39	6.38	6.21	121.43	-198.03	30.34	67.73	55.41	12.32	5.498		
1,800.00	1,776.44	1,800.82	1,781.66	6.83	6.65	122.10	-215.39	35.62	71.40	58.24	13.15	5.428		
1,900.00	1,874.31	1,900.75	1,879.93	7.29	7.08	122.70	-232.75	40.91	75.07	61.08	13.99	5.366		
2,000.00	1,972.18	2,000.67	1,978.20	7.74	7.51	123.25	-250.10	46.20	78.76	63.93	14.82	5.312		
2,100.00	2,070.05	2,100.60	2,076.47	8.20	7.95	123.75	-267.46	51.49	82.45	66.79	15.66	5.265		
2,200.00	2,167.92	2,200.53	2,174.73	8.66	8.38	124.20	-284.82	56.77	86.14	69.65	16.49	5.222		
2,300.00	2,265.78	2,300.46	2,273.00	9.12	8.82	124.62	-302.18	62.06	89.84	72.51	17.33	5.184		
2,400.00	2,363.65	2,400.39	2,371.27	9.57	9.25	125.01	-319.53	67.35	93.55	75.38	18.16	5.150		
2,500.00	2,461.52	2,500.32	2,469.54	10.03	9.69	125.36	-336.89	72.64	97.26	78.26	19.00	5.119		
2,600.00	2,559.39	2,600.25	2,567.81	10.49	10.13	125.69	-354.25	77.92	100.97	81.14	19.83	5.091		
2,700.00	2,657.26	2,700.18	2,666.08	10.95	10.56	126.00	-371.60	83.21	104.69	84.02	20.67	5.066		
2,800.00	2,755.13	2,800.11	2,764.34	11.41	11.00	126.28	-388.96	88.50	108.40	86.90	21.50	5.042		
2,900.00	2,852.99	2,900.04	2,862.61	11.87	11.44	126.55	-406.32	93.79	112.13	89.79	22.33	5.021		
3,000.00	2,950.86	2,999.97	2,960.88	12.33	11.87	126.80	-423.68	99.07	115.85	92.68	23.17	5.001		
3,100.00	3,048.73	3,099.90	3,059.15	12.79	12.31	127.03	-441.03	104.36	119.57	95.57	24.00	4.982		
3,200.00	3,146.60	3,199.83	3,157.42	13.25	12.75	127.25	-458.39	109.65	123.30	98.47	24.83	4.965		
3,300.00	3,244.47	3,299.76	3,255.69	13.71	13.19	127.46	-475.75	114.94	127.03	101.37	25.67	4.949		
3,400.00	3,342.34	3,399.69	3,353.95	14.17	13.62	127.65	-493.10	120.23	130.76	104.26	26.50	4.935		
3,500.00	3,440.20	3,499.62	3,452.22	14.63	14.06	127.84	-510.46	125.51	134.49	107.16	27.33	4.921		
3,600.00	3,538.07	3,599.55	3,550.49	15.09	14.50	128.01	-527.82	130.80	138.23	110.06	28.16	4.908		
3,700.00	3,635.94	3,699.48	3,648.76	15.56	14.94	128.18	-545.18	136.09	141.96	112.97	29.00	4.896		
3,800.00	3,733.81	3,799.40	3,747.03	16.02	15.37	128.33	-562.53	141.38	145.70	115.87	29.83	4.885		
3,900.00	3,831.68	3,899.33	3,845.30	16.48	15.81	128.48	-579.89	146.66	149.43	118.77	30.66	4.874		
4,000.00	3,929.55	3,999.26	3,943.56	16.94	16.25	128.62	-597.25	151.95	153.17	121.68	31.49	4.864		
4,100.00	4,027.42	4,099.19	4,041.83	17.40	16.69	128.76	-614.60	157.24	156.91	124.59	32.32	4.854		
4,200.00	4,125.28	4,199.12	4,140.10	17.86	17.13	128.88	-631.96	162.53	160.65	127.49	33.16	4.845		
4,300.00	4,223.15	4,299.05	4,238.37	18.32	17.56	129.01	-649.32	167.81	164.39	130.40	33.99	4.837		
4,400.00	4,321.04	4,398.98	4,336.64	18.76	18.00	129.11	-666.68	173.10	168.06	133.26	34.80	4.829		
4,500.00	4,419.41	4,498.94	4,434.94	19.05	18.44	128.57	-684.04	178.39	170.16	134.61	35.55	4.786		
4,600.00	4,518.34	4,598.84	4,533.17	19.32	18.88	127.09	-701.39	183.68	170.15	133.76	36.39	4.675		
4,700.00	4,617.72	4,697.20	4,629.98	19.57	19.27	124.81	-718.03	188.75	168.46	131.21	37.25	4.522		
4,800.00	4,717.43	4,794.51	4,726.23	19.81	19.53	122.43	-731.71	192.91	166.40	128.43	37.97	4.382		
4,900.00	4,817.34	4,892.07	4,823.15	20.03	19.77	120.04	-742.27	196.13	164.14	125.50	38.65	4.247		
5,000.00	4,917.34	4,989.87	4,920.65	20.27	20.01	-87.76	-749.69	198.39	161.77	122.45	39.31	4.115		
5,100.00	5,017.34	5,088.03	5,018.70	20.48	20.23	-89.26	-753.93	199.68	160.34	120.48	39.85	4.023		

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 #30H-1916
Project:	Weld County, CO	TVD Reference:	KBE @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	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	5,117.31	5,186.65	5,117.31	20.69	20.47	-89.97	-755.01	200.01	159.99	119.64	40.35	3.965		
5,201.53	5,118.84	5,188.18	5,118.84	20.69	20.47	-90.00	-755.01	200.01	159.99	119.63	40.36	3.964		
5,300.00	5,215.92	5,285.26	5,215.92	20.82	20.68	-95.40	-755.01	200.01	160.75	119.68	41.07	3.914		
5,400.00	5,309.71	5,380.18	5,310.84	20.88	20.88	-105.82	-754.87	200.01	167.54	125.84	41.70	4.017		
5,500.00	5,395.25	5,485.78	5,415.45	20.85	21.05	-117.38	-741.83	199.99	183.79	142.37	41.43	4.436		
5,600.00	5,469.40	5,602.72	5,525.56	20.78	21.13	-126.87	-703.17	199.95	205.68	166.00	39.68	5.183		
5,700.00	5,529.43	5,733.50	5,634.99	20.67	21.10	-134.15	-632.19	199.86	228.99	192.62	36.36	6.297		
5,800.00	5,573.13	5,879.65	5,732.09	20.55	21.00	-139.30	-523.61	199.73	249.45	217.51	31.93	7.811		
5,900.00	5,598.91	6,039.87	5,799.44	20.45	20.89	-142.31	-378.92	199.55	263.17	235.13	28.04	9.386		
6,000.00	5,606.00	6,199.49	5,820.00	20.39	20.87	-143.17	-221.25	199.36	267.37	240.14	27.23	9.821		
6,100.00	5,606.00	6,299.49	5,820.00	20.41	20.97	-143.16	-121.25	199.24	267.40	239.80	27.60	9.689		
6,200.00	5,606.00	6,399.49	5,820.00	20.55	21.18	-143.15	-21.25	199.11	267.43	239.33	28.11	9.515		
6,300.00	5,606.00	6,499.49	5,820.00	20.81	21.49	-143.14	78.75	198.99	267.47	238.73	28.74	9.307		
6,400.00	5,606.00	6,599.49	5,820.00	21.19	21.90	-143.13	178.75	198.87	267.50	238.01	29.49	9.070		
6,500.00	5,606.00	6,699.49	5,820.00	21.69	22.41	-143.12	278.75	198.75	267.53	237.18	30.35	8.814		
6,600.00	5,606.00	6,799.49	5,820.00	22.28	23.01	-143.11	378.75	198.62	267.56	236.25	31.31	8.544		
6,700.00	5,606.00	6,899.49	5,820.00	22.96	23.68	-143.10	478.75	198.50	267.60	235.23	32.37	8.267		
6,800.00	5,606.00	6,999.49	5,820.00	23.72	24.43	-143.09	578.75	198.38	267.63	234.12	33.51	7.988		
6,900.00	5,606.00	7,099.49	5,820.00	24.55	25.24	-143.08	678.75	198.26	267.66	232.94	34.72	7.710		
7,000.00	5,606.00	7,199.49	5,820.00	25.43	26.11	-143.07	778.75	198.14	267.69	231.70	36.00	7.436		
7,100.00	5,606.00	7,299.49	5,820.00	26.37	27.03	-143.07	878.75	198.01	267.73	230.39	37.34	7.170		
7,200.00	5,606.00	7,399.49	5,820.00	27.35	28.00	-143.06	978.75	197.89	267.76	229.02	38.74	6.913		
7,300.00	5,606.00	7,499.49	5,820.00	28.38	29.01	-143.05	1,078.75	197.77	267.79	227.61	40.18	6.665		
7,400.00	5,606.00	7,599.49	5,820.00	29.45	30.06	-143.04	1,178.75	197.65	267.83	226.16	41.67	6.427		
7,500.00	5,606.00	7,699.49	5,820.00	30.54	31.14	-143.03	1,278.75	197.52	267.86	224.66	43.20	6.201		
7,600.00	5,606.00	7,799.49	5,820.00	31.67	32.26	-143.02	1,378.75	197.40	267.89	223.13	44.76	5.985		
7,700.00	5,606.00	7,899.49	5,820.00	32.83	33.40	-143.01	1,478.75	197.28	267.92	221.57	46.36	5.780		
7,800.00	5,606.00	7,999.49	5,820.00	34.01	34.57	-143.00	1,578.75	197.16	267.96	219.98	47.98	5.585		
7,900.00	5,606.00	8,099.49	5,820.00	35.21	35.76	-142.99	1,678.75	197.04	267.99	218.36	49.63	5.400		
8,000.00	5,606.00	8,199.49	5,820.00	36.43	36.97	-142.98	1,778.75	196.91	268.02	216.72	51.31	5.224		
8,100.00	5,606.00	8,299.49	5,820.00	37.67	38.19	-142.97	1,878.75	196.79	268.06	215.05	53.00	5.057		
8,200.00	5,606.00	8,399.49	5,820.00	38.92	39.44	-142.96	1,978.75	196.67	268.09	213.37	54.72	4.899		
8,300.00	5,606.00	8,499.49	5,820.00	40.19	40.70	-142.95	2,078.75	196.55	268.12	211.67	56.45	4.750		
8,400.00	5,606.00	8,599.49	5,820.00	41.47	41.97	-142.94	2,178.75	196.42	268.15	209.95	58.20	4.607		
8,500.00	5,606.00	8,699.49	5,820.00	42.77	43.26	-142.94	2,278.75	196.30	268.19	208.22	59.97	4.472		
8,600.00	5,606.00	8,799.49	5,820.00	44.07	44.56	-142.93	2,378.75	196.18	268.22	206.47	61.75	4.344		
8,700.00	5,606.00	8,899.49	5,820.00	45.39	45.86	-142.92	2,478.75	196.06	268.25	204.72	63.54	4.222		
8,800.00	5,606.00	8,999.49	5,820.00	46.71	47.18	-142.91	2,578.75	195.94	268.28	202.95	65.34	4.106		
8,900.00	5,606.00	9,099.49	5,820.00	48.05	48.51	-142.90	2,678.75	195.81	268.32	201.16	67.15	3.996		
9,000.00	5,606.00	9,199.49	5,820.00	49.39	49.84	-142.89	2,778.75	195.69	268.35	199.37	68.98	3.890		
9,100.00	5,606.00	9,299.49	5,820.00	50.74	51.18	-142.88	2,878.75	195.57	268.38	197.57	70.81	3.790		
9,200.00	5,606.00	9,399.49	5,820.00	52.09	52.53	-142.87	2,978.75	195.45	268.42	195.77	72.65	3.695		
9,300.00	5,606.00	9,499.49	5,820.00	53.45	53.89	-142.86	3,078.75	195.32	268.45	193.95	74.50	3.603		
9,400.00	5,606.00	9,599.49	5,820.00	54.82	55.25	-142.85	3,178.75	195.20	268.48	192.13	76.36	3.516		
9,500.00	5,606.00	9,699.49	5,820.00	56.19	56.62	-142.84	3,278.75	195.08	268.51	190.29	78.22	3.433		
9,600.00	5,606.00	9,799.49	5,820.00	57.57	57.99	-142.83	3,378.75	194.96	268.55	188.46	80.09	3.353		
9,700.00	5,606.00	9,899.49	5,820.00	58.95	59.37	-142.82	3,478.75	194.84	268.58	186.61	81.97	3.277		
9,800.00	5,606.00	9,999.49	5,820.00	60.33	60.75	-142.81	3,578.75	194.71	268.61	184.76	83.85	3.204		
9,900.00	5,606.00	10,099.49	5,820.00	61.72	62.13	-142.81	3,678.75	194.59	268.65	182.91	85.74	3.133		
10,000.00	5,606.00	10,199.49	5,820.00	63.12	63.52	-142.80	3,778.75	194.47	268.68	181.05	87.63	3.066		
10,100.00	5,606.00	10,299.49	5,820.00	64.51	64.91	-142.79	3,878.75	194.35	268.71	179.19	89.53	3.001		
10,200.00	5,606.00	10,399.49	5,820.00	65.91	66.31	-142.78	3,978.75	194.22	268.75	177.32	91.43	2.939		

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 #30H-1916
Project:	Weld County, CO	TVD Reference:	KBE @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	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	5,606.00	10,499.49	5,820.00	67.32	67.71	-142.77	4,078.75	194.10	268.78	175.44	93.34	2.880		
10,400.00	5,606.00	10,599.49	5,820.00	68.72	69.11	-142.76	4,178.75	193.98	268.81	173.56	95.25	2.822		
10,500.00	5,606.00	10,699.49	5,820.00	70.13	70.52	-142.75	4,278.75	193.86	268.84	171.68	97.16	2.767		
10,600.00	5,606.00	10,799.49	5,820.00	71.54	71.93	-142.74	4,378.75	193.74	268.88	169.80	99.08	2.714		
10,700.00	5,606.00	10,899.49	5,820.00	72.95	73.34	-142.73	4,478.75	193.61	268.91	167.91	101.00	2.662		
10,800.00	5,606.00	10,999.49	5,820.00	74.37	74.75	-142.72	4,578.75	193.49	268.94	166.02	102.93	2.613		
10,900.00	5,606.00	11,099.49	5,820.00	75.79	76.16	-142.71	4,678.75	193.37	268.98	164.12	104.85	2.565		
11,000.00	5,606.00	11,199.49	5,820.00	77.21	77.58	-142.70	4,778.75	193.25	269.01	162.22	106.78	2.519		
11,100.00	5,606.00	11,299.49	5,820.00	78.63	79.00	-142.69	4,878.75	193.12	269.04	160.32	108.72	2.475		
11,200.00	5,606.00	11,399.49	5,820.00	80.05	80.42	-142.69	4,978.75	193.00	269.08	158.42	110.66	2.432		
11,300.00	5,606.00	11,499.49	5,820.00	81.48	81.84	-142.68	5,078.75	192.88	269.11	156.51	112.60	2.390		
11,400.00	5,606.00	11,599.49	5,820.00	82.90	83.27	-142.67	5,178.75	192.76	269.14	154.60	114.54	2.350		
11,500.00	5,606.00	11,699.49	5,820.00	84.33	84.69	-142.66	5,278.75	192.64	269.17	152.69	116.48	2.311		
11,600.00	5,606.00	11,799.49	5,820.00	85.76	86.12	-142.65	5,378.75	192.51	269.21	150.78	118.43	2.273		
11,700.00	5,606.00	11,899.49	5,820.00	87.19	87.55	-142.64	5,478.75	192.39	269.24	148.86	120.38	2.237		
11,800.00	5,606.00	11,999.49	5,820.00	88.63	88.98	-142.63	5,578.75	192.27	269.27	146.94	122.33	2.201		
11,900.00	5,606.00	12,099.49	5,820.00	90.06	90.41	-142.62	5,678.75	192.15	269.31	145.02	124.29	2.167		
12,000.00	5,606.00	12,199.49	5,820.00	91.49	91.85	-142.61	5,778.75	192.02	269.34	143.10	126.24	2.134		
12,100.00	5,606.00	12,299.49	5,820.00	92.93	93.28	-142.60	5,878.75	191.90	269.37	141.17	128.20	2.101		
12,200.00	5,606.00	12,399.49	5,820.00	94.37	94.72	-142.59	5,978.75	191.78	269.41	139.25	130.16	2.070		
12,300.00	5,606.00	12,499.49	5,820.00	95.81	96.15	-142.58	6,078.75	191.66	269.44	137.32	132.12	2.039		
12,400.00	5,606.00	12,599.49	5,820.00	97.25	97.59	-142.57	6,178.75	191.54	269.47	135.39	134.08	2.010		
12,500.00	5,606.00	12,699.49	5,820.00	98.69	99.03	-142.57	6,278.75	191.41	269.50	133.45	136.05	1.981		
12,600.00	5,606.00	12,799.49	5,820.00	100.13	100.47	-142.56	6,378.75	191.29	269.54	131.52	138.02	1.953		
12,700.00	5,606.00	12,899.49	5,820.00	101.57	101.91	-142.55	6,478.75	191.17	269.57	129.58	139.99	1.926		
12,800.00	5,606.00	12,999.49	5,820.00	103.01	103.35	-142.54	6,578.75	191.05	269.60	127.65	141.96	1.899		
12,900.00	5,606.00	13,099.49	5,820.00	104.46	104.79	-142.53	6,678.75	190.92	269.64	125.71	143.93	1.873		
13,000.00	5,606.00	13,199.49	5,820.00	105.90	106.24	-142.52	6,778.75	190.80	269.67	123.77	145.90	1.848		
13,100.00	5,606.00	13,299.49	5,820.00	107.35	107.68	-142.51	6,878.75	190.68	269.70	121.83	147.88	1.824		
13,200.00	5,606.00	13,399.49	5,820.00	108.79	109.12	-142.50	6,978.75	190.56	269.74	119.88	149.85	1.800		
13,300.00	5,606.00	13,499.49	5,820.00	110.24	110.57	-142.49	7,078.75	190.44	269.77	117.94	151.83	1.777		
13,400.00	5,606.00	13,599.49	5,820.00	111.68	112.02	-142.48	7,178.75	190.31	269.80	115.99	153.81	1.754		
13,500.00	5,606.00	13,699.49	5,820.00	113.13	113.46	-142.47	7,278.75	190.19	269.84	114.04	155.79	1.732		
13,600.00	5,606.00	13,799.49	5,820.00	114.58	114.91	-142.46	7,378.75	190.07	269.87	112.10	157.77	1.710		
13,700.00	5,606.00	13,899.49	5,820.00	116.03	116.36	-142.46	7,478.75	189.95	269.90	110.14	159.76	1.689		
13,759.87	5,606.00	13,959.36	5,820.00	116.80	117.13	-142.45	7,538.62	189.87	269.92	109.20	160.72	1.679 SF		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30H-1916
Project:	Weld County, CO	TVD Reference:	KBE @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	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	-105.41	-49.59	-179.94	186.65					
100.00	100.00	99.00	99.00	0.13	0.13	-105.41	-49.59	-179.94	186.64	186.38	0.27	704.273		
200.00	200.00	199.00	199.00	0.47	0.47	-105.41	-49.59	-179.94	186.64	185.71	0.94	199.135		
300.00	300.00	299.00	299.00	0.81	0.80	-105.41	-49.59	-179.94	186.64	185.03	1.61	115.815 CC, ES		
400.00	399.98	389.29	389.23	1.11	1.11	100.96	-48.64	-182.55	189.50	187.14	2.35	80.562		
500.00	499.84	487.48	487.18	1.41	1.44	103.43	-46.31	-188.95	196.42	193.46	2.96	66.284		
600.00	599.45	586.41	585.88	1.74	1.76	106.64	-43.95	-195.43	204.75	201.16	3.59	57.072		
700.00	698.70	684.82	684.04	2.07	2.10	110.41	-41.60	-201.88	214.94	210.69	4.24	50.655		
800.00	797.47	782.56	781.55	2.44	2.43	114.53	-39.27	-208.29	227.49	222.57	4.92	46.205		
900.00	895.63	879.53	878.28	2.84	2.77	118.86	-36.96	-214.65	242.90	237.27	5.63	43.158		
1,000.00	993.49	976.14	974.66	3.26	3.11	123.15	-34.65	-220.98	260.49	254.17	6.32	41.194		
1,100.00	1,091.36	1,072.75	1,071.03	3.69	3.44	126.90	-32.35	-227.31	279.37	272.35	7.02	39.804		
1,200.00	1,189.23	1,169.36	1,167.41	4.13	3.78	130.18	-30.04	-233.65	299.28	291.57	7.71	38.814		
1,300.00	1,287.10	1,265.97	1,263.78	4.58	4.11	133.05	-27.74	-239.98	320.04	311.64	8.40	38.100		
1,400.00	1,384.97	1,362.58	1,360.15	5.02	4.45	135.57	-25.43	-246.31	341.49	332.40	9.09	37.581		
1,500.00	1,482.84	1,459.19	1,456.53	5.47	4.79	137.80	-23.13	-252.64	363.51	353.74	9.77	37.200		
1,600.00	1,580.70	1,555.80	1,552.90	5.92	5.13	139.77	-20.82	-258.98	386.00	375.54	10.45	36.921		
1,700.00	1,678.57	1,652.41	1,649.27	6.38	5.46	141.53	-18.52	-265.31	408.88	397.75	11.14	36.715		
1,800.00	1,776.44	1,749.01	1,745.65	6.83	5.80	143.11	-16.21	-271.64	432.10	420.28	11.82	36.564		
1,900.00	1,874.31	1,845.62	1,842.02	7.29	6.14	144.52	-13.91	-277.97	455.59	443.10	12.50	36.454		
2,000.00	1,972.18	1,942.23	1,938.39	7.74	6.48	145.80	-11.60	-284.31	479.33	466.15	13.18	36.376		
2,100.00	2,070.05	2,038.84	2,034.77	8.20	6.82	146.95	-9.30	-290.64	503.27	489.41	13.86	36.320		
2,200.00	2,167.92	2,135.45	2,131.14	8.66	7.16	148.00	-6.99	-296.97	527.39	512.85	14.54	36.283		
2,300.00	2,265.78	2,232.06	2,227.51	9.12	7.49	148.97	-4.69	-303.30	551.66	536.45	15.21	36.260		
2,400.00	2,363.65	2,328.67	2,323.89	9.57	7.83	149.85	-2.38	-309.64	576.07	560.17	15.89	36.248		
2,500.00	2,461.52	2,425.28	2,420.26	10.03	8.17	150.65	-0.08	-315.97	600.59	584.02	16.57	36.244		
2,600.00	2,559.39	2,521.89	2,516.64	10.49	8.51	151.40	2.23	-322.30	625.22	607.97	17.25	36.246		
2,700.00	2,657.26	2,618.49	2,613.01	10.95	8.85	152.09	4.53	-328.64	649.94	632.02	17.93	36.254		
2,800.00	2,755.13	2,715.10	2,709.38	11.41	9.19	152.73	6.84	-334.97	674.75	656.14	18.61	36.265		
2,900.00	2,852.99	2,811.71	2,805.76	11.87	9.53	153.32	9.14	-341.30	699.63	680.34	19.28	36.279		
3,000.00	2,950.86	2,908.32	2,902.13	12.33	9.86	153.87	11.45	-347.63	724.57	704.61	19.96	36.296		
3,100.00	3,048.73	3,004.93	2,998.50	12.79	10.20	154.39	13.75	-353.97	749.57	728.93	20.64	36.314		
3,200.00	3,146.60	3,101.54	3,094.88	13.25	10.54	154.87	16.06	-360.30	774.63	753.31	21.32	36.333		
3,300.00	3,244.47	3,198.15	3,191.25	13.71	10.88	155.33	18.36	-366.63	799.74	777.74	22.00	36.353		
3,400.00	3,342.34	3,294.76	3,287.62	14.17	11.22	155.75	20.67	-372.96	824.89	802.21	22.68	36.374		
3,500.00	3,440.20	3,391.37	3,384.00	14.63	11.56	156.15	22.97	-379.30	850.08	826.72	23.36	36.395		
3,600.00	3,538.07	3,487.97	3,480.37	15.09	11.90	156.53	25.28	-385.63	875.30	851.27	24.04	36.416		
3,700.00	3,635.94	3,584.58	3,576.74	15.56	12.24	156.89	27.58	-391.96	900.56	875.85	24.72	36.438		
3,800.00	3,733.81	3,740.77	3,732.81	16.02	12.71	157.58	29.14	-396.25	921.92	896.25	25.67	35.915		
3,900.00	3,831.68	3,838.64	3,830.68	16.48	13.00	158.05	29.14	-396.25	940.99	914.69	26.31	35.769		
4,000.00	3,929.55	3,936.50	3,928.55	16.94	13.30	158.51	29.14	-396.25	960.13	933.17	26.96	35.617		
4,100.00	4,027.42	4,034.37	4,026.42	17.40	13.61	158.95	29.14	-396.25	979.32	951.71	27.61	35.473		
4,200.00	4,125.28	4,132.24	4,124.28	17.86	13.91	159.37	29.14	-396.25	998.56	970.30	28.26	35.336		
4,300.00	4,223.15	4,230.11	4,222.15	18.32	14.22	159.78	29.14	-396.25	1,017.86	988.95	28.91	35.206		
4,400.00	4,321.04	4,328.00	4,320.04	18.76	14.52	160.20	29.14	-396.25	1,037.10	1,007.55	29.55	35.094		
4,500.00	4,419.41	4,426.37	4,418.41	19.05	14.83	160.64	29.14	-396.25	1,054.06	1,023.95	30.11	35.006		
4,600.00	4,518.34	4,525.30	4,517.34	19.32	15.15	160.99	29.14	-396.25	1,067.80	1,037.13	30.67	34.811		
4,700.00	4,617.72	4,624.68	4,616.72	19.57	15.46	161.25	29.14	-396.25	1,078.28	1,047.04	31.24	34.515		
4,800.00	4,717.43	4,724.39	4,716.43	19.81	15.78	161.43	29.14	-396.25	1,085.47	1,053.66	31.81	34.123		
4,900.00	4,817.34	6,106.82	5,538.00	20.03	20.76	116.61	-755.27	-396.26	1,045.08	1,015.48	29.61	35.298		
5,000.00	4,917.34	6,107.54	5,538.00	20.27	20.76	-90.00	-755.99	-396.26	978.98	947.34	31.63	30.947		
5,100.00	5,017.34	6,107.54	5,538.00	20.48	20.76	-90.00	-755.99	-396.26	918.73	885.02	33.71	27.252		

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 #30H-1916
Project:	Weld County, CO	TVD Reference:	KBE @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	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	5,117.31	6,106.54	5,538.00	20.69	20.76	-91.94	-754.99	-396.26	865.88	830.09	35.79	24.192	
5,300.00	5,215.92	6,090.82	5,538.00	20.82	20.64	-96.09	-739.28	-396.26	822.37	784.80	37.57	21.887	
5,400.00	5,309.71	6,056.59	5,538.00	20.88	20.41	-97.42	-705.04	-396.26	790.22	751.40	38.82	20.357	
5,500.00	5,395.25	6,005.09	5,538.00	20.85	20.07	-96.43	-653.55	-396.26	769.73	730.32	39.41	19.532	
5,600.00	5,469.40	5,938.22	5,538.00	20.78	19.67	-93.86	-586.67	-396.26	759.34	719.91	39.43	19.259 SF	
5,700.00	5,529.43	5,858.43	5,538.00	20.67	19.25	-90.60	-506.89	-396.26	756.15	717.12	39.03	19.374	
5,720.78	5,539.91	5,840.50	5,537.99	20.64	19.16	-89.92	-488.96	-396.26	756.07	717.16	38.92	19.427	
5,800.00	5,573.13	5,773.67	5,533.36	20.55	18.87	-87.37	-422.33	-396.25	757.04	718.55	38.49	19.670	
5,900.00	5,598.91	5,694.06	5,516.78	20.45	18.57	-84.25	-344.55	-396.25	760.68	722.73	37.95	20.045	
6,000.00	5,606.00	5,618.51	5,490.26	20.39	18.33	-81.37	-273.88	-396.25	766.37	728.88	37.50	20.439	
6,100.00	5,606.00	5,550.00	5,457.60	20.41	18.14	-78.97	-213.71	-396.25	775.62	738.47	37.15	20.878	
6,200.00	5,606.00	5,491.61	5,423.73	20.55	17.99	-76.51	-166.18	-396.25	790.62	753.72	36.91	21.423	
6,300.00	5,606.00	5,450.00	5,396.46	20.81	17.88	-74.58	-134.77	-396.25	812.54	775.71	36.84	22.059	
6,400.00	5,606.00	5,400.00	5,360.50	21.19	17.76	-72.07	-100.06	-396.25	841.77	805.09	36.68	22.947	
6,500.00	5,606.00	5,364.51	5,333.03	21.69	17.66	-70.21	-77.59	-396.25	878.60	841.90	36.70	23.942	
6,600.00	5,606.00	5,334.42	5,308.60	22.28	17.58	-68.59	-60.04	-396.25	922.67	885.90	36.77	25.092	
6,700.00	5,606.00	5,300.00	5,279.46	22.96	17.49	-66.70	-41.73	-396.25	973.52	936.73	36.79	26.464	
6,800.00	5,606.00	5,300.00	5,279.46	23.72	17.49	-66.70	-41.73	-396.25	1,030.43	993.27	37.16	27.731	
6,900.00	5,606.00	5,267.49	5,250.88	24.55	17.41	-64.89	-26.25	-396.25	1,092.32	1,055.15	37.17	29.389	
7,000.00	5,606.00	5,250.00	5,235.12	25.43	17.36	-63.92	-18.66	-396.25	1,159.03	1,121.72	37.30	31.069	
7,100.00	5,606.00	5,250.00	5,235.12	26.37	17.36	-63.92	-18.66	-396.25	1,229.95	1,192.38	37.56	32.745	
7,200.00	5,606.00	5,223.16	5,210.46	27.35	17.28	-62.43	-8.06	-396.25	1,303.84	1,266.26	37.58	34.695	
7,300.00	5,606.00	5,200.00	5,188.77	28.38	17.22	-61.16	0.05	-396.25	1,381.05	1,343.44	37.61	36.718	
7,400.00	5,606.00	5,200.00	5,188.77	29.45	17.22	-61.16	0.05	-396.25	1,460.47	1,422.68	37.79	38.642	
7,500.00	5,606.00	5,200.00	5,188.77	30.54	17.22	-61.16	0.05	-396.25	1,542.29	1,504.34	37.95	40.643	



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30H-1916
Project:	Weld County, CO	TVD Reference:	KBE @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	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	-112.46	-49.59	-119.96	129.81					
100.00	100.00	99.00	99.00	0.13	0.13	-112.46	-49.59	-119.96	129.80	129.54	0.27	489.793		
200.00	200.00	199.00	199.00	0.47	0.47	-112.46	-49.59	-119.96	129.80	128.87	0.94	138.490		
300.00	300.00	299.00	299.00	0.81	0.80	-112.46	-49.59	-119.96	129.80	128.19	1.61	80.544		
400.00	399.98	400.93	400.91	1.11	1.15	94.51	-47.82	-119.83	129.16	126.89	2.27	56.997		
500.00	499.84	500.60	500.51	1.41	1.49	98.29	-44.25	-119.57	128.32	125.44	2.89	44.465		
521.27	521.05	521.74	521.64	1.48	1.56	99.29	-43.49	-119.52	128.29	125.27	3.02	42.424	CC, ES	
600.00	599.45	599.88	599.73	1.74	1.82	103.56	-40.70	-119.32	128.83	125.30	3.54	36.440		
700.00	698.70	698.68	698.47	2.07	2.16	110.10	-37.16	-119.06	131.60	127.39	4.21	31.252		
800.00	797.47	796.89	796.62	2.44	2.49	117.46	-33.65	-118.81	137.64	132.73	4.91	28.042		
900.00	895.63	894.39	894.06	2.84	2.82	125.11	-30.16	-118.56	147.84	142.22	5.62	26.289		
1,000.00	993.49	991.56	991.16	3.26	3.14	132.21	-26.68	-118.31	161.47	155.15	6.32	25.541		
1,100.00	1,091.36	1,088.72	1,088.26	3.69	3.47	138.16	-23.21	-118.06	177.22	170.21	7.01	25.291		
1,200.00	1,189.23	1,185.89	1,185.36	4.13	3.80	143.13	-19.73	-117.81	194.58	186.89	7.68	25.330		
1,300.00	1,287.10	1,283.05	1,282.47	4.58	4.13	147.27	-16.25	-117.56	213.14	204.80	8.35	25.531		
1,400.00	1,384.97	1,380.22	1,379.57	5.02	4.45	150.75	-12.78	-117.31	232.63	223.62	9.01	25.818		
1,500.00	1,482.84	1,477.38	1,476.67	5.47	4.78	153.69	-9.30	-117.06	252.83	243.17	9.67	26.147		
1,600.00	1,580.70	1,574.55	1,573.77	5.92	5.11	156.20	-5.82	-116.81	273.59	263.26	10.33	26.492		
1,700.00	1,678.57	1,671.71	1,670.87	6.38	5.44	158.35	-2.35	-116.56	294.78	283.79	10.98	26.836		
1,800.00	1,776.44	1,768.88	1,767.98	6.83	5.76	160.21	1.13	-116.31	316.31	304.67	11.64	27.172		
1,900.00	1,874.31	1,866.04	1,865.08	7.29	6.09	161.84	4.61	-116.06	338.13	325.83	12.30	27.494		
2,000.00	1,972.18	1,963.21	1,962.18	7.74	6.42	163.27	8.08	-115.81	360.18	347.22	12.96	27.800		
2,100.00	2,070.05	2,060.37	2,059.28	8.20	6.75	164.54	11.56	-115.56	382.42	368.80	13.61	28.089		
2,200.00	2,167.92	2,157.54	2,156.38	8.66	7.07	165.67	15.04	-115.31	404.82	390.54	14.27	28.362		
2,300.00	2,265.78	2,254.70	2,253.49	9.12	7.40	166.68	18.51	-115.06	427.35	412.42	14.93	28.619		
2,400.00	2,363.65	2,351.87	2,350.59	9.57	7.73	167.59	21.99	-114.81	450.00	434.40	15.59	28.859		
2,500.00	2,461.52	2,449.03	2,447.69	10.03	8.06	168.41	25.47	-114.56	472.74	456.49	16.25	29.086		
2,600.00	2,559.39	2,546.20	2,544.79	10.49	8.39	169.16	28.94	-114.31	495.57	478.65	16.91	29.298		
2,700.00	2,657.26	2,643.36	2,641.90	10.95	8.71	169.84	32.42	-114.06	518.47	500.89	17.58	29.498		
2,800.00	2,755.13	2,740.52	2,739.00	11.41	9.04	170.46	35.90	-113.81	541.44	523.20	18.24	29.686		
2,900.00	2,852.99	2,837.69	2,836.10	11.87	9.37	171.03	39.37	-113.56	564.46	545.56	18.90	29.863		
3,000.00	2,950.86	2,934.85	2,933.20	12.33	9.70	171.56	42.85	-113.31	587.53	567.96	19.56	30.030		
3,100.00	3,048.73	3,032.02	3,030.30	12.79	10.02	172.05	46.33	-113.06	610.64	590.41	20.23	30.188		
3,200.00	3,146.60	3,129.18	3,127.41	13.25	10.35	172.50	49.80	-112.81	633.80	612.90	20.89	30.337		
3,300.00	3,244.47	3,226.35	3,224.51	13.71	10.68	172.92	53.28	-112.56	656.98	635.43	21.56	30.477		
3,400.00	3,342.34	3,323.51	3,321.61	14.17	11.01	173.32	56.76	-112.31	680.20	657.98	22.22	30.611		
3,500.00	3,440.20	3,420.68	3,418.71	14.63	11.34	173.68	60.23	-112.06	703.45	680.57	22.89	30.737		
3,600.00	3,538.07	3,517.84	3,515.82	15.09	11.66	174.03	63.71	-111.81	726.73	703.17	23.55	30.857		
3,700.00	3,635.94	3,615.01	3,612.92	15.56	11.99	174.35	67.19	-111.56	750.02	725.80	24.22	30.971		
3,800.00	3,733.81	3,712.17	3,710.02	16.02	12.32	174.65	70.66	-111.31	773.34	748.46	24.88	31.080		
3,900.00	3,831.68	3,809.34	3,807.12	16.48	12.65	174.93	74.14	-111.05	796.68	771.13	25.55	31.183		
4,000.00	3,929.55	3,906.50	3,904.22	16.94	12.98	175.20	77.62	-110.80	820.03	793.82	26.21	31.281		
4,100.00	4,027.42	4,003.67	4,001.33	17.40	13.30	175.46	81.09	-110.55	843.40	816.52	26.88	31.375		
4,200.00	4,125.28	4,100.83	4,098.43	17.86	13.63	175.70	84.57	-110.30	866.79	839.24	27.55	31.465		
4,300.00	4,223.15	4,202.65	4,200.18	18.32	13.97	175.93	88.16	-110.05	890.15	861.91	28.24	31.525		
4,400.00	4,321.04	4,322.52	4,320.04	18.76	14.29	176.10	89.41	-109.96	911.31	882.35	28.96	31.470		
4,500.00	4,419.41	4,420.89	4,418.41	19.05	14.62	176.20	89.41	-109.96	929.24	899.69	29.55	31.442		
4,600.00	4,518.34	4,519.82	4,517.34	19.32	14.95	176.27	89.41	-109.96	943.74	913.59	30.15	31.299		
4,700.00	4,617.72	4,619.20	4,616.72	19.57	15.29	176.33	89.41	-109.96	954.78	924.03	30.75	31.048		
4,800.00	4,717.43	4,718.91	4,716.43	19.81	15.62	176.37	89.41	-109.96	962.36	931.01	31.35	30.696		
4,900.00	4,817.34	6,229.60	5,606.00	20.03	20.71	117.48	-755.28	-109.96	918.75	895.95	22.80	40.300		
5,000.00	4,917.34	6,230.33	5,606.00	20.27	20.71	-90.00	-756.00	-109.96	834.57	809.77	24.80	33.658		

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 #30H-1916
Project:	Weld County, CO	TVD Reference:	KBE @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	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	5,017.34	6,230.33	5,606.00	20.48	20.71	-90.00	-756.00	-109.96	754.03	726.93	27.11	27.818		
5,200.00	5,117.31	6,229.32	5,606.00	20.69	20.71	-93.66	-754.99	-109.96	678.71	648.93	29.78	22.789		
5,300.00	5,215.92	6,213.61	5,606.00	20.82	20.59	-101.77	-739.28	-109.96	611.39	578.78	32.61	18.749		
5,400.00	5,309.71	6,179.38	5,606.00	20.88	20.35	-105.23	-705.05	-109.96	556.07	520.80	35.27	15.767		
5,500.00	5,395.25	6,127.88	5,606.00	20.85	20.02	-104.99	-653.55	-109.96	515.40	478.03	37.37	13.792		
5,600.00	5,469.40	6,061.01	5,606.00	20.78	19.61	-102.17	-586.68	-109.96	489.58	450.96	38.62	12.677		
5,700.00	5,529.43	5,981.22	5,606.00	20.67	19.18	-98.00	-506.89	-109.96	476.15	437.15	39.00	12.208		
5,800.00	5,573.13	5,890.45	5,605.77	20.55	18.76	-93.78	-416.13	-109.96	470.93	432.12	38.81	12.135 SF		
5,892.17	5,597.57	5,802.18	5,595.73	20.46	18.43	-89.90	-328.54	-109.96	469.67	431.22	38.45	12.216		
5,900.00	5,598.91	5,794.94	5,594.25	20.45	18.41	-89.57	-321.45	-109.96	469.68	431.27	38.41	12.227		
6,000.00	5,606.00	5,705.47	5,567.95	20.39	18.20	-85.49	-236.04	-109.96	471.29	433.31	37.99	12.407		
6,100.00	5,606.00	5,625.41	5,532.34	20.41	18.09	-81.20	-164.43	-109.96	477.09	439.54	37.55	12.704		
6,200.00	5,606.00	5,557.70	5,493.96	20.55	17.99	-76.69	-108.71	-109.96	490.31	453.24	37.07	13.225		
6,300.00	5,606.00	5,500.00	5,455.77	20.81	17.88	-72.37	-65.49	-109.96	513.29	476.71	36.58	14.032		
6,400.00	5,606.00	5,450.00	5,418.98	21.19	17.78	-68.39	-31.65	-109.96	547.01	510.88	36.13	15.140		
6,500.00	5,606.00	5,416.66	5,392.73	21.69	17.71	-65.67	-11.12	-109.96	591.10	555.10	36.00	16.421		
6,600.00	5,606.00	5,384.70	5,366.37	22.28	17.63	-63.05	6.96	-109.96	644.56	608.67	35.89	17.958		
6,700.00	5,606.00	5,350.00	5,336.56	22.96	17.55	-60.24	24.70	-109.96	706.02	670.28	35.75	19.750		
6,800.00	5,606.00	5,335.12	5,323.43	23.72	17.51	-59.04	31.70	-109.96	773.80	737.86	35.94	21.528		
6,900.00	5,606.00	5,315.68	5,305.98	24.55	17.46	-57.50	40.27	-109.96	846.92	810.88	36.03	23.504		
7,000.00	5,606.00	5,300.00	5,291.68	25.43	17.42	-56.28	46.70	-109.96	924.25	888.10	36.15	25.569		
7,100.00	5,606.00	5,300.00	5,291.68	26.37	17.42	-56.28	46.70	-109.96	1,005.30	968.89	36.40	27.616		
7,200.00	5,606.00	5,271.55	5,265.27	27.35	17.35	-54.11	57.27	-109.96	1,088.43	1,052.09	36.34	29.955		
7,300.00	5,606.00	5,250.00	5,244.90	28.38	17.29	-52.51	64.30	-109.96	1,174.26	1,137.92	36.34	32.313		
7,400.00	5,606.00	5,250.00	5,244.90	29.45	17.29	-52.51	64.30	-109.96	1,261.64	1,225.13	36.51	34.553		
7,500.00	5,606.00	5,250.00	5,244.90	30.54	17.29	-52.51	64.30	-109.96	1,350.78	1,314.13	36.65	36.852		
7,600.00	5,606.00	5,250.00	5,244.90	31.67	17.29	-52.51	64.30	-109.96	1,441.35	1,404.57	36.77	39.198		
7,700.00	5,606.00	5,226.00	5,221.90	32.83	17.23	-50.78	71.13	-109.96	1,532.37	1,495.63	36.74	41.706		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30H-1916
Project:	Weld County, CO	TVD Reference:	KBE @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	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	-130.15	-50.60	-59.98	78.48					
100.00	100.00	99.00	99.00	0.13	0.13	-130.15	-50.60	-59.98	78.47	78.21	0.27	296.107		
200.00	200.00	199.00	199.00	0.47	0.47	-130.15	-50.60	-59.98	78.47	77.54	0.94	83.725		
300.00	300.00	299.00	299.00	0.81	0.80	-130.15	-50.60	-59.98	78.47	76.86	1.61	48.694		
400.00	399.98	401.69	401.67	1.11	1.15	76.49	-49.62	-58.47	76.30	73.98	2.32	32.908		
500.00	499.84	503.03	502.87	1.41	1.49	80.39	-46.81	-54.17	70.18	67.17	3.01	23.331		
600.00	599.45	602.41	602.09	1.74	1.82	88.08	-43.69	-49.38	63.52	59.90	3.62	17.526		
700.00	698.70	701.40	700.92	2.07	2.15	100.57	-40.58	-44.61	58.75	54.48	4.26	13.776		
753.08	751.19	753.74	753.17	2.26	2.33	109.08	-38.93	-42.09	57.92	53.31	4.62	12.549 CC, ES		
800.00	797.47	799.88	799.23	2.44	2.48	117.30	-37.48	-39.87	58.67	53.75	4.93	11.913		
900.00	895.63	897.73	896.92	2.84	2.81	134.74	-34.41	-35.15	65.92	60.32	5.61	11.761		
1,000.00	993.49	995.28	994.31	3.26	3.15	148.50	-31.34	-30.45	79.35	73.08	6.27	12.661		
1,100.00	1,091.36	1,092.83	1,091.70	3.69	3.48	157.99	-28.28	-25.76	95.99	89.07	6.92	13.872		
1,200.00	1,189.23	1,190.38	1,189.09	4.13	3.81	164.59	-25.21	-21.06	114.46	106.89	7.57	15.116		
1,300.00	1,287.10	1,287.93	1,286.47	4.58	4.15	169.34	-22.14	-16.36	134.00	125.77	8.23	16.287		
1,400.00	1,384.97	1,385.48	1,383.86	5.02	4.48	172.87	-19.08	-11.66	154.21	145.32	8.89	17.354		
1,500.00	1,482.84	1,483.03	1,481.25	5.47	4.82	175.58	-16.01	-6.96	174.85	165.30	9.55	18.312		
1,600.00	1,580.70	1,580.58	1,578.64	5.92	5.15	177.72	-12.95	-2.26	195.78	185.57	10.21	19.170		
1,700.00	1,678.57	1,678.12	1,676.02	6.38	5.49	179.45	-9.88	2.44	216.93	206.05	10.88	19.938		
1,800.00	1,776.44	1,775.67	1,773.41	6.83	5.82	-179.13	-6.82	7.14	238.24	226.69	11.55	20.626		
1,900.00	1,874.31	1,873.22	1,870.80	7.29	6.16	-177.95	-3.75	11.84	259.66	247.44	12.22	21.246		
2,000.00	1,972.18	1,970.77	1,968.19	7.74	6.49	-176.94	-0.69	16.54	281.17	268.27	12.89	21.806		
2,100.00	2,070.05	2,068.32	2,065.57	8.20	6.83	-176.08	2.38	21.24	302.75	289.18	13.57	22.313		
2,200.00	2,167.92	2,165.87	2,162.96	8.66	7.16	-175.33	5.45	25.94	324.39	310.14	14.24	22.775		
2,300.00	2,265.78	2,263.42	2,260.35	9.12	7.50	-174.68	8.51	30.64	346.07	331.15	14.92	23.196		
2,400.00	2,363.65	2,360.97	2,357.74	9.57	7.83	-174.10	11.58	35.33	367.80	352.20	15.60	23.582		
2,500.00	2,461.52	2,458.52	2,455.13	10.03	8.17	-173.59	14.64	40.03	389.55	373.28	16.27	23.938		
2,600.00	2,559.39	2,556.07	2,552.51	10.49	8.50	-173.13	17.71	44.73	411.33	394.38	16.95	24.265		
2,700.00	2,657.26	2,653.61	2,649.90	10.95	8.84	-172.72	20.77	49.43	433.13	415.50	17.63	24.568		
2,800.00	2,755.13	2,751.16	2,747.29	11.41	9.17	-172.35	23.84	54.13	454.96	436.65	18.31	24.848		
2,900.00	2,852.99	2,848.71	2,844.68	11.87	9.51	-172.01	26.91	58.83	476.80	457.81	18.99	25.109		
3,000.00	2,950.86	2,946.26	2,942.06	12.33	9.84	-171.70	29.97	63.53	498.65	478.98	19.67	25.353		
3,100.00	3,048.73	3,043.81	3,039.45	12.79	10.18	-171.42	33.04	68.23	520.52	500.17	20.35	25.580		
3,200.00	3,146.60	3,141.36	3,136.84	13.25	10.51	-171.16	36.10	72.93	542.39	521.36	21.03	25.792		
3,300.00	3,244.47	3,238.91	3,234.23	13.71	10.85	-170.92	39.17	77.63	564.28	542.57	21.71	25.992		
3,400.00	3,342.34	3,336.46	3,331.61	14.17	11.18	-170.69	42.23	82.33	586.18	563.79	22.39	26.179		
3,500.00	3,440.20	3,434.01	3,429.00	14.63	11.52	-170.49	45.30	87.03	608.08	585.01	23.07	26.356		
3,600.00	3,538.07	3,531.56	3,526.39	15.09	11.85	-170.30	48.37	91.72	629.99	606.24	23.75	26.522		
3,700.00	3,635.94	3,629.11	3,623.78	15.56	12.19	-170.12	51.43	96.42	651.91	627.47	24.44	26.679		
3,800.00	3,733.81	3,726.65	3,721.16	16.02	12.52	-169.95	54.50	101.12	673.83	648.72	25.12	26.828		
3,900.00	3,831.68	3,824.20	3,818.55	16.48	12.86	-169.79	57.56	105.82	695.76	669.96	25.80	26.968		
4,000.00	3,929.55	3,921.75	3,915.94	16.94	13.20	-169.65	60.63	110.52	717.69	691.21	26.48	27.102		
4,100.00	4,027.42	4,019.30	4,013.33	17.40	13.53	-169.51	63.69	115.22	739.63	712.47	27.16	27.229		
4,200.00	4,125.28	4,116.85	4,110.71	17.86	13.87	-169.38	66.76	119.92	761.57	733.72	27.85	27.349		
4,300.00	4,223.15	4,214.40	4,208.10	18.32	14.20	-169.25	69.83	124.62	783.52	754.99	28.53	27.464		
4,400.00	4,321.04	4,311.97	4,305.51	18.76	14.54	-169.16	72.89	129.32	805.36	776.16	29.20	27.579		
4,500.00	4,419.41	4,410.04	4,403.42	19.05	14.87	-169.09	75.97	134.04	824.80	794.98	29.82	27.664		
4,600.00	4,518.34	4,508.70	4,501.91	19.32	15.21	-168.96	79.07	138.80	840.87	810.44	30.43	27.634		
4,700.00	4,617.72	4,607.83	4,600.88	19.57	15.55	-168.79	82.19	143.57	853.56	822.52	31.04	27.495		
4,800.00	4,717.43	4,707.53	4,700.00	19.81	20.99	126.18	-751.57	150.02	847.46	833.01	14.45	58.635		
4,900.00	4,817.34	4,807.24	4,800.00	20.03	21.01	119.51	-755.28	150.02	751.49	735.91	15.58	48.223		
5,000.00	4,917.34	4,907.24	4,900.00	20.27	21.02	-90.00	-756.00	150.02	656.17	639.17	17.00	38.600		

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 #30H-1916
Project:	Weld County, CO	TVD Reference:	KBE @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	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	5,017.34	6,163.96	5,538.00	20.48	21.02	-90.00	-756.00	150.02	562.34	543.46	18.88	29.789		
5,200.00	5,117.31	6,162.96	5,538.00	20.69	21.01	-97.06	-755.00	150.02	471.07	449.59	21.49	21.923		
5,300.00	5,215.92	6,147.25	5,538.00	20.82	20.90	-111.11	-739.28	150.02	385.32	360.29	25.03	15.396		
5,400.00	5,309.71	6,113.01	5,538.00	20.88	20.65	-115.19	-705.05	150.02	310.89	281.29	29.60	10.503		
5,500.00	5,395.25	6,061.51	5,538.00	20.85	20.31	-112.16	-653.55	150.02	254.41	219.72	34.69	7.333		
5,600.00	5,469.40	5,994.64	5,538.00	20.78	19.89	-103.72	-586.68	150.02	221.11	182.61	38.50	5.743		
5,700.00	5,529.43	5,914.86	5,538.00	20.67	19.46	-92.21	-506.89	150.02	210.03	170.71	39.32	5.341 SF		
5,719.43	5,539.25	5,898.10	5,538.00	20.65	19.37	-89.92	-490.14	150.02	209.80	170.64	39.16	5.358		
5,800.00	5,573.13	5,826.16	5,537.75	20.55	19.05	-81.35	-418.20	150.02	212.55	174.62	37.94	5.603		
5,900.00	5,598.91	5,741.64	5,528.28	20.45	18.72	-72.41	-334.30	150.02	221.36	185.36	36.00	6.149		
6,000.00	5,606.00	5,661.04	5,506.73	20.39	18.45	-64.89	-256.72	150.02	234.24	200.01	34.23	6.844		
6,100.00	5,606.00	5,587.31	5,476.76	20.41	18.24	-58.54	-189.42	150.02	255.01	222.40	32.62	7.819		
6,200.00	5,606.00	5,523.19	5,443.19	20.55	18.08	-52.33	-134.84	150.02	288.12	256.74	31.38	9.182		
6,300.00	5,606.00	5,468.50	5,409.44	20.81	17.94	-46.98	-91.84	150.02	333.57	302.69	30.87	10.805		
6,400.00	5,606.00	5,422.27	5,377.52	21.19	17.83	-42.65	-58.41	150.02	389.76	358.76	31.00	12.573		
6,500.00	5,606.00	5,383.25	5,348.37	21.69	17.73	-39.22	-32.49	150.02	454.59	423.12	31.47	14.444		
6,600.00	5,606.00	5,350.00	5,322.05	22.28	17.65	-36.51	-12.18	150.02	526.13	494.07	32.06	16.412		
6,700.00	5,606.00	5,322.12	5,299.02	22.96	17.58	-34.39	3.53	150.02	602.82	570.17	32.65	18.462		
6,800.00	5,606.00	5,300.00	5,280.17	23.72	17.52	-32.81	15.10	150.02	683.49	650.26	33.23	20.569		
6,900.00	5,606.00	5,277.29	5,260.32	24.55	17.46	-31.29	26.14	150.02	767.23	733.59	33.64	22.806		
7,000.00	5,606.00	5,250.00	5,235.87	25.43	17.39	-29.57	38.24	150.02	853.56	819.67	33.89	25.189		
7,100.00	5,606.00	5,250.00	5,235.87	26.37	17.39	-29.57	38.24	150.02	941.63	907.17	34.46	27.322		
7,200.00	5,606.00	5,229.56	5,217.16	27.35	17.34	-28.37	46.46	150.02	1,031.29	996.63	34.66	29.754		
7,300.00	5,606.00	5,217.24	5,205.73	28.38	17.30	-27.68	51.05	150.02	1,122.30	1,087.39	34.91	32.152		
7,400.00	5,606.00	5,200.00	5,189.56	29.45	17.26	-26.75	57.03	150.02	1,214.43	1,179.37	35.06	34.638		
7,500.00	5,606.00	5,200.00	5,189.56	30.54	17.26	-26.75	57.03	150.02	1,307.36	1,272.03	35.33	37.003		
7,600.00	5,606.00	5,200.00	5,189.56	31.67	17.26	-26.75	57.03	150.02	1,401.27	1,365.71	35.55	39.411		
7,700.00	5,606.00	5,179.52	5,170.10	32.83	17.20	-25.71	63.43	150.02	1,495.43	1,459.81	35.61	41.989		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30H-1916
Project:	Weld County, CO	TVD Reference:	KBE @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	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	180.00	-50.62	0.00	50.63					
100.00	100.00	99.00	99.00	0.13	0.13	180.00	-50.62	0.00	50.62	50.35	0.27	191.001		
200.00	200.00	199.00	199.00	0.47	0.47	180.00	-50.62	0.00	50.62	49.68	0.94	54.006		
300.00	300.00	299.00	299.00	0.81	0.80	180.00	-50.62	0.00	50.62	49.01	1.61	31.409		
400.00	399.98	399.47	399.45	1.11	1.13	24.43	-50.10	1.65	48.54	46.29	2.25	21.582		
500.00	499.84	499.64	499.48	1.41	1.47	20.61	-48.54	6.63	42.40	39.51	2.88	14.702		
600.00	599.45	599.18	598.64	1.74	1.81	11.15	-45.94	14.89	32.80	29.27	3.53	9.286		
700.00	698.70	698.06	696.98	2.07	2.15	-10.45	-42.84	24.76	21.82	17.61	4.21	5.184		
790.87	788.47	787.54	785.96	2.40	2.46	-56.27	-40.04	33.69	15.88	10.91	4.96	3.199 CC, ES		
800.00	797.47	796.51	794.89	2.44	2.49	-62.34	-39.76	34.59	15.96	10.92	5.04	3.165		
900.00	895.63	894.41	892.25	2.84	2.84	-111.75	-36.69	44.36	26.51	20.74	5.78	4.590		
1,000.00	993.49	992.04	989.35	3.26	3.19	-129.38	-33.63	54.10	45.42	38.99	6.43	7.064		
1,100.00	1,091.36	1,089.68	1,086.44	3.69	3.54	-136.42	-30.57	63.85	66.02	58.92	7.10	9.295		
1,200.00	1,189.23	1,187.31	1,183.54	4.13	3.89	-140.10	-27.51	73.59	87.13	79.34	7.79	11.184		
1,300.00	1,287.10	1,284.94	1,280.63	4.58	4.24	-142.34	-24.45	83.34	108.44	99.96	8.49	12.779		
1,400.00	1,384.97	1,382.57	1,377.73	5.02	4.60	-143.84	-21.39	93.08	129.86	120.67	9.19	14.136		
1,500.00	1,482.84	1,480.20	1,474.83	5.47	4.95	-144.91	-18.34	102.83	151.34	141.45	9.89	15.300		
1,600.00	1,580.70	1,577.83	1,571.92	5.92	5.31	-145.72	-15.28	112.57	172.86	162.26	10.60	16.309		
1,700.00	1,678.57	1,675.47	1,669.02	6.38	5.66	-146.35	-12.22	122.32	194.41	183.10	11.31	17.191		
1,800.00	1,776.44	1,773.10	1,766.11	6.83	6.02	-146.86	-9.16	132.06	215.97	203.95	12.02	17.967		
1,900.00	1,874.31	1,870.73	1,863.21	7.29	6.37	-147.27	-6.10	141.81	237.55	224.81	12.73	18.656		
2,000.00	1,972.18	1,968.36	1,960.30	7.74	6.73	-147.61	-3.04	151.55	259.13	245.68	13.45	19.270		
2,100.00	2,070.05	2,065.99	2,057.40	8.20	7.08	-147.90	0.02	161.30	280.72	266.56	14.16	19.822		
2,200.00	2,167.92	2,163.62	2,154.50	8.66	7.44	-148.15	3.08	171.04	302.32	287.45	14.88	20.320		
2,300.00	2,265.78	2,261.26	2,251.59	9.12	7.79	-148.37	6.14	180.79	323.93	308.33	15.59	20.772		
2,400.00	2,363.65	2,358.89	2,348.69	9.57	8.15	-148.56	9.20	190.53	345.53	329.22	16.31	21.183		
2,500.00	2,461.52	2,456.52	2,445.78	10.03	8.51	-148.73	12.26	200.28	367.15	350.12	17.03	21.560		
2,600.00	2,559.39	2,554.15	2,542.88	10.49	8.86	-148.87	15.32	210.02	388.76	371.01	17.75	21.905		
2,700.00	2,657.26	2,651.78	2,639.98	10.95	9.22	-149.01	18.38	219.76	410.37	391.91	18.47	22.223		
2,800.00	2,755.13	2,749.41	2,737.07	11.41	9.57	-149.13	21.44	229.51	431.99	412.81	19.18	22.517		
2,900.00	2,852.99	2,847.05	2,834.17	11.87	9.93	-149.23	24.50	239.25	453.61	433.71	19.90	22.790		
3,000.00	2,950.86	2,944.68	2,931.26	12.33	10.29	-149.33	27.56	249.00	475.23	454.61	20.62	23.043		
3,100.00	3,048.73	3,042.31	3,028.36	12.79	10.64	-149.42	30.62	258.74	496.85	475.51	21.34	23.279		
3,200.00	3,146.60	3,139.94	3,125.46	13.25	11.00	-149.50	33.67	268.49	518.48	496.41	22.06	23.500		
3,300.00	3,244.47	3,237.57	3,222.55	13.71	11.35	-149.58	36.73	278.23	540.10	517.32	22.78	23.706		
3,400.00	3,342.34	3,335.21	3,319.65	14.17	11.71	-149.65	39.79	287.98	561.73	538.22	23.50	23.899		
3,500.00	3,440.20	3,432.84	3,416.74	14.63	12.07	-149.71	42.85	297.72	583.35	559.13	24.22	24.081		
3,600.00	3,538.07	3,530.47	3,513.84	15.09	12.42	-149.77	45.91	307.47	604.98	580.03	24.94	24.253		
3,700.00	3,635.94	3,628.10	3,610.94	15.56	12.78	-149.83	48.97	317.21	626.60	600.94	25.67	24.414		
3,800.00	3,733.81	3,725.73	3,708.03	16.02	13.14	-149.88	52.03	326.96	648.23	621.84	26.39	24.567		
3,900.00	3,831.68	3,823.36	3,805.13	16.48	13.49	-149.93	55.09	336.70	669.86	642.75	27.11	24.711		
4,000.00	3,929.55	3,921.00	3,902.22	16.94	13.85	-149.98	58.15	346.45	691.49	663.66	27.83	24.848		
4,100.00	4,027.42	4,018.63	3,999.32	17.40	14.21	-150.02	61.21	356.19	713.12	684.56	28.55	24.977		
4,200.00	4,125.28	4,116.26	4,096.42	17.86	14.56	-150.06	64.27	365.94	734.74	705.47	29.27	25.101		
4,300.00	4,223.15	4,213.89	4,193.51	18.32	14.92	-150.10	67.33	375.68	756.37	726.38	29.99	25.218		
4,400.00	4,321.04	4,311.54	4,290.63	18.76	15.27	-150.18	70.39	385.43	777.91	747.21	30.70	25.336		
4,500.00	4,419.41	4,409.63	4,388.18	19.05	15.63	-150.32	73.46	395.22	797.32	765.98	31.34	25.438		
4,600.00	4,518.34	4,508.24	4,486.24	19.32	15.99	-150.30	76.55	405.06	813.75	781.76	31.99	25.441		
4,700.00	4,617.72	4,607.23	4,584.70	19.57	16.35	-150.14	79.65	414.94	827.20	794.57	32.63	25.351		
4,800.00	4,717.43	4,718.66	4,695.71	19.81	16.70	-149.92	82.51	424.03	836.95	803.67	33.29	25.143		
4,900.00	4,817.34	6,245.19	5,606.00	20.03	21.92	-79.66	-755.28	430.00	792.79	783.77	9.01	87.960		
5,000.00	4,917.34	6,245.91	5,606.00	20.27	21.92	90.00	-756.00	430.00	693.21	684.12	9.08	76.317		

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 #30H-1916
Project:	Weld County, CO	TVD Reference:	KBE @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	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 #30H-3116 - 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	5,017.34	6,245.91	5,606.00	20.48	21.92	90.00	-756.00	430.00	593.80	584.58	9.22	64.379				
5,200.00	5,117.31	6,244.91	5,606.00	20.69	21.92	113.49	-755.00	430.00	494.66	485.17	9.50	52.095				
5,300.00	5,215.92	6,229.19	5,606.00	20.82	21.80	144.55	-739.28	430.00	397.30	387.39	9.91	40.087				
5,400.00	5,309.71	6,194.96	5,606.00	20.88	21.57	151.36	-705.05	430.00	305.43	294.68	10.75	28.410				
5,500.00	5,395.25	6,143.46	5,606.00	20.85	21.23	150.95	-653.55	430.00	223.04	210.30	12.74	17.506				
5,600.00	5,469.40	6,076.59	5,606.00	20.78	20.83	145.38	-586.68	430.00	154.44	137.35	17.09	9.037				
5,700.00	5,529.43	5,996.80	5,606.00	20.67	20.40	133.33	-506.89	430.00	104.60	79.65	24.96	4.192				
5,800.00	5,573.13	5,905.70	5,605.59	20.55	19.99	113.75	-415.79	430.00	77.80	43.59	34.21	2.274				
5,886.92	5,596.60	5,822.74	5,595.72	20.46	19.67	90.10	-333.51	430.00	70.29	31.59	38.70	1.816 SF				
5,900.00	5,598.91	5,810.69	5,593.20	20.45	19.62	86.37	-321.72	430.00	70.46	31.74	38.72	1.820				
6,000.00	5,606.00	5,721.77	5,566.32	20.39	19.34	61.20	-237.08	430.00	81.88	46.86	35.02	2.338				
6,100.00	5,606.00	5,642.33	5,530.44	20.41	19.11	43.36	-166.29	430.00	112.10	81.67	30.43	3.684				
6,200.00	5,606.00	5,575.23	5,492.04	20.55	18.94	31.94	-111.32	430.00	160.87	131.71	29.16	5.516				
6,300.00	5,606.00	5,519.54	5,455.01	20.81	18.81	25.16	-69.76	430.00	222.69	192.74	29.95	7.435				
6,400.00	5,606.00	5,473.57	5,421.25	21.19	18.69	20.99	-38.58	430.00	293.38	262.19	31.19	9.405				
6,500.00	5,606.00	5,435.53	5,391.32	21.69	18.60	18.26	-15.12	430.00	370.32	337.97	32.35	11.447				
6,600.00	5,606.00	5,400.00	5,361.89	22.28	18.52	16.18	4.77	430.00	451.80	418.63	33.16	13.624				
6,700.00	5,606.00	5,377.24	5,342.35	22.96	18.46	15.03	16.44	430.00	536.58	502.51	34.07	15.750				
6,800.00	5,606.00	5,350.00	5,318.32	23.72	18.39	13.82	29.27	430.00	623.99	589.42	34.57	18.052				
6,900.00	5,606.00	5,335.39	5,305.17	24.55	18.36	13.24	35.62	430.00	713.31	678.15	35.16	20.290				
7,000.00	5,606.00	5,318.74	5,289.97	25.43	18.31	12.62	42.41	430.00	804.23	768.68	35.55	22.624				
7,100.00	5,606.00	5,300.00	5,272.61	26.37	18.27	11.98	49.47	430.00	896.42	860.61	35.82	25.029				
7,200.00	5,606.00	5,300.00	5,272.61	27.35	18.27	11.98	49.47	430.00	989.69	953.46	36.22	27.321				
7,300.00	5,606.00	5,280.35	5,254.15	28.38	18.22	11.37	56.20	430.00	1,083.60	1,047.24	36.36	29.802				
7,400.00	5,606.00	5,270.39	5,244.69	29.45	18.19	11.08	59.34	430.00	1,178.32	1,141.77	36.55	32.236				
7,500.00	5,606.00	5,250.00	5,225.17	30.54	18.14	10.52	65.20	430.00	1,273.79	1,237.15	36.64	34.766				
7,600.00	5,606.00	5,250.00	5,225.17	31.67	18.14	10.52	65.20	430.00	1,369.42	1,332.57	36.85	37.167				
7,700.00	5,606.00	5,250.00	5,225.17	32.83	18.14	10.52	65.20	430.00	1,465.63	1,428.61	37.02	39.592				



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30H-1916
Project:	Weld County, CO	TVD Reference:	KBE @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	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	-103.29	-49.59	-209.92	215.70					
100.00	100.00	99.00	99.00	0.13	0.13	-103.29	-49.59	-209.92	215.70	215.44	0.27	813.921		
200.00	200.00	199.00	199.00	0.47	0.47	-103.29	-49.59	-209.92	215.70	214.77	0.94	230.138		
300.00	300.00	299.00	299.00	0.81	0.80	-103.29	-49.59	-209.92	215.70	214.09	1.61	133.846 CC, ES		
400.00	399.98	387.22	387.17	1.11	1.10	102.84	-48.90	-212.49	218.75	216.39	2.36	92.698		
500.00	499.84	480.39	480.00	1.41	1.43	104.80	-46.87	-220.07	227.51	224.44	3.07	74.087		
600.00	599.45	579.07	578.27	1.74	1.75	107.54	-44.53	-228.79	238.35	234.68	3.67	64.932		
700.00	698.70	677.18	675.97	2.07	2.09	110.72	-42.21	-237.47	250.98	246.67	4.31	58.271		
800.00	797.47	774.60	772.98	2.44	2.43	114.19	-39.90	-246.08	265.83	260.86	4.97	53.463		
900.00	895.63	871.22	869.19	2.84	2.77	117.84	-37.61	-254.61	283.30	277.64	5.67	50.009		
1,000.00	993.49	967.46	965.02	3.26	3.11	121.55	-35.34	-263.12	302.74	296.39	6.35	47.663		
1,100.00	1,091.36	1,063.69	1,060.86	3.69	3.46	124.82	-33.06	-271.63	323.29	316.25	7.04	45.914		
1,200.00	1,189.23	1,159.93	1,156.69	4.13	3.80	127.71	-30.78	-280.13	344.76	337.03	7.73	44.590		
1,300.00	1,287.10	1,256.17	1,252.53	4.58	4.15	130.26	-28.50	-288.64	366.98	358.56	8.42	43.575		
1,400.00	1,384.97	1,352.41	1,348.36	5.02	4.49	132.52	-26.22	-297.14	389.83	380.72	9.11	42.786		
1,500.00	1,482.84	1,448.65	1,444.20	5.47	4.84	134.53	-23.94	-305.65	413.21	403.41	9.80	42.163		
1,600.00	1,580.70	1,544.89	1,540.03	5.92	5.18	136.33	-21.66	-314.16	437.02	426.54	10.49	41.667		
1,700.00	1,678.57	1,641.12	1,635.87	6.38	5.53	137.94	-19.38	-322.66	461.21	450.03	11.18	41.267		
1,800.00	1,776.44	1,737.36	1,731.70	6.83	5.88	139.40	-17.10	-331.17	485.71	473.85	11.86	40.941		
1,900.00	1,874.31	1,833.60	1,827.54	7.29	6.22	140.71	-14.82	-339.67	510.48	497.93	12.55	40.673		
2,000.00	1,972.18	1,929.84	1,923.37	7.74	6.57	141.91	-12.54	-348.18	535.48	522.25	13.24	40.452		
2,100.00	2,070.05	2,026.08	2,019.20	8.20	6.92	143.00	-10.26	-356.69	560.69	546.77	13.92	40.267		
2,200.00	2,167.92	2,122.32	2,115.04	8.66	7.26	144.00	-7.98	-365.19	586.07	571.46	14.61	40.113		
2,300.00	2,265.78	2,218.56	2,210.87	9.12	7.61	144.91	-5.71	-373.70	611.60	596.31	15.30	39.982		
2,400.00	2,363.65	2,314.79	2,306.71	9.57	7.96	145.75	-3.43	-382.20	637.27	621.29	15.98	39.871		
2,500.00	2,461.52	2,411.03	2,402.54	10.03	8.30	146.53	-1.15	-390.71	663.06	646.39	16.67	39.777		
2,600.00	2,559.39	2,507.27	2,498.38	10.49	8.65	147.25	1.13	-399.22	688.96	671.60	17.36	39.696		
2,700.00	2,657.26	2,603.51	2,594.21	10.95	9.00	147.92	3.41	-407.72	714.95	696.91	18.04	39.626		
2,800.00	2,755.13	2,699.75	2,690.05	11.41	9.35	148.54	5.69	-416.23	741.02	722.29	18.73	39.566		
2,900.00	2,852.99	2,795.99	2,785.88	11.87	9.69	149.12	7.97	-424.73	767.17	747.76	19.42	39.514		
3,000.00	2,950.86	2,892.22	2,881.72	12.33	10.04	149.66	10.25	-433.24	793.39	773.29	20.10	39.469		
3,100.00	3,048.73	2,988.46	2,977.55	12.79	10.39	150.16	12.53	-441.74	819.67	798.88	20.79	39.430		
3,200.00	3,146.60	3,084.70	3,073.39	13.25	10.74	150.64	14.81	-450.25	846.01	824.54	21.47	39.395		
3,300.00	3,244.47	3,180.94	3,169.22	13.71	11.08	151.08	17.09	-458.76	872.40	850.24	22.16	39.365		
3,400.00	3,342.34	3,277.18	3,265.05	14.17	11.43	151.50	19.37	-467.26	898.83	875.98	22.85	39.339		
3,500.00	3,440.20	3,373.42	3,360.89	14.63	11.78	151.90	21.65	-475.77	925.31	901.77	23.54	39.316		
3,600.00	3,538.07	3,469.65	3,456.72	15.09	12.13	152.27	23.92	-484.27	951.83	927.60	24.22	39.296		
3,700.00	3,635.94	3,565.89	3,552.56	15.56	12.47	152.63	26.20	-492.78	978.38	953.47	24.91	39.278		
3,800.00	3,733.81	3,662.13	3,648.39	16.02	12.82	152.96	28.48	-501.29	1,004.96	979.37	25.60	39.262		
3,900.00	3,831.68	3,758.37	3,744.23	16.48	13.17	153.28	30.76	-509.79	1,031.58	1,005.30	26.28	39.248		
4,000.00	3,929.55	3,854.61	3,840.06	16.94	13.52	153.58	33.04	-518.30	1,058.22	1,031.25	26.97	39.236		
4,100.00	4,027.42	3,950.85	3,935.90	17.40	13.86	153.87	35.32	-526.80	1,084.89	1,057.23	27.66	39.225		
4,200.00	4,125.28	4,047.08	4,031.73	17.86	14.21	154.15	37.60	-535.31	1,111.59	1,083.24	28.35	39.216		
4,300.00	4,223.15	4,143.32	4,127.57	18.32	14.56	154.41	39.88	-543.82	1,138.30	1,109.27	29.03	39.207		
4,400.00	4,321.04	4,244.46	4,228.28	18.76	14.92	154.72	42.27	-552.72	1,164.93	1,135.20	29.73	39.180		
4,500.00	4,419.41	4,399.62	4,383.15	19.05	15.34	155.30	44.67	-561.70	1,186.61	1,156.08	30.53	38.862		
4,600.00	4,518.34	4,533.84	4,517.34	19.32	15.70	155.79	45.07	-563.19	1,200.74	1,169.54	31.20	38.487		
4,700.00	4,617.72	4,633.22	4,616.72	19.57	16.00	156.08	45.07	-563.19	1,210.85	1,179.11	31.75	38.138		
4,800.00	4,717.43	4,732.92	4,716.43	19.81	16.30	156.28	45.07	-563.19	1,217.80	1,185.50	32.30	37.701		
4,900.00	4,817.34	4,832.83	4,816.34	20.03	16.60	156.39	45.07	-563.19	1,221.56	1,188.71	32.86	37.180		
5,000.00	4,917.34	4,932.83	4,916.34	20.27	16.91	-49.05	45.07	-563.19	1,222.30	1,188.85	33.44	36.551		
5,100.00	5,017.34	5,032.83	5,016.34	20.48	17.18	-90.00	-755.99	-563.20	1,169.95	1,137.26	32.69	35.792		

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 #30H-1916
Project:	Weld County, CO	TVD Reference:	KBE @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	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	5,117.31	6,327.99	5,735.00	20.69	21.80	-92.34	-754.99	-563.20	1,111.34	1,076.86	34.48	32.230		
5,300.00	5,215.92	6,312.28	5,735.00	20.82	21.69	-98.02	-739.28	-563.20	1,059.61	1,023.51	36.10	29.355		
5,400.00	5,309.71	6,278.04	5,735.00	20.88	21.46	-101.23	-705.04	-563.20	1,016.84	979.46	37.38	27.204		
5,500.00	5,395.25	6,226.54	5,735.00	20.85	21.13	-102.37	-653.54	-563.20	984.01	945.77	38.24	25.730		
5,600.00	5,469.40	6,159.67	5,735.00	20.78	20.75	-102.00	-586.67	-563.20	960.81	922.12	38.69	24.833		
5,700.00	5,529.43	6,079.89	5,735.00	20.67	20.34	-100.79	-506.89	-563.20	945.86	907.08	38.78	24.387		
5,800.00	5,573.13	5,964.17	5,728.14	20.55	19.85	-98.44	-391.54	-563.20	936.41	897.82	38.59	24.265		
5,900.00	5,598.91	5,848.70	5,697.03	20.45	19.46	-95.64	-280.58	-563.20	929.08	890.66	38.42	24.183		
6,000.00	5,606.00	5,747.94	5,650.50	20.39	19.18	-92.82	-191.39	-563.20	924.43	886.14	38.29	24.145		
6,090.96	5,606.00	5,671.60	5,604.28	20.41	18.98	-89.96	-130.71	-563.20	922.77	884.52	38.25	24.125 SF		
6,100.00	5,606.00	5,664.92	5,599.83	20.41	18.97	-89.68	-125.74	-563.20	922.79	884.55	38.25	24.128		
6,200.00	5,606.00	5,600.00	5,553.32	20.55	18.80	-86.79	-80.51	-563.20	926.05	887.77	38.29	24.188		
6,300.00	5,606.00	5,550.00	5,513.87	20.81	18.68	-84.36	-49.82	-563.20	936.02	897.62	38.40	24.376		
6,400.00	5,606.00	5,510.95	5,481.12	21.19	18.57	-82.35	-28.56	-563.20	953.69	915.12	38.57	24.726		
6,500.00	5,606.00	5,479.52	5,453.66	21.69	18.49	-80.69	-13.27	-563.20	979.44	940.66	38.78	25.257		
6,600.00	5,606.00	5,450.00	5,427.08	22.28	18.41	-79.09	-0.45	-563.20	1,013.15	974.17	38.98	25.993		
6,700.00	5,606.00	5,433.02	5,411.47	22.96	18.37	-78.15	6.24	-563.20	1,054.35	1,015.11	39.24	26.871		
6,800.00	5,606.00	5,415.47	5,395.12	23.72	18.32	-77.19	12.61	-563.20	1,102.45	1,063.00	39.45	27.946		
6,900.00	5,606.00	5,400.00	5,380.54	24.55	18.28	-76.33	17.77	-563.20	1,156.73	1,117.09	39.65	29.176		
7,000.00	5,606.00	5,400.00	5,380.54	25.43	18.28	-76.33	17.77	-563.20	1,216.61	1,176.72	39.90	30.495		
7,100.00	5,606.00	5,376.93	5,358.52	26.37	18.22	-75.04	24.66	-563.20	1,280.94	1,240.97	39.97	32.044		
7,200.00	5,606.00	5,367.34	5,349.28	27.35	18.19	-74.51	27.23	-563.20	1,349.55	1,309.44	40.10	33.652		
7,300.00	5,606.00	5,350.00	5,332.47	28.38	18.14	-73.54	31.45	-563.20	1,421.80	1,381.63	40.17	35.395		
7,400.00	5,606.00	5,350.00	5,332.47	29.45	18.14	-73.54	31.45	-563.20	1,496.96	1,456.66	40.30	37.146		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30H-1916
Project:	Weld County, CO	TVD Reference:	KBE @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	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	-108.30	-49.59	-149.95	157.94					
100.00	100.00	99.00	99.00	0.13	0.13	-108.30	-49.59	-149.95	157.93	157.67	0.27	595.939		
200.00	200.00	199.00	199.00	0.47	0.47	-108.30	-49.59	-149.95	157.93	157.00	0.94	168.503		
300.00	300.00	299.00	299.00	0.81	0.80	-108.30	-49.59	-149.95	157.93	156.32	1.61	98.000 CC, ES		
400.00	399.98	397.28	397.26	1.11	1.13	98.33	-48.25	-150.91	158.69	156.44	2.25	70.665		
500.00	499.84	496.75	496.67	1.41	1.47	101.34	-45.31	-153.02	160.84	157.97	2.87	56.067		
600.00	599.45	595.99	595.84	1.74	1.80	105.41	-42.38	-155.14	164.34	160.82	3.52	46.670		
700.00	698.70	694.74	694.52	2.07	2.13	110.31	-39.46	-157.24	169.86	165.66	4.20	40.454		
800.00	797.47	792.87	792.59	2.44	2.46	115.80	-36.55	-159.33	178.10	173.20	4.90	36.370		
900.00	895.63	890.28	889.94	2.84	2.79	121.58	-33.67	-161.40	189.75	184.14	5.61	33.799		
1,000.00	993.49	987.35	986.94	3.26	3.12	127.13	-30.80	-163.47	204.14	197.82	6.32	32.308		
1,100.00	1,091.36	1,084.42	1,083.94	3.69	3.45	131.95	-27.92	-165.53	220.22	213.21	7.01	31.395		
1,200.00	1,189.23	1,181.48	1,180.94	4.13	3.78	136.10	-25.05	-167.60	237.65	229.95	7.70	30.855		
1,300.00	1,287.10	1,278.55	1,277.95	4.58	4.11	139.69	-22.18	-169.67	256.15	247.77	8.38	30.557		
1,400.00	1,384.97	1,375.62	1,374.95	5.02	4.44	142.79	-19.31	-171.73	275.51	266.45	9.06	30.417		
1,500.00	1,482.84	1,472.68	1,471.95	5.47	4.77	145.48	-16.44	-173.80	295.56	285.83	9.73	30.379		
1,600.00	1,580.70	1,569.75	1,568.95	5.92	5.09	147.84	-13.56	-175.86	316.16	305.77	10.40	30.408		
1,700.00	1,678.57	1,666.82	1,665.96	6.38	5.42	149.90	-10.69	-177.93	337.22	326.16	11.06	30.481		
1,800.00	1,776.44	1,763.88	1,762.96	6.83	5.75	151.73	-7.82	-180.00	358.66	346.93	11.73	30.580		
1,900.00	1,874.31	1,860.95	1,859.96	7.29	6.08	153.35	-4.95	-182.06	380.41	368.01	12.39	30.696		
2,000.00	1,972.18	1,958.02	1,956.96	7.74	6.41	154.79	-2.08	-184.13	402.41	389.36	13.06	30.821		
2,100.00	2,070.05	2,055.09	2,053.97	8.20	6.74	156.09	0.80	-186.20	424.64	410.92	13.72	30.951		
2,200.00	2,167.92	2,152.15	2,150.97	8.66	7.07	157.26	3.67	-188.26	447.06	432.68	14.38	31.083		
2,300.00	2,265.78	2,249.22	2,247.97	9.12	7.40	158.31	6.54	-190.33	469.64	454.59	15.05	31.213		
2,400.00	2,363.65	2,346.29	2,344.97	9.57	7.73	159.27	9.41	-192.39	492.35	476.65	15.71	31.341		
2,500.00	2,461.52	2,443.35	2,441.97	10.03	8.06	160.15	12.29	-194.46	515.19	498.82	16.37	31.465		
2,600.00	2,559.39	2,540.42	2,538.98	10.49	8.38	160.95	15.16	-196.53	538.13	521.10	17.04	31.586		
2,700.00	2,657.26	2,637.49	2,635.98	10.95	8.71	161.69	18.03	-198.59	561.17	543.47	17.70	31.702		
2,800.00	2,755.13	2,734.55	2,732.98	11.41	9.04	162.37	20.90	-200.66	584.28	565.92	18.37	31.814		
2,900.00	2,852.99	2,831.62	2,829.98	11.87	9.37	162.99	23.77	-202.73	607.47	588.44	19.03	31.921		
3,000.00	2,950.86	2,928.69	2,926.99	12.33	9.70	163.58	26.65	-204.79	630.72	611.03	19.70	32.024		
3,100.00	3,048.73	3,025.75	3,023.99	12.79	10.03	164.11	29.52	-206.86	654.03	633.67	20.36	32.123		
3,200.00	3,146.60	3,122.82	3,120.99	13.25	10.36	164.62	32.39	-208.92	677.39	656.36	21.03	32.217		
3,300.00	3,244.47	3,219.89	3,217.99	13.71	10.69	165.09	35.26	-210.99	700.80	679.10	21.69	32.308		
3,400.00	3,342.34	3,316.95	3,315.00	14.17	11.02	165.53	38.13	-213.06	724.24	701.89	22.36	32.395		
3,500.00	3,440.20	3,414.02	3,412.00	14.63	11.35	165.94	41.01	-215.12	747.73	724.71	23.02	32.478		
3,600.00	3,538.07	3,511.09	3,509.00	15.09	11.68	166.32	43.88	-217.19	771.25	747.56	23.69	32.557		
3,700.00	3,635.94	3,608.15	3,606.00	15.56	12.01	166.69	46.75	-219.26	794.80	770.44	24.36	32.633		
3,800.00	3,733.81	3,705.22	3,703.00	16.02	12.34	167.03	49.62	-221.32	818.38	793.36	25.02	32.706		
3,900.00	3,831.68	3,802.29	3,800.01	16.48	12.67	167.35	52.50	-223.39	841.98	816.29	25.69	32.776		
4,000.00	3,929.55	3,899.35	3,897.01	16.94	12.99	167.66	55.37	-225.45	865.61	839.26	26.36	32.843		
4,100.00	4,027.42	3,996.42	3,994.01	17.40	13.32	167.95	58.24	-227.52	889.27	862.24	27.02	32.907		
4,200.00	4,125.28	4,093.49	4,091.01	17.86	13.65	168.22	61.11	-229.59	912.94	885.25	27.69	32.969		
4,300.00	4,223.15	4,190.56	4,188.02	18.32	13.98	168.49	63.98	-231.65	936.63	908.27	28.36	33.028		
4,400.00	4,321.04	4,287.65	4,285.04	18.76	14.31	168.76	66.86	-233.72	960.23	931.22	29.02	33.094		
4,500.00	4,419.41	4,385.30	4,382.64	19.05	14.64	169.05	69.75	-235.80	981.46	951.86	29.60	33.156		
4,600.00	4,518.34	4,483.65	4,480.92	19.32	14.98	169.27	72.66	-237.89	999.33	969.14	30.19	33.102		
4,700.00	4,617.72	4,582.57	4,579.77	19.57	15.31	169.44	75.58	-240.00	1,013.82	983.04	30.78	32.936		
4,800.00	4,717.43	4,681.94	4,679.07	19.81	15.65	169.56	78.52	-242.11	1,024.92	993.54	31.37	32.667		
4,900.00	4,817.34	4,781.63	4,778.70	20.03	15.99	169.63	81.47	-244.24	1,032.60	1,000.63	31.97	32.300		
5,000.00	4,917.34	4,881.53	4,878.53	20.27	16.33	-35.81	84.43	-246.36	1,037.03	1,004.44	32.59	31.819		
5,100.00	5,017.34	4,981.95	4,978.00	20.48	21.45	-90.00	-756.00	-249.95	1,008.92	982.43	26.49	38.083		

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 #30H-1916
Project:	Weld County, CO	TVD Reference:	KBE @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	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 #30H-3146 - Hz - APD		Offset Site Error:		0.00 usft	
Survey Program: 0-MWD+IFR1+MS+sag															Offset Well Error:		0.00 usft	
Reference		Offset		Semi Major Axis			Distance											
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning					
5,200.00	5,117.31	6,443.94	5,820.00	20.69	21.45	-94.05	-754.99	-249.95	931.24	902.73	28.51	32.659						
5,300.00	5,215.92	6,428.23	5,820.00	20.82	21.33	-103.96	-739.28	-249.95	859.16	828.55	30.60	28.075						
5,400.00	5,309.71	6,394.00	5,820.00	20.88	21.10	-109.85	-705.05	-249.95	795.87	763.28	32.59	24.421						
5,500.00	5,395.25	6,342.50	5,820.00	20.85	20.78	-112.55	-653.55	-249.95	743.78	709.45	34.34	21.661						
5,600.00	5,469.40	6,275.63	5,820.00	20.78	20.38	-113.02	-586.68	-249.95	703.93	668.25	35.69	19.726						
5,700.00	5,529.43	6,195.84	5,820.00	20.67	19.97	-112.17	-506.89	-249.95	675.90	639.33	36.57	18.481						
5,800.00	5,573.13	6,093.07	5,819.28	20.55	19.54	-110.41	-404.13	-249.95	658.03	621.04	37.00	17.785						
5,900.00	5,598.91	5,935.43	5,787.50	20.45	19.07	-106.05	-250.35	-249.95	642.31	604.92	37.39	17.178						
6,000.00	5,606.00	5,806.55	5,728.27	20.39	18.83	-101.43	-136.25	-249.95	627.68	589.77	37.90	16.559						
6,100.00	5,606.00	5,707.48	5,664.72	20.41	18.63	-95.60	-60.44	-249.95	615.43	577.10	38.32	16.059						
6,200.00	5,606.00	5,635.83	5,610.39	20.55	18.47	-90.51	-13.82	-249.95	609.51	570.92	38.60	15.791						
6,211.83	5,606.00	5,628.77	5,604.70	20.58	18.46	-89.97	-9.64	-249.95	609.44	570.81	38.63	15.777 SF						
6,300.00	5,606.00	5,583.43	5,566.87	20.81	18.35	-86.42	15.33	-249.95	613.88	575.11	38.77	15.834						
6,400.00	5,606.00	5,550.00	5,537.66	21.19	18.27	-83.69	31.58	-249.95	630.49	591.57	38.92	16.200						
6,500.00	5,606.00	5,514.00	5,505.11	21.69	18.17	-80.69	46.95	-249.95	659.53	620.61	38.92	16.945						
6,600.00	5,606.00	5,500.00	5,492.18	22.28	18.14	-79.51	52.31	-249.95	700.37	661.33	39.04	17.942						
6,700.00	5,606.00	5,471.05	5,465.01	22.96	18.06	-77.06	62.29	-249.95	751.14	712.21	38.93	19.293						
6,800.00	5,606.00	5,450.00	5,444.93	23.72	18.01	-75.28	68.59	-249.95	810.57	771.71	38.86	20.859						
6,900.00	5,606.00	5,450.00	5,444.93	24.55	18.01	-75.28	68.59	-249.95	876.93	838.00	38.94	22.523						
7,000.00	5,606.00	5,431.15	5,426.74	25.43	17.96	-73.69	73.54	-249.95	948.76	909.93	38.83	24.433						
7,100.00	5,606.00	5,421.67	5,417.53	26.37	17.94	-72.90	75.78	-249.95	1,025.14	986.35	38.79	26.428						
7,200.00	5,606.00	5,400.00	5,396.33	27.35	17.88	-71.10	80.26	-249.95	1,105.34	1,066.68	38.67	28.587						
7,300.00	5,606.00	5,400.00	5,396.33	28.38	17.88	-71.10	80.26	-249.95	1,188.04	1,149.36	38.68	30.715						
7,400.00	5,606.00	5,400.00	5,396.33	29.45	17.88	-71.10	80.26	-249.95	1,273.22	1,234.54	38.68	32.915						
7,500.00	5,606.00	5,400.00	5,396.33	30.54	17.88	-71.10	80.26	-249.95	1,360.42	1,321.74	38.68	35.170						
7,600.00	5,606.00	5,400.00	5,396.33	31.67	17.88	-71.10	80.26	-249.95	1,449.28	1,410.60	38.68	37.471						
7,700.00	5,606.00	5,400.00	5,396.33	32.83	17.88	-71.10	80.26	-249.95	1,539.50	1,500.83	38.67	39.806						



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30H-1916
Project:	Weld County, CO	TVD Reference:	KBE @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	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	-118.87	-49.60	-89.97	102.74					
100.00	100.00	99.00	99.00	0.13	0.13	-118.87	-49.60	-89.97	102.73	102.47	0.27	387.650		
200.00	200.00	199.00	199.00	0.47	0.47	-118.87	-49.60	-89.97	102.73	101.80	0.94	109.609		
300.00	300.00	299.00	299.00	0.81	0.80	-118.87	-49.60	-89.97	102.73	101.12	1.61	63.747		
400.00	399.98	402.41	402.39	1.11	1.15	87.97	-48.27	-88.71	100.97	98.66	2.32	43.590		
500.00	499.84	502.63	502.52	1.41	1.49	91.93	-45.29	-85.91	97.15	94.22	2.93	33.109		
600.00	599.45	602.03	601.84	1.74	1.82	98.24	-42.31	-83.10	94.21	90.65	3.57	26.426		
677.60	676.50	678.88	678.62	2.00	2.08	104.73	-40.00	-80.93	93.33	89.26	4.08	22.894 CC		
700.00	698.70	701.01	700.74	2.07	2.15	106.83	-39.34	-80.30	93.42	89.20	4.22	22.115 ES		
800.00	797.47	799.46	799.10	2.44	2.48	117.08	-36.39	-77.52	96.31	91.40	4.91	19.621		
900.00	895.63	897.25	896.81	2.84	2.81	127.84	-33.45	-74.76	104.27	98.66	5.61	18.581		
1,000.00	993.49	994.73	994.20	3.26	3.14	137.42	-30.53	-72.00	116.59	110.30	6.30	18.515		
1,100.00	1,091.36	1,092.21	1,091.60	3.69	3.47	145.06	-27.60	-69.25	131.57	124.60	6.97	18.883		
1,200.00	1,189.23	1,189.68	1,189.00	4.13	3.80	151.08	-24.68	-66.49	148.40	140.78	7.63	19.454		
1,300.00	1,287.10	1,287.16	1,286.39	4.58	4.13	155.87	-21.75	-63.74	166.53	158.25	8.28	20.101		
1,400.00	1,384.97	1,384.64	1,383.79	5.02	4.46	159.70	-18.83	-60.98	185.57	176.63	8.94	20.759		
1,500.00	1,482.84	1,482.12	1,481.18	5.47	4.79	162.82	-15.90	-58.23	205.27	195.68	9.59	21.396		
1,600.00	1,580.70	1,579.60	1,578.58	5.92	5.12	165.39	-12.98	-55.47	225.46	215.21	10.25	21.997		
1,700.00	1,678.57	1,677.08	1,675.97	6.38	5.45	167.54	-10.06	-52.72	246.02	235.11	10.91	22.556		
1,800.00	1,776.44	1,774.56	1,773.37	6.83	5.78	169.36	-7.13	-49.96	266.86	255.29	11.57	23.073		
1,900.00	1,874.31	1,872.03	1,870.77	7.29	6.11	170.92	-4.21	-47.21	287.92	275.69	12.23	23.550		
2,000.00	1,972.18	1,969.51	1,968.16	7.74	6.44	172.26	-1.28	-44.45	309.16	296.27	12.89	23.989		
2,100.00	2,070.05	2,066.99	2,065.56	8.20	6.77	173.43	1.64	-41.70	330.54	316.99	13.55	24.393		
2,200.00	2,167.92	2,164.47	2,162.95	8.66	7.10	174.46	4.57	-38.94	352.03	337.82	14.21	24.766		
2,300.00	2,265.78	2,261.95	2,260.35	9.12	7.43	175.37	7.49	-36.19	373.62	358.74	14.88	25.110		
2,400.00	2,363.65	2,359.43	2,357.74	9.57	7.77	176.18	10.42	-33.43	395.29	379.75	15.55	25.429		
2,500.00	2,461.52	2,456.91	2,455.14	10.03	8.10	176.91	13.34	-30.68	417.03	400.82	16.21	25.724		
2,600.00	2,559.39	2,554.38	2,552.54	10.49	8.43	177.56	16.26	-27.92	438.83	421.95	16.88	25.998		
2,700.00	2,657.26	2,651.86	2,649.93	10.95	8.76	178.16	19.19	-25.17	460.67	443.13	17.55	26.254		
2,800.00	2,755.13	2,749.34	2,747.33	11.41	9.09	178.69	22.11	-22.41	482.56	464.35	18.22	26.492		
2,900.00	2,852.99	2,846.82	2,844.72	11.87	9.42	179.19	25.04	-19.66	504.49	485.61	18.88	26.714		
3,000.00	2,950.86	2,944.30	2,942.12	12.33	9.75	179.64	27.96	-16.90	526.45	506.89	19.55	26.922		
3,100.00	3,048.73	3,041.78	3,039.51	12.79	10.08	-179.95	30.89	-14.15	548.44	528.21	20.22	27.117		
3,200.00	3,146.60	3,139.26	3,136.91	13.25	10.41	-179.56	33.81	-11.39	570.45	549.55	20.90	27.301		
3,300.00	3,244.47	3,236.73	3,234.31	13.71	10.74	-179.21	36.74	-8.64	592.49	570.92	21.57	27.473		
3,400.00	3,342.34	3,334.21	3,331.70	14.17	11.07	-178.88	39.66	-5.88	614.54	592.30	22.24	27.636		
3,500.00	3,440.20	3,431.69	3,429.10	14.63	11.40	-178.57	42.59	-3.13	636.62	613.71	22.91	27.789		
3,600.00	3,538.07	3,529.17	3,526.49	15.09	11.73	-178.28	45.51	-0.37	658.71	635.13	23.58	27.934		
3,700.00	3,635.94	3,626.65	3,623.89	15.56	12.07	-178.02	48.43	2.38	680.81	656.56	24.25	28.072		
3,800.00	3,733.81	3,724.13	3,721.28	16.02	12.40	-177.77	51.36	5.14	702.93	678.00	24.92	28.202		
3,900.00	3,831.68	3,821.61	3,818.68	16.48	12.73	-177.53	54.28	7.89	725.06	699.46	25.60	28.326		
4,000.00	3,929.55	3,919.08	3,916.08	16.94	13.06	-177.31	57.21	10.65	747.20	720.93	26.27	28.443		
4,100.00	4,027.42	4,016.56	4,013.47	17.40	13.39	-177.10	60.13	13.40	769.35	742.41	26.94	28.555		
4,200.00	4,125.28	4,114.04	4,110.87	17.86	13.72	-176.90	63.06	16.16	791.51	763.89	27.62	28.661		
4,300.00	4,223.15	4,211.52	4,208.26	18.32	14.05	-176.72	65.98	18.91	813.68	785.39	28.29	28.763		
4,400.00	4,321.04	4,309.02	4,305.68	18.76	14.38	-176.55	68.91	21.67	835.75	806.80	28.95	28.865		
4,500.00	4,419.41	4,407.04	4,403.61	19.05	14.71	-176.39	71.85	24.44	855.38	825.82	29.56	28.941		
4,600.00	4,518.34	4,505.67	4,502.16	19.32	15.05	-176.23	74.81	27.23	871.59	841.43	30.16	28.999		
4,700.00	4,617.72	4,604.80	4,601.21	19.57	15.39	-176.05	77.78	30.03	884.37	853.61	30.76	28.746		
4,800.00	4,717.43	4,704.31	4,700.63	19.81	15.72	-175.86	80.77	32.84	893.70	862.33	31.37	28.489		
4,900.00	4,817.34	4,804.07	4,800.31	20.03	16.06	-175.65	83.76	35.66	899.56	867.59	31.97	28.134		
5,000.00	4,917.34	4,903.72	4,900.00	20.27	16.38	-175.44	86.75	38.47	905.41	873.53	32.57	27.779		

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 @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	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	5,017.34	6,359.72	5,735.00	20.48	21.38	-90.00	-756.00	40.03	786.68	766.66	20.01	39.308		
5,200.00	5,117.31	6,358.71	5,735.00	20.69	21.37	-96.80	-755.00	40.03	696.53	674.55	21.98	31.695		
5,300.00	5,215.92	6,343.00	5,735.00	20.82	21.26	-112.19	-739.28	40.03	610.62	586.31	24.31	25.119		
5,400.00	5,309.71	6,308.76	5,735.00	20.88	21.02	-119.86	-705.05	40.03	532.99	506.03	26.96	19.770		
5,500.00	5,395.25	6,257.27	5,735.00	20.85	20.69	-122.36	-653.55	40.03	467.38	437.58	29.80	15.685		
5,600.00	5,469.40	6,190.40	5,735.00	20.78	20.29	-121.57	-586.68	40.03	416.39	383.90	32.49	12.815		
5,700.00	5,529.43	6,110.61	5,735.00	20.67	19.87	-118.84	-506.89	40.03	380.72	346.05	34.66	10.983		
5,800.00	5,573.13	6,013.87	5,734.52	20.55	19.46	-115.08	-410.16	40.03	358.68	322.67	36.01	9.961		
5,900.00	5,598.91	5,888.52	5,714.21	20.45	19.03	-108.85	-286.78	40.03	341.85	304.80	37.05	9.227		
6,000.00	5,606.00	5,777.92	5,672.27	20.39	18.75	-101.89	-184.66	40.03	328.63	290.70	37.93	8.664		
6,100.00	5,606.00	5,685.77	5,621.51	20.41	18.54	-92.96	-107.90	40.03	320.23	281.84	38.40	8.340		
6,133.35	5,606.00	5,659.69	5,604.75	20.45	18.49	-89.96	-87.91	40.03	319.52	281.09	38.43	8.315 SF		
6,200.00	5,606.00	5,613.76	5,572.89	20.55	18.38	-84.26	-54.85	40.03	322.85	284.62	38.23	8.444		
6,300.00	5,606.00	5,557.91	5,530.42	20.81	18.25	-76.86	-18.63	40.03	342.20	304.59	37.61	9.099		
6,400.00	5,606.00	5,514.28	5,494.68	21.19	18.14	-70.95	6.39	40.03	379.37	342.43	36.94	10.269		
6,500.00	5,606.00	5,479.69	5,464.94	21.69	18.05	-66.33	24.04	40.03	431.89	395.39	36.50	11.833		
6,600.00	5,606.00	5,450.00	5,438.53	22.28	17.98	-62.47	37.58	40.03	496.12	459.88	36.24	13.691		
6,700.00	5,606.00	5,429.03	5,419.43	22.96	17.92	-59.84	46.24	40.03	568.79	532.58	36.21	15.707		
6,800.00	5,606.00	5,400.00	5,392.44	23.72	17.84	-56.36	56.93	40.03	647.68	611.63	36.05	17.964		
6,900.00	5,606.00	5,400.00	5,392.44	24.55	17.84	-56.36	56.93	40.03	730.65	694.29	36.36	20.095		
7,000.00	5,606.00	5,380.57	5,374.07	25.43	17.79	-54.13	63.24	40.03	816.88	780.53	36.34	22.477		
7,100.00	5,606.00	5,368.88	5,362.91	26.37	17.76	-52.84	66.70	40.03	905.55	869.14	36.41	24.872		
7,200.00	5,606.00	5,350.00	5,344.72	27.35	17.71	-50.82	71.77	40.03	996.17	959.78	36.40	27.371		
7,300.00	5,606.00	5,350.00	5,344.72	28.38	17.71	-50.82	71.77	40.03	1,088.00	1,051.47	36.54	29.779		
7,400.00	5,606.00	5,350.00	5,344.72	29.45	17.71	-50.82	71.77	40.03	1,181.16	1,144.52	36.65	32.231		
7,500.00	5,606.00	5,350.00	5,344.72	30.54	17.71	-50.82	71.77	40.03	1,275.36	1,238.62	36.74	34.717		
7,600.00	5,606.00	5,328.70	5,324.00	31.67	17.65	-48.66	76.68	40.03	1,369.79	1,333.08	36.70	37.320		
7,700.00	5,606.00	5,323.07	5,318.48	32.83	17.64	-48.11	77.84	40.03	1,465.13	1,428.38	36.76	39.861		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30H-1916
Project:	Weld County, CO	TVD Reference:	KBE @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	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	-149.35	-50.61	-29.99	58.84					
100.00	100.00	99.00	99.00	0.13	0.13	-149.35	-50.61	-29.99	58.83	58.56	0.27	221.980		
200.00	200.00	199.00	199.00	0.47	0.47	-149.35	-50.61	-29.99	58.83	57.89	0.94	62.765		
300.00	300.00	299.00	299.00	0.81	0.80	-149.35	-50.61	-29.99	58.83	57.22	1.61	36.504		
400.00	399.98	400.61	400.59	1.11	1.14	56.58	-49.92	-28.36	56.46	54.16	2.29	24.632		
500.00	499.84	501.87	501.70	1.41	1.48	58.21	-47.83	-23.45	49.32	46.30	3.02	16.355		
600.00	599.45	601.44	600.99	1.74	1.81	63.11	-44.90	-16.55	38.64	34.97	3.67	10.530		
700.00	698.70	700.44	699.71	2.07	2.15	78.34	-41.97	-9.65	27.47	23.14	4.33	6.340		
795.43	792.96	794.49	793.48	2.42	2.47	114.17	-39.18	-3.11	21.54	16.60	4.94	4.363 CC		
800.00	797.47	798.98	797.96	2.44	2.48	116.39	-39.05	-2.79	21.56	16.60	4.96	4.344 ES		
900.00	895.63	896.92	895.62	2.84	2.82	156.83	-36.15	4.03	30.65	25.06	5.58	5.491		
1,000.00	993.49	994.57	992.99	3.26	3.16	174.56	-33.26	10.83	48.66	42.42	6.23	7.804		
1,100.00	1,091.36	1,092.22	1,090.37	3.69	3.50	-177.56	-30.37	17.63	68.72	61.82	6.90	9.960		
1,200.00	1,189.23	1,189.88	1,187.74	4.13	3.84	-173.28	-27.48	24.43	89.48	81.90	7.57	11.816		
1,300.00	1,287.10	1,287.53	1,285.11	4.58	4.18	-170.61	-24.59	31.23	110.53	102.28	8.25	13.399		
1,400.00	1,384.97	1,385.19	1,382.49	5.02	4.52	-168.80	-21.70	38.03	131.74	122.81	8.93	14.754		
1,500.00	1,482.84	1,482.84	1,479.86	5.47	4.86	-167.49	-18.81	44.83	153.04	143.42	9.61	15.923		
1,600.00	1,580.70	1,580.49	1,577.24	5.92	5.20	-166.50	-15.92	51.63	174.39	164.10	10.30	16.938		
1,700.00	1,678.57	1,678.15	1,674.61	6.38	5.54	-165.73	-13.03	58.43	195.79	184.81	10.98	17.828		
1,800.00	1,776.44	1,775.80	1,771.99	6.83	5.89	-165.10	-10.14	65.23	217.21	205.54	11.67	18.613		
1,900.00	1,874.31	1,873.46	1,869.36	7.29	6.23	-164.60	-7.25	72.03	238.65	226.29	12.36	19.311		
2,000.00	1,972.18	1,971.11	1,966.73	7.74	6.57	-164.17	-4.36	78.83	260.11	247.06	13.05	19.934		
2,100.00	2,070.05	2,068.76	2,064.11	8.20	6.91	-163.81	-1.47	85.64	281.58	267.84	13.74	20.495		
2,200.00	2,167.92	2,166.42	2,161.48	8.66	7.25	-163.50	1.42	92.44	303.06	288.63	14.43	21.001		
2,300.00	2,265.78	2,264.07	2,258.86	9.12	7.60	-163.23	4.31	99.24	324.54	309.42	15.12	21.461		
2,400.00	2,363.65	2,361.73	2,356.23	9.57	7.94	-163.00	7.20	106.04	346.04	330.22	15.81	21.880		
2,500.00	2,461.52	2,459.38	2,453.60	10.03	8.28	-162.79	10.09	112.84	367.53	351.02	16.51	22.264		
2,600.00	2,559.39	2,557.03	2,550.98	10.49	8.62	-162.60	12.98	119.64	389.03	371.83	17.20	22.617		
2,700.00	2,657.26	2,654.69	2,648.35	10.95	8.96	-162.44	15.87	126.44	410.54	392.64	17.89	22.942		
2,800.00	2,755.13	2,752.34	2,745.73	11.41	9.31	-162.29	18.76	133.24	432.04	413.46	18.59	23.242		
2,900.00	2,852.99	2,850.00	2,843.10	11.87	9.65	-162.15	21.65	140.04	453.55	434.27	19.28	23.520		
3,000.00	2,950.86	2,947.65	2,940.47	12.33	9.99	-162.03	24.54	146.84	475.07	455.09	19.98	23.779		
3,100.00	3,048.73	3,045.30	3,037.85	12.79	10.33	-161.92	27.43	153.64	496.58	475.91	20.67	24.021		
3,200.00	3,146.60	3,142.96	3,135.22	13.25	10.68	-161.82	30.32	160.44	518.10	496.73	21.37	24.246		
3,300.00	3,244.47	3,240.61	3,232.60	13.71	11.02	-161.72	33.21	167.24	539.61	517.55	22.06	24.458		
3,400.00	3,342.34	3,338.26	3,329.97	14.17	11.36	-161.63	36.10	174.04	561.13	538.37	22.76	24.656		
3,500.00	3,440.20	3,435.92	3,427.34	14.63	11.70	-161.55	38.99	180.84	582.65	559.20	23.45	24.842		
3,600.00	3,538.07	3,533.57	3,524.72	15.09	12.05	-161.48	41.88	187.64	604.17	580.02	24.15	25.017		
3,700.00	3,635.94	3,631.23	3,622.09	15.56	12.39	-161.41	44.77	194.44	625.69	600.85	24.85	25.183		
3,800.00	3,733.81	3,728.88	3,719.47	16.02	12.73	-161.34	47.66	201.25	647.21	621.67	25.54	25.339		
3,900.00	3,831.68	3,826.53	3,816.84	16.48	13.07	-161.28	50.55	208.05	668.74	642.50	26.24	25.487		
4,000.00	3,929.55	3,924.19	3,914.21	16.94	13.42	-161.23	53.44	214.85	690.26	663.33	26.93	25.627		
4,100.00	4,027.42	4,021.84	4,011.59	17.40	13.76	-161.17	56.33	221.65	711.78	684.15	27.63	25.761		
4,200.00	4,125.28	4,119.50	4,108.96	17.86	14.10	-161.12	59.22	228.45	733.31	704.98	28.33	25.887		
4,300.00	4,223.15	4,217.15	4,206.34	18.32	14.44	-161.07	62.11	235.25	754.83	725.81	29.02	26.007		
4,400.00	4,321.04	4,314.83	4,303.73	18.76	14.79	-161.06	65.01	242.05	776.26	746.55	29.71	26.127		
4,500.00	4,419.41	4,412.97	4,401.59	19.05	15.13	-161.08	67.91	248.88	795.36	765.03	30.34	26.219		
4,600.00	4,518.34	4,511.67	4,500.01	19.32	15.48	-161.00	70.83	255.76	811.22	780.26	30.96	26.202		
4,700.00	4,617.72	4,610.80	4,598.85	19.57	15.83	-160.83	73.77	262.66	823.83	792.24	31.59	26.080		
4,800.00	4,717.43	4,710.24	4,698.01	19.81	16.17	-160.57	76.71	269.59	833.18	800.96	32.22	25.861		
4,900.00	4,817.34	4,809.88	4,797.37	20.03	16.52	-160.21	79.66	276.53	839.28	806.43	32.85	25.552		
5,000.00	4,917.34	4,911.04	4,898.24	20.27	16.87	-5.21	82.63	283.53	842.31	808.81	33.50	25.147		

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 #30H-1916
Project:	Weld County, CO	TVD Reference:	KBE @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	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	5,017.34	6,450.80	5,820.00	20.48	22.13	-90.00	-756.00	290.01	806.71	795.79	10.91	73.922		
5,200.00	5,117.31	6,449.79	5,820.00	20.69	22.12	-121.92	-755.00	290.01	707.16	695.94	11.22	63.028		
5,300.00	5,215.92	6,434.08	5,820.00	20.82	22.01	-155.28	-739.28	290.01	609.12	597.59	11.53	52.847		
5,400.00	5,309.71	6,399.84	5,820.00	20.88	21.78	-162.40	-705.05	290.01	516.05	504.21	11.85	43.563		
5,500.00	5,395.25	6,348.35	5,820.00	20.85	21.45	-164.58	-653.55	290.01	431.45	419.16	12.29	35.110		
5,600.00	5,469.40	6,281.48	5,820.00	20.78	21.06	-164.92	-586.68	290.01	358.48	345.53	12.95	27.691		
5,700.00	5,529.43	6,201.69	5,820.00	20.67	20.64	-164.32	-506.89	290.01	299.82	285.96	13.85	21.642		
5,800.00	5,573.13	6,095.30	5,818.83	20.55	20.17	-162.80	-400.53	290.01	256.90	241.66	15.24	16.852		
5,900.00	5,598.91	5,939.17	5,785.33	20.45	19.63	-158.07	-248.63	290.01	212.54	191.38	21.16	10.044		
6,000.00	5,606.00	5,811.80	5,725.63	20.39	19.28	-150.03	-136.48	290.01	162.95	135.33	27.61	5.901		
6,100.00	5,606.00	5,714.00	5,662.32	20.41	19.03	-129.51	-62.12	290.01	107.69	74.22	33.46	3.218		
6,200.00	5,606.00	5,643.27	5,608.44	20.55	18.86	-92.83	-16.39	290.01	69.73	31.12	38.61	1.806		
6,207.24	5,606.00	5,638.97	5,604.97	20.57	18.85	-89.97	-13.85	290.01	69.49	30.86	38.62	1.799 SF		
6,300.00	5,606.00	5,591.50	5,565.33	20.81	18.73	-60.27	12.23	290.01	104.14	68.63	35.51	2.933		
6,400.00	5,606.00	5,550.00	5,528.85	21.19	18.62	-42.37	32.00	290.01	179.46	144.82	34.64	5.181		
6,500.00	5,606.00	5,522.80	5,504.13	21.69	18.55	-34.55	43.35	290.01	265.48	230.28	35.21	7.541		
6,600.00	5,606.00	5,500.00	5,482.98	22.28	18.49	-29.65	51.86	290.01	355.90	320.29	35.61	9.993		
6,700.00	5,606.00	5,480.23	5,464.36	22.96	18.44	-26.28	58.49	290.01	448.72	412.82	35.90	12.499		
6,800.00	5,606.00	5,464.63	5,449.50	23.72	18.40	-24.06	63.21	290.01	543.08	506.94	36.14	15.025		
6,900.00	5,606.00	5,450.00	5,435.43	24.55	18.36	-22.27	67.24	290.01	638.52	602.21	36.31	17.584		
7,000.00	5,606.00	5,450.00	5,435.43	25.43	18.36	-22.27	67.24	290.01	734.87	698.29	36.58	20.089		
7,100.00	5,606.00	5,431.18	5,417.18	26.37	18.31	-20.29	71.83	290.01	831.54	794.93	36.61	22.714		
7,200.00	5,606.00	5,423.03	5,409.22	27.35	18.29	-19.53	73.62	290.01	928.81	892.09	36.71	25.299		
7,300.00	5,606.00	5,400.00	5,386.62	28.38	18.22	-17.64	77.99	290.01	1,026.81	990.11	36.70	27.978		
7,400.00	5,606.00	5,400.00	5,386.62	29.45	18.22	-17.64	77.99	290.01	1,124.51	1,087.68	36.83	30.533		
7,500.00	5,606.00	5,400.00	5,386.62	30.54	18.22	-17.64	77.99	290.01	1,222.58	1,185.65	36.93	33.101		
7,600.00	5,606.00	5,400.00	5,386.62	31.67	18.22	-17.64	77.99	290.01	1,320.94	1,283.92	37.03	35.677		
7,700.00	5,606.00	5,400.00	5,386.62	32.83	18.22	-17.64	77.99	290.01	1,419.53	1,382.43	37.11	38.257		
7,800.00	5,606.00	5,400.00	5,386.62	34.01	18.22	-17.64	77.99	290.01	1,518.31	1,481.13	37.18	40.839		



WOG

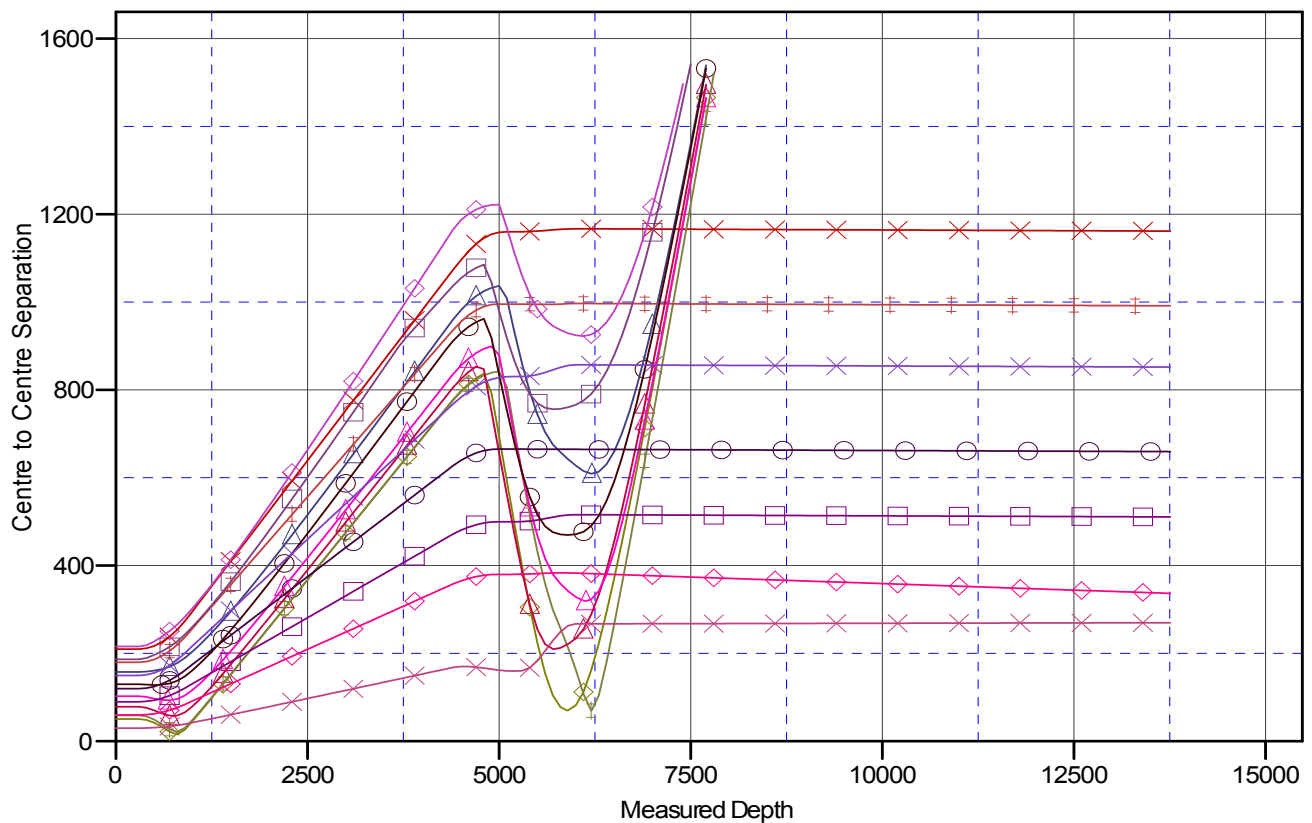
Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30H-1916
Project:	Weld County, CO	TVD Reference:	KBE @ 4746.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4746.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-1916	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KBE @ 4746.00usft (Original Well Ele)
Offset Depths are relative to Offset Datum
Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: Horsetail #30H-1916
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 1.11°

Ladder Plot



LEGEND

Horsetail #30H-3116, Hz, APD V0	Horsetail #30H-3113, Hz, APD V0	Horsetail #30H-1914, Hz, APD V0
Horsetail #30H-1945, Hz, APD V0	Horsetail #30H-3115, Hz, APD V0	Horsetail #30H-3114, Hz, APD V0
Horsetail #30H-3146, Hz, APD V0	Horsetail #30H-1948, Hz, APD V0	Horsetail #30H-3145, Hz, APD V0
Horsetail #30H-3148, Hz, APD V0	Horsetail #30H-3147, Hz, APD V0	Horsetail #30H-1915, Hz, APD V0
Horsetail #30H-1913, Hz, APD V0	Horsetail #30H-1947, Hz, APD V0	Horsetail #30H-1946, Hz, APD V0



WOG

Anticollision Report

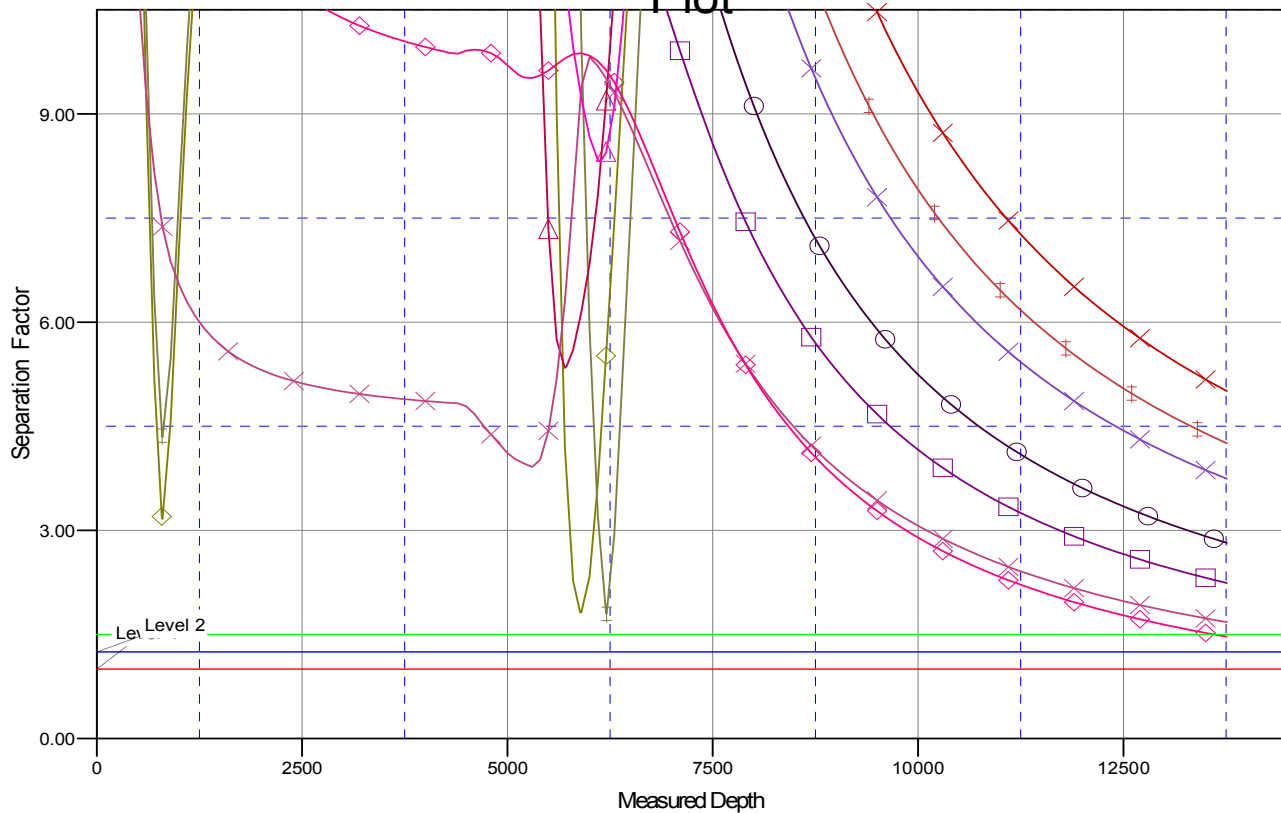
Company: Whiting Petroleum Corp.
Project: Weld County, CO
Reference Site: Sec 30-T10N-R57W
Site Error: 0.00 usft
Reference Well: Horsetail #30H-1916
Well Error: 0.00 usft
Reference Wellbore: Hz
Reference Design: APD

Local Co-ordinate Reference: Well Horsetail #30H-1916
TVD Reference: KBE @ 4746.00usft (Original Well Elev)
MD Reference: KBE @ 4746.00usft (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 @ 4746.00usft (Original Well Ele
Offset Depths are relative to Offset Datum
Central Meridian is 105° 30' 0.000 W

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Grid Convergence at Surface is: 1.11°

Separation Factor Plot



LEGEND

- Horsetail #30H-3116, Hz, APD V0
- Horsetail #30H-1945, Hz, APD V0
- Horsetail #30H-3113, Hz, APD V0
- Horsetail #30H-1948, Hz, APD V0
- Horsetail #30H-1914, Hz, APD V0
- Horsetail #30H-3115, Hz, APD V0
- Horsetail #30H-3114, Hz, APD V0
- Horsetail #30H-3146, Hz, APD V0
- Horsetail #30H-1947, Hz, APD V0
- Horsetail #30H-3145, Hz, APD V0
- Horsetail #30H-3148, Hz, APD V0
- Horsetail #30H-1915, Hz, APD V0
- Horsetail #30H-1946, Hz, APD V0