



Whiting Petroleum Corp.

Weld County, CO

Sec 30-T10N-R57W

Horsetail #30H-3116

Hz

APD

Anticollision Report

12 October, 2015



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30H-3116
Project:	Weld County, CO	TVD Reference:	KBE @ 4745.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4745.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-3116	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

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

Survey Tool Program		Date	10/12/2015		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	13,700.31	APD (Hz)	MWD+IFR1+MS+sag	Fixed:v2:crustal dec & 3-axis correction + sag	

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Sec 30-T10N-R57W						
Horsetail #30H-1913 - Hz - APD	216.33	217.33	186.92	185.86	177.319	CC
Horsetail #30H-1913 - Hz - APD	300.00	300.98	186.92	185.30	115.530	ES
Horsetail #30H-1913 - Hz - APD	6,200.00	5,600.00	1,086.86	1,046.64	27.019	SF
Horsetail #30H-1914 - Hz - APD	300.26	301.27	130.19	128.57	80.384	CC, ES
Horsetail #30H-1914 - Hz - APD	6,000.00	5,717.83	738.67	699.50	18.858	SF
Horsetail #30H-1916 - Hz - APD	787.54	790.86	15.88	10.91	3.199	CC, ES
Horsetail #30H-1916 - Hz - APD	5,822.80	5,886.86	70.34	31.64	1.818	SF
Horsetail #30H-1946 - Hz - APD	216.33	217.33	158.25	157.20	150.128	CC
Horsetail #30H-1946 - Hz - APD	300.00	301.00	158.25	156.64	97.813	ES
Horsetail #30H-1946 - Hz - APD	6,200.00	5,650.00	905.99	864.94	22.070	SF
Horsetail #30H-1947 - Hz - APD	301.41	302.45	103.21	101.59	63.443	CC
Horsetail #30H-1947 - Hz - APD	400.00	402.37	103.74	101.48	46.043	ES
Horsetail #30H-1947 - Hz - APD	6,143.19	5,693.39	599.61	558.45	14.567	SF
Horsetail #30H-1948 - Hz - APD	692.28	697.61	49.23	44.94	11.472	CC
Horsetail #30H-1948 - Hz - APD	700.00	705.29	49.25	44.91	11.356	ES
Horsetail #30H-1948 - Hz - APD	6,066.33	5,729.55	230.21	189.78	5.694	SF
Horsetail #30H-3113 - Hz - APD	300.00	300.00	179.94	178.32	111.421	CC, ES
Horsetail #30H-3113 - Hz - APD	13,699.97	13,555.53	991.94	749.38	4.089	SF
Horsetail #30H-3114 - Hz - APD	300.00	300.00	119.96	118.35	74.282	CC, ES
Horsetail #30H-3114 - Hz - APD	13,699.97	13,679.98	659.59	416.34	2.712	SF
Horsetail #30H-3115 - Hz - APD	300.00	300.00	59.98	58.36	37.140	CC
Horsetail #30H-3115 - Hz - APD	400.00	401.72	60.21	57.89	26.005	ES
Horsetail #30H-3115 - Hz - APD	13,699.97	13,616.26	336.91	98.00	1.410	Level 3, SF
Horsetail #30H-3146 - Hz - APD	300.00	300.00	149.95	148.33	92.851	CC, ES
Horsetail #30H-3146 - Hz - APD	13,699.97	13,808.22	836.12	595.14	3.470	SF
Horsetail #30H-3147 - Hz - APD	300.00	300.00	89.97	88.36	55.713	CC
Horsetail #30H-3147 - Hz - APD	400.00	402.17	90.43	88.12	39.204	ES
Horsetail #30H-3147 - Hz - APD	13,699.97	13,897.62	540.80	314.07	2.385	SF
Horsetail #30H-3148 - Hz - APD	300.00	300.00	29.99	28.37	18.570	CC
Horsetail #30H-3148 - Hz - APD	13,699.97	13,819.43	209.73	8.38	1.042	Level 2, ES, SF
Sec 31-T10N-R57W						
Maddy #1-31 - Wellbore #1 - Wellbore #1	13,116.31	5,579.00	501.57	378.49	4.075	CC, ES, SF

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30H-3116
Project:	Weld County, CO	TVD Reference:	KBE @ 4745.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4745.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-3116	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	1.00	1.00	0.00	0.00	-74.29	50.61	-179.94	186.92					
100.00	100.00	101.00	101.00	0.13	0.14	-74.29	50.61	-179.94	186.92	186.65	0.27	693.007		
200.00	200.00	201.00	201.00	0.47	0.47	-74.29	50.61	-179.94	186.92	185.97	0.94	198.002		
216.33	216.33	217.33	217.33	0.53	0.53	-74.29	50.61	-179.94	186.92	185.86	1.05	177.319 CC		
300.00	300.00	300.98	300.98	0.81	0.81	-74.29	50.61	-179.94	186.92	185.30	1.62	115.530 ES		
400.00	399.98	400.00	399.98	1.13	1.11	-147.64	49.10	-180.81	188.83	186.59	2.24	84.166		
500.00	499.84	496.99	496.84	1.47	1.41	-149.81	44.75	-183.32	194.75	191.87	2.88	67.704		
600.00	599.45	593.49	592.98	1.81	1.72	-153.11	37.60	-187.45	205.21	201.66	3.55	57.742		
700.00	698.90	688.58	687.39	2.15	2.04	-157.09	27.82	-193.09	219.32	215.06	4.26	51.540		
800.00	798.35	782.32	780.04	2.50	2.37	-161.20	15.53	-200.19	235.96	230.99	4.97	47.470		
900.00	897.81	874.55	870.71	2.86	2.74	-165.31	0.88	-208.65	255.46	249.75	5.71	44.777		
1,000.00	997.26	966.01	960.04	3.22	3.12	-169.31	-16.10	-218.45	278.01	271.57	6.44	43.193		
1,100.00	1,096.71	1,061.18	1,052.77	3.58	3.54	-173.02	-34.64	-229.15	302.49	295.36	7.13	42.440		
1,200.00	1,196.16	1,156.35	1,145.50	3.94	3.97	-176.18	-53.18	-239.86	328.02	320.21	7.81	42.023		
1,300.00	1,295.61	1,251.52	1,238.23	4.30	4.41	-178.89	-71.72	-250.56	354.37	345.89	8.48	41.795		
1,400.00	1,395.06	1,346.69	1,330.96	4.66	4.85	-178.77	-90.26	-261.27	381.37	372.22	9.15	41.686		
1,500.00	1,494.51	1,441.86	1,423.69	5.02	5.29	176.74	-108.80	-271.97	408.90	399.08	9.82	41.658		
1,600.00	1,593.96	1,537.03	1,516.42	5.39	5.73	174.96	-127.34	-282.67	436.85	426.36	10.48	41.680		
1,700.00	1,693.42	1,632.20	1,609.15	5.75	6.18	173.39	-145.88	-293.38	465.14	454.00	11.15	41.733		
1,800.00	1,792.87	1,727.37	1,701.88	6.11	6.63	172.00	-164.42	-304.08	493.73	481.92	11.81	41.806		
1,900.00	1,892.32	1,822.54	1,794.61	6.48	7.08	170.77	-182.96	-314.79	522.55	510.08	12.47	41.889		
2,000.00	1,991.77	1,917.70	1,887.34	6.84	7.53	169.66	-201.50	-325.49	551.58	538.44	13.14	41.978		
2,100.00	2,091.22	2,012.87	1,980.07	7.21	7.98	168.66	-220.04	-336.20	580.78	566.98	13.81	42.069		
2,200.00	2,190.67	2,108.04	2,072.80	7.57	8.44	167.75	-238.58	-346.90	610.13	595.66	14.47	42.160		
2,300.00	2,290.12	2,203.21	2,165.53	7.93	8.89	166.93	-257.12	-357.61	639.61	624.47	15.14	42.249		
2,400.00	2,389.58	2,298.38	2,258.26	8.30	9.34	166.18	-275.66	-368.31	669.20	653.39	15.81	42.336		
2,500.00	2,489.03	2,393.55	2,350.99	8.66	9.80	165.49	-294.20	-379.01	698.88	682.40	16.48	42.420		
2,600.00	2,588.48	2,488.72	2,443.72	9.03	10.25	164.86	-312.74	-389.72	728.65	711.50	17.14	42.500		
2,700.00	2,687.93	2,583.89	2,536.45	9.39	10.71	164.28	-331.28	-400.42	758.49	740.67	17.81	42.577		
2,800.00	2,787.38	2,679.06	2,629.18	9.76	11.16	163.74	-349.82	-411.13	788.40	769.91	18.49	42.651		
2,900.00	2,886.83	2,774.23	2,721.91	10.12	11.62	163.24	-368.36	-421.83	818.37	799.21	19.16	42.721		
3,000.00	2,986.28	2,869.40	2,814.64	10.49	12.07	162.78	-386.90	-432.54	848.39	828.56	19.83	42.787		
3,100.00	3,085.73	2,964.57	2,907.37	10.85	12.53	162.35	-405.44	-443.24	878.45	857.95	20.50	42.851		
3,200.00	3,185.19	3,059.74	3,000.10	11.22	12.98	161.94	-423.98	-453.94	908.57	887.39	21.17	42.911		
3,300.00	3,284.64	3,154.90	3,092.83	11.58	13.44	161.56	-442.52	-464.65	938.71	916.87	21.85	42.969		
3,400.00	3,384.09	3,250.07	3,185.56	11.95	13.90	161.21	-461.06	-475.35	968.90	946.38	22.52	43.024		
3,500.00	3,483.54	3,345.24	3,278.29	12.31	14.35	160.88	-479.60	-486.06	999.11	975.92	23.19	43.076		
3,600.00	3,582.99	3,440.41	3,371.02	12.68	14.81	160.56	-498.14	-496.76	1,029.36	1,005.49	23.87	43.125		
3,700.00	3,682.44	3,535.58	3,463.75	13.04	15.27	160.27	-516.68	-507.47	1,059.63	1,035.09	24.54	43.172		
3,800.00	3,781.89	3,630.75	3,556.48	13.41	15.72	159.99	-535.22	-518.17	1,089.93	1,064.71	25.22	43.217		
3,900.00	3,881.34	3,725.92	3,649.21	13.77	16.18	159.72	-553.76	-528.87	1,120.24	1,094.35	25.90	43.260		
4,000.00	3,980.80	3,821.09	3,741.94	14.14	16.64	159.47	-572.30	-539.58	1,150.58	1,124.01	26.57	43.301		
4,100.00	4,080.25	3,916.26	3,834.67	14.50	17.10	159.24	-590.84	-550.28	1,180.94	1,153.69	27.25	43.340		
4,200.00	4,179.70	4,011.43	3,927.40	14.87	17.55	159.01	-609.38	-560.99	1,211.32	1,183.39	27.93	43.377		
4,300.00	4,279.15	4,106.60	4,020.13	15.23	18.01	158.80	-627.92	-571.69	1,241.71	1,213.10	28.60	43.413		
4,400.00	4,378.60	4,201.77	4,112.86	15.60	18.47	158.59	-646.46	-582.40	1,272.11	1,242.83	29.28	43.447		
4,500.00	4,478.05	4,296.94	4,205.59	15.96	18.93	158.40	-665.00	-593.10	1,302.53	1,272.58	29.96	43.479		
4,599.99	4,577.49	4,429.83	4,335.37	16.33	19.45	158.16	-689.78	-607.41	1,332.27	1,301.43	30.84	43.199		
4,700.00	4,677.09	4,602.85	4,505.97	16.65	19.93	158.13	-714.59	-621.73	1,355.96	1,324.19	31.77	42.678		
4,800.00	4,776.94	4,624.26	4,538.00	16.91	20.66	-163.02	134.26	-635.10	1,306.90	1,277.13	29.77	43.900		
4,899.99	4,876.90	4,624.86	4,538.00	17.16	20.66	-162.61	134.87	-635.10	1,253.05	1,221.80	31.26	40.089		
5,000.00	4,976.91	4,624.87	4,538.00	17.44	20.66	-90.01	134.87	-635.10	1,203.39	1,170.65	32.73	36.764		

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-3116
Project:	Weld County, CO	TVD Reference:	KBE @ 4745.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4745.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-3116	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-1913 - Hz - APD		Offset Site Error:		0.00 usft	
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:		0.00 usft			
Reference		Offset		Semi Major Axis			Distance							Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor						
5,099.99	5,076.90	6,284.87	5,538.00	17.74	20.66	-90.01	134.87	-635.10	1,160.23	1,126.06	34.17	33.954						
5,200.00	5,176.44	6,276.80	5,538.00	18.01	20.64	93.39	126.81	-635.10	1,124.47	1,089.02	35.45	31.719						
5,300.00	5,272.61	6,249.96	5,538.00	18.27	20.58	95.10	99.96	-635.10	1,097.42	1,060.97	36.45	30.106						
5,400.00	5,361.89	6,205.26	5,538.00	18.52	20.49	94.99	55.26	-635.09	1,079.39	1,042.26	37.13	29.068						
5,500.00	5,441.00	6,144.34	5,538.00	18.76	20.43	93.52	-5.65	-635.08	1,069.40	1,031.83	37.57	28.464						
5,600.00	5,507.03	6,069.45	5,538.00	19.01	20.41	91.30	-80.55	-635.07	1,065.50	1,027.67	37.83	28.166						
5,655.70	5,537.23	6,022.68	5,538.00	19.15	20.42	89.99	-127.32	-635.07	1,065.07	1,027.12	37.95	28.063						
5,700.00	5,557.57	5,983.33	5,538.00	19.27	20.45	88.99	-166.66	-635.06	1,065.26	1,027.22	38.04	28.000						
5,800.00	5,590.74	5,893.39	5,536.46	19.59	20.56	87.17	-256.57	-635.05	1,066.49	1,028.15	38.35	27.811						
5,900.00	5,605.33	5,809.38	5,523.28	19.97	20.70	85.60	-339.44	-635.04	1,068.46	1,029.72	38.75	27.576						
6,000.00	5,606.00	5,729.87	5,498.71	20.42	20.84	84.19	-414.98	-635.03	1,071.45	1,032.23	39.22	27.321						
6,100.00	5,606.00	5,659.07	5,467.38	20.96	20.96	82.53	-478.41	-635.03	1,077.19	1,037.47	39.72	27.117						
6,200.00	5,606.00	5,600.00	5,434.86	21.60	21.06	80.82	-527.69	-635.02	1,086.86	1,046.64	40.23	27,019 SF						
6,300.00	5,606.00	5,550.00	5,403.12	22.31	21.13	79.16	-566.30	-635.02	1,101.43	1,060.73	40.70	27.065						
6,400.00	5,606.00	5,500.00	5,367.83	23.10	21.19	77.34	-601.69	-635.01	1,121.56	1,080.47	41.09	27.292						
6,500.00	5,606.00	5,464.71	5,340.95	23.96	21.23	75.97	-624.55	-635.01	1,147.69	1,106.23	41.46	27.683						
6,600.00	5,606.00	5,433.20	5,315.70	24.87	21.25	74.70	-643.39	-635.01	1,179.92	1,138.16	41.76	28.255						
6,700.00	5,606.00	5,400.00	5,287.91	25.84	21.28	73.32	-661.55	-635.00	1,218.19	1,176.21	41.97	29.024						
6,800.00	5,606.00	5,383.26	5,273.48	26.85	21.28	72.61	-670.02	-635.00	1,262.11	1,219.91	42.20	29.911						
6,900.00	5,606.00	5,350.00	5,244.03	27.90	21.29	71.18	-685.46	-635.00	1,311.59	1,269.33	42.26	31.035						
7,000.00	5,606.00	5,350.00	5,244.03	28.99	21.29	71.18	-685.46	-635.00	1,365.67	1,323.21	42.47	32.160						
7,100.00	5,606.00	5,330.70	5,226.51	30.11	21.29	70.34	-693.55	-635.00	1,424.37	1,381.86	42.51	33.509						
7,200.00	5,606.00	5,317.26	5,214.13	31.27	21.29	69.75	-698.80	-635.00	1,487.10	1,444.55	42.55	34.953						



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Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30H-3116
Project:	Weld County, CO	TVD Reference:	KBE @ 4745.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4745.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-3116	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	1.00	1.00	0.00	0.00	-67.13	50.60	-119.96	130.19					
100.00	100.00	101.00	101.00	0.13	0.14	-67.13	50.60	-119.96	130.19	129.92	0.27	482.687		
200.00	200.00	201.00	201.00	0.47	0.47	-67.13	50.60	-119.96	130.19	129.25	0.94	137.911		
300.00	300.00	301.01	301.01	0.81	0.81	-67.13	50.59	-119.96	130.19	128.57	1.62	80.466		
300.26	300.26	301.27	301.27	0.81	0.81	-67.13	50.59	-119.96	130.19	128.57	1.62	80.384 CC, ES		
400.00	399.98	401.63	401.61	1.13	1.11	-140.96	48.84	-120.39	131.27	129.03	2.24	58.495		
500.00	499.84	501.69	501.52	1.47	1.42	-144.55	43.70	-121.65	134.89	132.03	2.86	47.157		
600.00	599.45	600.64	600.08	1.81	1.73	-149.99	35.29	-123.73	142.03	138.52	3.52	40.402		
700.00	698.90	698.28	696.99	2.15	2.06	-156.41	23.76	-126.57	152.38	148.18	4.20	36.282		
800.00	798.35	794.63	792.17	2.50	2.41	-163.01	9.24	-130.15	165.25	160.33	4.91	33.634		
900.00	897.81	890.58	886.49	2.86	2.79	-169.44	-7.92	-134.37	181.06	175.41	5.65	32.066		
1,000.00	997.26	987.24	981.41	3.22	3.18	-174.97	-25.58	-138.72	199.01	192.64	6.37	31.241		
1,100.00	1,096.71	1,083.89	1,076.33	3.58	3.59	-179.57	-43.25	-143.08	218.52	211.43	7.08	30.849		
1,200.00	1,196.16	1,180.54	1,171.26	3.94	4.00	176.58	-60.91	-147.43	239.18	231.40	7.78	30.724		
1,300.00	1,295.61	1,277.19	1,266.18	4.30	4.41	173.34	-78.58	-151.78	260.74	252.26	8.48	30.738		
1,400.00	1,395.06	1,373.84	1,361.11	4.66	4.83	170.59	-96.24	-156.13	282.98	273.81	9.17	30.845		
1,500.00	1,494.51	1,470.49	1,456.03	5.02	5.25	168.25	-113.91	-160.48	305.76	295.90	9.86	31.002		
1,600.00	1,593.96	1,567.14	1,550.95	5.39	5.67	166.22	-131.57	-164.84	328.97	318.42	10.55	31.185		
1,700.00	1,693.42	1,663.79	1,645.88	5.75	6.09	164.47	-149.24	-169.19	352.51	341.28	11.23	31.379		
1,800.00	1,792.87	1,760.45	1,740.80	6.11	6.51	162.93	-166.90	-173.54	376.33	364.41	11.92	31.575		
1,900.00	1,892.32	1,857.10	1,835.72	6.48	6.93	161.57	-184.57	-177.89	400.38	387.78	12.60	31.769		
2,000.00	1,991.77	1,953.75	1,930.65	6.84	7.36	160.37	-202.24	-182.24	424.62	411.33	13.29	31.957		
2,100.00	2,091.22	2,050.40	2,025.57	7.21	7.78	159.30	-219.90	-186.60	449.01	435.04	13.97	32.137		
2,200.00	2,190.67	2,147.05	2,120.49	7.57	8.21	158.33	-237.57	-190.95	473.54	458.89	14.66	32.309		
2,300.00	2,290.12	2,243.70	2,215.42	7.93	8.64	157.47	-255.23	-195.30	498.19	482.85	15.34	32.472		
2,400.00	2,389.58	2,340.35	2,310.34	8.30	9.06	156.68	-272.90	-199.65	522.93	506.90	16.03	32.627		
2,500.00	2,489.03	2,437.00	2,405.26	8.66	9.49	155.96	-290.56	-204.00	547.76	531.04	16.71	32.773		
2,600.00	2,588.48	2,533.66	2,500.19	9.03	9.92	155.31	-308.23	-208.36	572.66	555.26	17.40	32.911		
2,700.00	2,687.93	2,630.31	2,595.11	9.39	10.34	154.71	-325.89	-212.71	597.62	579.53	18.09	33.041		
2,800.00	2,787.38	2,726.96	2,690.04	9.76	10.77	154.16	-343.56	-217.06	622.64	603.87	18.77	33.164		
2,900.00	2,886.83	2,823.61	2,784.96	10.12	11.20	153.65	-361.22	-221.41	647.71	628.25	19.46	33.280		
3,000.00	2,986.28	2,920.26	2,879.88	10.49	11.63	153.18	-378.89	-225.76	672.83	652.68	20.15	33.390		
3,100.00	3,085.73	3,016.91	2,974.81	10.85	12.06	152.74	-396.55	-230.12	697.99	677.15	20.84	33.494		
3,200.00	3,185.19	3,113.56	3,069.73	11.22	12.49	152.33	-414.22	-234.47	723.18	701.65	21.53	33.592		
3,300.00	3,284.64	3,210.22	3,164.65	11.58	12.91	151.95	-431.88	-238.82	748.40	726.18	22.22	33.686		
3,400.00	3,384.09	3,306.87	3,259.58	11.95	13.34	151.60	-449.55	-243.17	773.65	750.75	22.91	33.774		
3,500.00	3,483.54	3,403.52	3,354.50	12.31	13.77	151.26	-467.21	-247.52	798.93	775.33	23.60	33.858		
3,600.00	3,582.99	3,500.17	3,449.42	12.68	14.20	150.95	-484.88	-251.88	824.23	799.95	24.29	33.938		
3,700.00	3,682.44	3,596.82	3,544.35	13.04	14.63	150.66	-502.54	-256.23	849.56	824.58	24.98	34.014		
3,800.00	3,781.89	3,693.47	3,639.27	13.41	15.06	150.38	-520.21	-260.58	874.90	849.23	25.67	34.086		
3,900.00	3,881.34	3,790.12	3,734.19	13.77	15.49	150.12	-537.87	-264.93	900.26	873.90	26.36	34.155		
4,000.00	3,980.80	3,886.77	3,829.12	14.14	15.92	149.87	-555.54	-269.28	925.64	898.59	27.05	34.220		
4,100.00	4,080.25	3,983.43	3,924.04	14.50	16.35	149.64	-573.20	-273.64	951.03	923.29	27.74	34.283		
4,200.00	4,179.70	4,080.08	4,018.97	14.87	16.77	149.42	-590.87	-277.99	976.44	948.01	28.43	34.343		
4,300.00	4,279.15	4,176.73	4,113.89	15.23	17.20	149.21	-608.53	-282.34	1,001.86	972.73	29.12	34.400		
4,400.00	4,378.60	4,273.38	4,208.81	15.60	17.63	149.01	-626.20	-286.69	1,027.29	997.47	29.82	34.454		
4,500.00	4,478.05	4,370.03	4,303.74	15.96	18.06	148.82	-643.86	-291.04	1,052.73	1,022.22	30.51	34.507		
4,599.99	4,577.49	4,493.61	4,425.31	16.33	18.54	148.62	-665.36	-296.34	1,077.51	1,046.16	31.35	34.372		
4,700.00	4,677.09	4,641.39	4,571.72	16.65	18.92	148.68	-684.72	-301.11	1,097.08	1,064.93	32.16	34.117		
4,800.00	4,776.94	4,688.38	4,606.00	16.91	20.70	-163.27	134.30	-305.32	1,106.13	1,080.53	25.61	43.197		
4,899.99	4,876.90	4,688.99	4,606.00	17.16	20.71	-162.63	134.91	-305.32	1,034.80	1,007.44	27.36	37.815		
5,000.00	4,976.91	4,688.99	4,606.00	17.44	20.71	-90.01	134.91	-305.32	967.06	937.82	29.24	33.078		

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-3116
Project:	Weld County, CO	TVD Reference:	KBE @ 4745.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4745.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-3116	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	
5,099.99	5,076.90	6,288.99	5,606.00	17.74	20.71	-90.01	134.91	-305.32	905.31	874.10	31.21	29.005	
5,200.00	5,176.44	6,280.93	5,606.00	18.01	20.68	95.83	126.84	-305.32	851.10	817.93	33.17	25.660	
5,300.00	5,272.61	6,254.09	5,606.00	18.27	20.59	99.23	100.00	-305.32	806.96	772.06	34.90	23.123	
5,400.00	5,361.89	6,209.39	5,606.00	18.52	20.44	99.96	55.30	-305.31	774.46	738.21	36.25	21.363	
5,500.00	5,441.00	6,148.47	5,606.00	18.76	20.29	98.66	-5.62	-305.31	753.37	716.17	37.20	20.251	
5,600.00	5,507.03	6,073.58	5,606.00	19.01	20.14	96.16	-80.51	-305.30	741.79	704.01	37.78	19.634	
5,700.00	5,557.57	5,987.46	5,606.00	19.27	20.05	93.35	-166.62	-305.29	736.81	698.66	38.15	19.313	
5,800.00	5,590.74	5,891.71	5,599.56	19.59	20.04	90.57	-262.04	-305.27	735.32	696.82	38.50	19.099	
5,821.01	5,595.37	5,872.20	5,596.15	19.66	20.05	89.98	-281.24	-305.27	735.27	696.69	38.58	19.059	
5,900.00	5,605.33	5,800.00	5,577.32	19.97	20.08	87.78	-350.89	-305.26	735.89	697.04	38.84	18.944	
6,000.00	5,606.00	5,717.83	5,544.43	20.42	20.14	85.14	-426.10	-305.25	738.67	699.50	39.17	18.858 SF	
6,100.00	5,606.00	5,650.00	5,508.65	20.96	20.20	82.38	-483.66	-305.25	745.66	706.25	39.41	18.919	
6,200.00	5,606.00	5,586.77	5,468.82	21.60	20.25	79.36	-532.72	-305.24	758.78	719.26	39.51	19.204	
6,300.00	5,606.00	5,537.47	5,433.81	22.31	20.29	76.75	-567.41	-305.24	779.39	739.91	39.49	19.738	
6,400.00	5,606.00	5,500.00	5,405.10	23.10	20.32	74.64	-591.47	-305.23	808.18	768.79	39.39	20.516	
6,500.00	5,606.00	5,462.83	5,374.98	23.96	20.33	72.49	-613.24	-305.23	845.14	805.95	39.19	21.566	
6,600.00	5,606.00	5,434.45	5,350.99	24.87	20.34	70.80	-628.39	-305.23	889.91	850.92	38.98	22.828	
6,700.00	5,606.00	5,400.00	5,320.81	25.84	20.35	68.73	-644.99	-305.23	941.89	903.22	38.67	24.357	
6,800.00	5,606.00	5,400.00	5,320.81	26.85	20.35	68.73	-644.99	-305.23	1,000.03	961.36	38.67	25.860	
6,900.00	5,606.00	5,372.43	5,295.90	27.90	20.34	67.07	-656.81	-305.23	1,063.52	1,025.12	38.40	27.698	
7,000.00	5,606.00	5,350.00	5,275.20	28.99	20.33	65.71	-665.44	-305.22	1,131.87	1,093.69	38.18	29.649	
7,100.00	5,606.00	5,350.00	5,275.20	30.11	20.33	65.71	-665.44	-305.22	1,204.13	1,165.96	38.17	31.549	
7,200.00	5,606.00	5,332.05	5,258.38	31.27	20.32	64.63	-671.71	-305.22	1,279.75	1,241.75	38.00	33.676	
7,300.00	5,606.00	5,321.63	5,248.52	32.44	20.32	64.01	-675.08	-305.22	1,358.30	1,320.38	37.91	35.826	
7,400.00	5,606.00	5,300.00	5,227.85	33.65	20.30	62.72	-681.44	-305.22	1,439.47	1,401.72	37.75	38.134	
7,500.00	5,606.00	5,300.00	5,227.85	34.87	20.30	62.72	-681.44	-305.22	1,522.39	1,484.63	37.76	40.316	



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30H-3116
Project:	Weld County, CO	TVD Reference:	KBE @ 4745.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4745.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-3116	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	1.00	1.00	0.00	0.00	0.00	50.62	0.00	50.62					
100.00	100.00	101.00	101.00	0.13	0.14	0.00	50.62	0.00	50.62	50.35	0.27	187.671		
200.00	200.00	201.00	201.00	0.47	0.47	0.00	50.62	0.00	50.62	49.67	0.94	53.620		
300.00	300.00	301.02	301.02	0.81	0.81	0.00	50.62	0.00	50.62	49.00	1.62	31.284		
400.00	399.98	402.58	402.56	1.13	1.12	-73.68	48.96	0.79	48.47	46.16	2.31	21.001		
500.00	499.84	503.82	503.65	1.47	1.43	-77.68	44.07	3.12	42.23	39.18	3.05	13.855		
600.00	599.45	604.41	603.84	1.81	1.75	-87.58	36.03	6.95	32.52	28.68	3.84	8.464		
700.00	698.90	704.21	702.87	2.15	2.09	-109.92	24.91	12.24	21.50	16.89	4.61	4.663		
787.54	785.96	790.86	788.47	2.46	2.40	-154.82	12.74	18.04	15.88	10.91	4.96	3.199 CC, ES		
800.00	798.35	803.13	800.55	2.50	2.45	-163.11	10.83	18.95	16.03	11.04	4.99	3.211		
900.00	897.81	901.00	896.60	2.86	2.84	148.64	-6.08	27.00	27.08	21.31	5.76	4.698		
1,000.00	997.26	998.63	992.15	3.22	3.26	131.63	-24.18	35.62	46.09	39.50	6.59	6.995		
1,100.00	1,096.71	1,096.26	1,087.70	3.58	3.68	124.77	-42.28	44.24	66.72	59.41	7.31	9.130		
1,200.00	1,196.16	1,193.89	1,183.25	3.94	4.11	121.16	-60.39	52.86	87.84	79.84	8.00	10.981		
1,300.00	1,295.61	1,291.52	1,278.80	4.30	4.54	118.95	-78.49	61.48	109.15	100.47	8.69	12.567		
1,400.00	1,395.06	1,389.15	1,374.35	4.66	4.97	117.47	-96.59	70.10	130.58	121.20	9.37	13.931		
1,500.00	1,494.51	1,486.79	1,469.90	5.02	5.41	116.40	-114.70	78.72	152.06	142.00	10.06	15.111		
1,600.00	1,593.96	1,584.42	1,565.45	5.39	5.85	115.60	-132.80	87.34	173.58	162.82	10.76	16.138		
1,700.00	1,693.42	1,682.05	1,661.00	5.75	6.30	114.98	-150.90	95.96	195.12	183.67	11.45	17.040		
1,800.00	1,792.87	1,779.68	1,756.55	6.11	6.74	114.48	-169.00	104.58	216.69	204.54	12.15	17.836		
1,900.00	1,892.32	1,877.31	1,852.11	6.48	7.18	114.07	-187.11	113.20	238.26	225.41	12.85	18.542		
2,000.00	1,991.77	1,974.94	1,947.66	6.84	7.63	113.73	-205.21	121.82	259.85	246.30	13.55	19.174		
2,100.00	2,091.22	2,072.58	2,043.21	7.21	8.07	113.44	-223.31	130.44	281.44	267.19	14.26	19.741		
2,200.00	2,190.67	2,170.21	2,138.76	7.57	8.52	113.19	-241.42	139.06	303.04	288.08	14.96	20.253		
2,300.00	2,290.12	2,267.84	2,234.31	7.93	8.97	112.97	-259.52	147.68	324.65	308.98	15.67	20.718		
2,400.00	2,389.58	2,365.47	2,329.86	8.30	9.42	112.78	-277.62	156.30	346.25	329.88	16.38	21.141		
2,500.00	2,489.03	2,463.10	2,425.41	8.66	9.86	112.62	-295.72	164.93	367.87	350.78	17.09	21.527		
2,600.00	2,588.48	2,560.73	2,520.96	9.03	10.31	112.47	-313.83	173.55	389.48	371.68	17.80	21.882		
2,700.00	2,687.93	2,658.37	2,616.51	9.39	10.76	112.34	-331.93	182.17	411.09	392.58	18.51	22.208		
2,800.00	2,787.38	2,756.00	2,712.06	9.76	11.21	112.22	-350.03	190.79	432.71	413.49	19.22	22.509		
2,900.00	2,886.83	2,853.63	2,807.61	10.12	11.66	112.11	-368.14	199.41	454.33	434.40	19.94	22.789		
3,000.00	2,986.28	2,951.26	2,903.16	10.49	12.11	112.01	-386.24	208.03	475.95	455.30	20.65	23.048		
3,100.00	3,085.73	3,048.89	2,998.71	10.85	12.56	111.92	-404.34	216.65	497.57	476.21	21.37	23.289		
3,200.00	3,185.19	3,146.52	3,094.26	11.22	13.01	111.84	-422.44	225.27	519.20	497.12	22.08	23.514		
3,300.00	3,284.64	3,244.16	3,189.81	11.58	13.45	111.77	-440.55	233.89	540.82	518.03	22.80	23.725		
3,400.00	3,384.09	3,341.79	3,285.36	11.95	13.90	111.70	-458.65	242.51	562.45	538.93	23.51	23.922		
3,500.00	3,483.54	3,439.42	3,380.91	12.31	14.35	111.63	-476.75	251.13	584.07	559.84	24.23	24.107		
3,600.00	3,582.99	3,537.05	3,476.47	12.68	14.80	111.57	-494.86	259.75	605.70	580.75	24.94	24.282		
3,700.00	3,682.44	3,634.68	3,572.02	13.04	15.25	111.52	-512.96	268.37	627.32	601.66	25.66	24.446		
3,800.00	3,781.89	3,732.31	3,667.57	13.41	15.70	111.46	-531.06	276.99	648.95	622.57	26.38	24.601		
3,900.00	3,881.34	3,829.95	3,763.12	13.77	16.15	111.42	-549.16	285.61	670.58	643.48	27.10	24.747		
4,000.00	3,980.80	3,927.58	3,858.67	14.14	16.60	111.37	-567.27	294.23	692.21	664.39	27.82	24.886		
4,100.00	4,080.25	4,025.21	3,954.22	14.50	17.05	111.33	-585.37	302.85	713.84	685.30	28.53	25.018		
4,200.00	4,179.70	4,122.84	4,049.77	14.87	17.51	111.29	-603.47	311.47	735.46	706.21	29.25	25.142		
4,300.00	4,279.15	4,220.47	4,145.32	15.23	17.96	111.25	-621.58	320.09	757.09	727.12	29.97	25.261		
4,400.00	4,378.60	4,318.10	4,240.87	15.60	18.41	111.21	-639.68	328.71	778.72	748.03	30.69	25.374		
4,500.00	4,478.05	4,428.73	4,349.24	15.96	18.84	111.19	-659.75	338.27	800.02	768.55	31.47	25.418		
4,599.99	4,577.49	4,558.96	4,477.68	16.33	19.20	111.34	-679.10	347.49	818.13	785.83	32.30	25.326		
4,700.00	4,677.09	4,690.91	4,608.67	16.65	19.55	111.80	-693.32	354.26	831.80	798.76	33.04	25.173		
4,800.00	4,776.94	6,304.77	5,606.00	16.91	20.83	-168.02	134.33	359.32	830.91	820.12	10.79	77.025		
4,899.99	4,876.90	6,305.37	5,606.00	17.16	20.83	-163.10	134.94	359.32	731.52	720.42	11.11	65.869		
5,000.00	4,976.91	6,305.37	5,606.00	17.44	20.83	-90.05	134.94	359.32	632.05	620.58	11.47	55.091		

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-3116
Project:	Weld County, CO	TVD Reference:	KBE @ 4745.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4745.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-3116	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		
5,099.99	5,076.90	6,305.37	5,606.00	17.74	20.83	-90.05	134.94	359.32	532.81	520.81	12.00	44.413		
5,200.00	5,176.44	6,297.31	5,606.00	18.01	20.80	136.73	126.88	359.33	434.35	421.61	12.74	34.091		
5,300.00	5,272.61	6,270.47	5,606.00	18.27	20.73	149.42	100.03	359.35	339.82	325.98	13.84	24.551		
5,400.00	5,361.89	6,225.76	5,606.00	18.52	20.61	151.33	55.33	359.38	253.16	237.42	15.74	16.083		
5,500.00	5,441.00	6,164.85	5,606.00	18.76	20.50	147.79	-5.58	359.43	178.54	159.29	19.25	9.274		
5,600.00	5,507.03	6,089.96	5,606.00	19.01	20.41	138.37	-80.47	359.49	120.70	95.26	25.44	4.744		
5,700.00	5,557.57	6,003.84	5,606.00	19.27	20.39	121.40	-166.59	359.56	84.92	51.24	33.67	2.522		
5,800.00	5,590.74	5,908.10	5,600.18	19.59	20.45	96.39	-262.04	359.64	70.88	32.12	38.76	1.829		
5,822.80	5,595.73	5,886.86	5,596.59	19.67	20.46	89.88	-282.98	359.66	70.34	31.64	38.70	1.818 SF		
5,900.00	5,605.33	5,817.18	5,578.87	19.97	20.53	69.01	-350.31	359.71	76.02	41.19	34.83	2.183		
6,000.00	5,606.00	5,733.32	5,545.89	20.42	20.63	48.97	-427.32	359.77	98.48	71.08	27.40	3.594		
6,100.00	5,606.00	5,661.39	5,508.08	20.96	20.71	35.35	-488.43	359.82	140.56	117.11	23.44	5.995		
6,200.00	5,606.00	5,600.00	5,469.40	21.60	20.78	27.01	-536.06	359.86	197.69	174.08	23.61	8.373		
6,300.00	5,606.00	5,550.00	5,433.93	22.31	20.82	22.05	-571.28	359.89	265.11	239.74	25.37	10.449		
6,400.00	5,606.00	5,510.57	5,403.68	23.10	20.85	19.02	-596.55	359.91	339.67	312.35	27.32	12.432		
6,500.00	5,606.00	5,476.44	5,376.02	23.96	20.86	16.88	-616.53	359.93	419.37	390.52	28.85	14.538		
6,600.00	5,606.00	5,450.00	5,353.72	24.87	20.87	15.46	-630.74	359.94	502.87	472.70	30.17	16.668		
6,700.00	5,606.00	5,423.73	5,330.88	25.84	20.87	14.24	-643.71	359.95	589.20	558.13	31.07	18.962		
6,800.00	5,606.00	5,400.00	5,309.71	26.85	20.88	13.26	-654.43	359.96	677.76	645.97	31.79	21.322		
6,900.00	5,606.00	5,400.00	5,309.71	27.90	20.88	13.26	-654.43	359.96	768.35	735.50	32.86	23.385		
7,000.00	5,606.00	5,370.10	5,282.38	28.99	20.87	12.17	-666.55	359.97	859.66	826.59	33.07	25.995		
7,100.00	5,606.00	5,350.00	5,263.64	30.11	20.86	11.53	-673.80	359.97	952.48	919.07	33.41	28.507		
7,200.00	5,606.00	5,350.00	5,263.64	31.27	20.86	11.53	-673.80	359.97	1,046.11	1,012.12	33.99	30.778		
7,300.00	5,606.00	5,350.00	5,263.64	32.44	20.86	11.53	-673.80	359.97	1,140.83	1,106.37	34.45	33.115		
7,400.00	5,606.00	5,325.05	5,240.00	33.65	20.84	10.80	-681.79	359.98	1,235.52	1,200.98	34.54	35.771		
7,500.00	5,606.00	5,300.00	5,215.92	34.87	20.82	10.15	-688.67	359.99	1,331.46	1,296.84	34.62	38.461		
7,600.00	5,606.00	5,300.00	5,215.92	36.11	20.82	10.15	-688.67	359.99	1,427.22	1,392.28	34.94	40.848		
7,700.00	5,606.00	5,300.00	5,215.92	37.37	20.82	10.15	-688.67	359.99	1,523.52	1,488.30	35.22	43.260		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30H-3116
Project:	Weld County, CO	TVD Reference:	KBE @ 4745.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4745.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-3116	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	1.00	1.00	0.00	0.00	-71.35	50.60	-149.95	158.25					
100.00	100.00	101.00	101.00	0.13	0.14	-71.35	50.60	-149.95	158.25	157.98	0.27	586.737		
200.00	200.00	201.00	201.00	0.47	0.47	-71.35	50.60	-149.95	158.25	157.31	0.94	167.639		
216.33	216.33	217.33	217.33	0.53	0.53	-71.35	50.60	-149.95	158.25	157.20	1.05	150.128 CC		
300.00	300.00	301.00	301.00	0.81	0.81	-71.35	50.60	-149.95	158.25	156.64	1.62	97.813 ES		
400.00	399.98	400.47	400.45	1.13	1.11	-144.90	48.98	-150.64	159.83	157.58	2.24	71.275		
500.00	499.84	499.34	499.18	1.47	1.41	-147.67	44.23	-152.67	164.81	161.95	2.86	57.546		
600.00	599.45	597.04	596.51	1.81	1.73	-151.85	36.45	-155.99	173.93	170.40	3.53	49.254		
700.00	698.90	693.36	692.13	2.15	2.05	-156.82	25.80	-160.53	186.52	182.29	4.23	44.125		
800.00	798.35	788.35	785.99	2.50	2.39	-161.94	12.41	-166.25	201.63	196.69	4.94	40.785		
900.00	897.81	882.78	878.79	2.86	2.76	-167.02	-3.61	-173.09	219.64	213.96	5.67	38.715		
1,000.00	997.26	979.05	973.26	3.22	3.16	-171.59	-20.68	-180.37	239.61	233.23	6.38	37.552		
1,100.00	1,096.71	1,075.33	1,067.73	3.58	3.57	-175.45	-37.75	-187.66	260.87	253.79	7.08	36.854		
1,200.00	1,196.16	1,171.60	1,162.20	3.94	3.98	-178.73	-54.82	-194.94	283.11	275.34	7.76	36.461		
1,300.00	1,295.61	1,267.88	1,256.67	4.30	4.39	-178.46	-71.89	-202.23	306.12	297.67	8.45	36.224		
1,400.00	1,395.06	1,364.15	1,351.14	4.66	4.81	-176.04	-88.95	-209.52	329.75	320.62	9.13	36.111		
1,500.00	1,494.51	1,460.43	1,445.61	5.02	5.23	-173.94	-106.02	-216.80	353.87	344.06	9.81	36.073		
1,600.00	1,593.96	1,556.70	1,540.08	5.39	5.65	-172.11	-123.09	-224.09	378.38	367.89	10.49	36.083		
1,700.00	1,693.42	1,652.98	1,634.55	5.75	6.08	-170.50	-140.16	-231.37	403.21	392.05	11.16	36.122		
1,800.00	1,792.87	1,749.25	1,729.02	6.11	6.50	-169.08	-157.23	-238.66	428.31	416.47	11.84	36.181		
1,900.00	1,892.32	1,845.53	1,823.49	6.48	6.93	-167.81	-174.30	-245.95	453.64	441.12	12.51	36.251		
2,000.00	1,991.77	1,941.81	1,917.96	6.84	7.36	-166.68	-191.37	-253.23	479.15	465.96	13.19	36.327		
2,100.00	2,091.22	2,038.08	2,012.43	7.21	7.78	-165.66	-208.44	-260.52	504.82	490.95	13.87	36.407		
2,200.00	2,190.67	2,134.36	2,106.90	7.57	8.21	-164.74	-225.50	-267.80	530.62	516.08	14.54	36.487		
2,300.00	2,290.12	2,230.63	2,201.37	7.93	8.64	-163.90	-242.57	-275.09	556.55	541.33	15.22	36.567		
2,400.00	2,389.58	2,326.91	2,295.83	8.30	9.07	-163.14	-259.64	-282.37	582.57	566.68	15.90	36.645		
2,500.00	2,489.03	2,423.18	2,390.30	8.66	9.50	-162.44	-276.71	-289.66	608.69	592.11	16.58	36.721		
2,600.00	2,588.48	2,519.46	2,484.77	9.03	9.93	-161.80	-293.78	-296.95	634.88	617.62	17.25	36.794		
2,700.00	2,687.93	2,615.73	2,579.24	9.39	10.36	-161.21	-310.85	-304.23	661.14	643.20	17.93	36.865		
2,800.00	2,787.38	2,712.01	2,673.71	9.76	10.79	-160.67	-327.92	-311.52	687.46	668.84	18.61	36.933		
2,900.00	2,886.83	2,808.28	2,768.18	10.12	11.22	-160.16	-344.98	-318.80	713.83	694.53	19.29	36.998		
3,000.00	2,986.28	2,904.56	2,862.65	10.49	11.65	-159.69	-362.05	-326.09	740.25	720.28	19.97	37.061		
3,100.00	3,085.73	3,000.83	2,957.12	10.85	12.08	-159.26	-379.12	-333.37	766.71	746.06	20.65	37.120		
3,200.00	3,185.19	3,097.11	3,051.59	11.22	12.51	-158.85	-396.19	-340.66	793.22	771.88	21.34	37.177		
3,300.00	3,284.64	3,193.38	3,146.06	11.58	12.94	-158.47	-413.26	-347.95	819.76	797.74	22.02	37.231		
3,400.00	3,384.09	3,289.66	3,240.53	11.95	13.38	-158.11	-430.33	-355.23	846.32	823.62	22.70	37.283		
3,500.00	3,483.54	3,385.93	3,335.00	12.31	13.81	-157.78	-447.40	-362.52	872.92	849.54	23.38	37.333		
3,600.00	3,582.99	3,482.21	3,429.47	12.68	14.24	-157.46	-464.46	-369.80	899.55	875.48	24.06	37.380		
3,700.00	3,682.44	3,578.48	3,523.94	13.04	14.67	-157.16	-481.53	-377.09	926.20	901.45	24.75	37.426		
3,800.00	3,781.89	3,674.76	3,618.41	13.41	15.10	-156.88	-498.60	-384.37	952.87	927.44	25.43	37.469		
3,900.00	3,881.34	3,771.03	3,712.88	13.77	15.53	-156.62	-515.67	-391.66	979.56	953.44	26.11	37.510		
4,000.00	3,980.80	3,867.31	3,807.35	14.14	15.96	-156.36	-532.74	-398.95	1,006.27	979.47	26.80	37.550		
4,100.00	4,080.25	3,963.58	3,901.82	14.50	16.40	-156.12	-549.81	-406.23	1,032.99	1,005.51	27.48	37.588		
4,200.00	4,179.70	4,059.86	3,996.29	14.87	16.83	-155.90	-566.88	-413.52	1,059.74	1,031.57	28.17	37.624		
4,300.00	4,279.15	4,156.13	4,090.75	15.23	17.26	-155.68	-583.94	-420.80	1,086.49	1,057.64	28.85	37.659		
4,400.00	4,378.60	4,252.41	4,185.22	15.60	17.69	-155.48	-601.01	-428.09	1,113.27	1,083.73	29.54	37.692		
4,500.00	4,478.05	4,348.68	4,279.69	15.96	18.12	-155.28	-618.08	-435.38	1,140.05	1,109.83	30.22	37.724		
4,599.99	4,577.49	4,444.95	4,374.15	16.33	18.56	-155.10	-635.15	-442.66	1,166.84	1,135.94	30.91	37.755		
4,700.00	4,677.09	4,546.02	4,473.33	16.65	19.00	-155.08	-653.05	-450.30	1,192.34	1,160.77	31.57	37.767		
4,800.00	4,776.94	4,704.58	4,629.79	16.91	19.47	-154.91	-676.59	-460.35	1,211.98	1,179.56	32.43	37.377		
4,899.99	4,876.90	4,866.70	4,790.98	17.16	19.87	-154.74	-692.40	-467.10	1,223.48	1,190.28	33.20	36.853		
5,000.00	4,976.91	6,422.73	5,735.00	17.44	21.11	-90.00	135.01	-470.50	1,176.47	1,147.15	29.33	40.114		

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-3116
Project:	Weld County, CO	TVD Reference:	KBE @ 4745.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4745.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-3116	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-1946 - 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				
5,099.99	5,076.90	6,422.73	5,735.00	17.74	21.11	-90.00	135.01	-470.50	1,114.76	1,083.73	31.03	35.927					
5,200.00	5,176.44	6,414.67	5,735.00	18.01	21.08	96.19	126.94	-470.50	1,059.14	1,026.44	32.71	32.381					
5,300.00	5,272.61	6,387.83	5,735.00	18.27	20.99	100.45	100.10	-470.51	1,011.83	977.59	34.23	29.557					
5,400.00	5,361.89	6,343.12	5,735.00	18.52	20.88	102.38	55.40	-470.51	974.36	938.83	35.53	27.425					
5,500.00	5,441.00	6,282.21	5,735.00	18.76	20.76	102.53	-5.52	-470.51	946.97	910.43	36.54	25.914					
5,600.00	5,507.03	6,207.32	5,735.00	19.01	20.67	101.54	-80.41	-470.51	928.67	891.35	37.32	24.886					
5,700.00	5,557.57	6,121.20	5,735.00	19.27	20.64	100.08	-166.53	-470.51	917.63	879.69	37.94	24.186					
5,800.00	5,590.74	5,997.88	5,723.33	19.59	20.70	97.65	-289.03	-470.51	910.51	871.97	38.54	23.624					
5,900.00	5,605.33	5,884.14	5,687.50	19.97	20.81	95.03	-396.73	-470.51	904.93	865.69	39.24	23.062					
6,000.00	5,606.00	5,785.75	5,638.28	20.42	20.92	91.99	-481.76	-470.51	901.33	861.41	39.92	22.578					
6,061.96	5,606.00	5,735.21	5,607.01	20.75	20.97	90.00	-521.43	-470.51	900.51	860.18	40.33	22.330					
6,100.00	5,606.00	5,707.85	5,588.51	20.96	21.00	88.82	-541.58	-470.51	900.88	860.34	40.54	22.222					
6,200.00	5,606.00	5,650.00	5,546.07	21.60	21.04	86.13	-580.86	-470.51	905.99	864.94	41.05	22.070 SF					
6,300.00	5,606.00	5,600.00	5,506.07	22.31	21.07	83.61	-610.83	-470.51	918.26	876.83	41.43	22.164					
6,400.00	5,606.00	5,562.95	5,474.68	23.10	21.07	81.64	-630.49	-470.51	938.54	896.84	41.70	22.505					
6,500.00	5,606.00	5,533.09	5,448.41	23.96	21.07	80.01	-644.68	-470.51	967.04	925.16	41.88	23.093					
6,600.00	5,606.00	5,500.00	5,418.41	24.87	21.07	78.17	-658.62	-470.51	1,003.58	961.67	41.91	23.946					
6,700.00	5,606.00	5,500.00	5,418.41	25.84	21.07	78.17	-658.62	-470.51	1,047.54	1,005.49	42.05	24.911					
6,800.00	5,606.00	5,471.76	5,392.15	26.85	21.06	76.58	-668.99	-470.51	1,098.06	1,056.12	41.94	26.182					
6,900.00	5,606.00	5,450.00	5,371.55	27.90	21.04	75.35	-676.00	-470.51	1,154.77	1,112.95	41.81	27.617					
7,000.00	5,606.00	5,450.00	5,371.55	28.99	21.04	75.35	-676.00	-470.51	1,216.63	1,174.83	41.80	29.109					
7,100.00	5,606.00	5,450.00	5,371.55	30.11	21.04	75.35	-676.00	-470.51	1,283.30	1,241.56	41.75	30.741					
7,200.00	5,606.00	5,425.17	5,347.71	31.27	21.02	73.94	-682.95	-470.51	1,353.42	1,311.90	41.52	32.593					
7,300.00	5,606.00	5,400.00	5,323.23	32.44	21.00	72.51	-688.81	-470.51	1,427.50	1,386.20	41.29	34.570					
7,400.00	5,606.00	5,400.00	5,323.23	33.65	21.00	72.51	-688.81	-470.51	1,503.95	1,462.73	41.23	36.479					



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30H-3116
Project:	Weld County, CO	TVD Reference:	KBE @ 4745.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4745.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-3116	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	1.00	1.00	0.00	0.00	-60.65	50.59	-89.97	103.21					
100.00	100.00	101.00	101.00	0.13	0.14	-60.65	50.59	-89.97	103.21	102.94	0.27	382.673		
200.00	200.00	201.00	201.00	0.47	0.47	-60.65	50.59	-89.97	103.21	102.27	0.94	109.335		
300.00	300.00	301.01	301.01	0.81	0.81	-60.65	50.59	-89.97	103.21	101.60	1.62	63.792		
301.41	301.41	302.45	302.45	0.81	0.81	-133.22	50.59	-89.97	103.21	101.59	1.63	63.443 CC		
400.00	399.98	402.37	402.35	1.13	1.12	-134.85	48.77	-90.16	103.74	101.48	2.25	46.043 ES		
500.00	499.84	503.20	503.03	1.47	1.42	-139.56	43.42	-90.73	105.82	102.94	2.88	36.804		
600.00	599.45	602.98	602.42	1.81	1.74	-146.79	34.67	-91.66	110.78	107.26	3.52	31.447		
700.00	698.90	701.54	700.22	2.15	2.07	-155.29	22.65	-92.94	118.82	114.62	4.19	28.331		
800.00	798.35	798.86	796.34	2.50	2.42	-163.98	7.50	-94.54	129.56	124.66	4.90	26.449		
900.00	897.81	896.08	892.09	2.86	2.80	-171.88	-9.26	-96.33	143.32	137.69	5.63	25.464		
1,000.00	997.26	993.30	987.84	3.22	3.19	-178.33	-26.02	-98.11	159.34	152.99	6.35	25.075		
1,100.00	1,096.71	1,090.52	1,083.59	3.58	3.59	176.41	-42.78	-99.89	177.02	169.94	7.07	25.030		
1,200.00	1,196.16	1,187.75	1,179.34	3.94	3.99	172.12	-59.54	-101.67	195.90	188.12	7.78	25.181		
1,300.00	1,295.61	1,284.97	1,275.09	4.30	4.40	168.58	-76.30	-103.45	215.67	207.19	8.48	25.426		
1,400.00	1,395.06	1,382.19	1,370.84	4.66	4.80	165.64	-93.06	-105.23	236.10	226.92	9.18	25.720		
1,500.00	1,494.51	1,479.41	1,466.59	5.02	5.21	163.17	-109.82	-107.01	257.05	247.17	9.87	26.032		
1,600.00	1,593.96	1,576.63	1,562.34	5.39	5.62	161.07	-126.59	-108.79	278.38	267.82	10.57	26.345		
1,700.00	1,693.42	1,673.86	1,658.09	5.75	6.04	159.27	-143.35	-110.57	300.03	288.77	11.26	26.649		
1,800.00	1,792.87	1,771.08	1,753.84	6.11	6.45	157.71	-160.11	-112.35	321.92	309.97	11.95	26.940		
1,900.00	1,892.32	1,868.30	1,849.59	6.48	6.86	156.35	-176.87	-114.13	344.01	331.37	12.64	27.214		
2,000.00	1,991.77	1,965.52	1,945.34	6.84	7.28	155.15	-193.63	-115.91	366.26	352.93	13.33	27.473		
2,100.00	2,091.22	2,062.75	2,041.09	7.21	7.69	154.09	-210.39	-117.70	388.65	374.63	14.02	27.715		
2,200.00	2,190.67	2,159.97	2,136.84	7.57	8.11	153.15	-227.15	-119.48	411.16	396.44	14.72	27.941		
2,300.00	2,290.12	2,257.19	2,232.59	7.93	8.52	152.30	-243.92	-121.26	433.76	418.35	15.41	28.153		
2,400.00	2,389.58	2,354.41	2,328.34	8.30	8.94	151.54	-260.68	-123.04	456.44	440.34	16.10	28.351		
2,500.00	2,489.03	2,451.63	2,424.09	8.66	9.36	150.84	-277.44	-124.82	479.19	462.39	16.79	28.536		
2,600.00	2,588.48	2,548.86	2,519.84	9.03	9.78	150.22	-294.20	-126.60	502.00	484.51	17.49	28.709		
2,700.00	2,687.93	2,646.08	2,615.59	9.39	10.19	149.64	-310.96	-128.38	524.86	506.68	18.18	28.871		
2,800.00	2,787.38	2,743.30	2,711.34	9.76	10.61	149.11	-327.72	-130.16	547.77	528.89	18.87	29.023		
2,900.00	2,886.83	2,840.52	2,807.09	10.12	11.03	148.63	-344.48	-131.94	570.72	551.15	19.57	29.166		
3,000.00	2,986.28	2,937.74	2,902.84	10.49	11.44	148.18	-361.25	-133.72	593.70	573.44	20.26	29.301		
3,100.00	3,085.73	3,034.97	2,998.59	10.85	11.86	147.77	-378.01	-135.50	616.72	595.76	20.96	29.427		
3,200.00	3,185.19	3,132.19	3,094.34	11.22	12.28	147.39	-394.77	-137.28	639.76	618.11	21.65	29.547		
3,300.00	3,284.64	3,229.41	3,190.09	11.58	12.70	147.03	-411.53	-139.07	662.83	640.48	22.35	29.660		
3,400.00	3,384.09	3,326.63	3,285.84	11.95	13.12	146.70	-428.29	-140.85	685.92	662.88	23.04	29.766		
3,500.00	3,483.54	3,423.86	3,381.59	12.31	13.54	146.38	-445.05	-142.63	709.04	685.30	23.74	29.867		
3,600.00	3,582.99	3,521.08	3,477.34	12.68	13.95	146.09	-461.81	-144.41	732.17	707.73	24.44	29.962		
3,700.00	3,682.44	3,618.30	3,573.09	13.04	14.37	145.82	-478.57	-146.19	755.32	730.19	25.13	30.053		
3,800.00	3,781.89	3,715.52	3,668.84	13.41	14.79	145.56	-495.34	-147.97	778.48	752.65	25.83	30.139		
3,900.00	3,881.34	3,812.74	3,764.58	13.77	15.21	145.32	-512.10	-149.75	801.66	775.13	26.53	30.221		
4,000.00	3,980.80	3,909.97	3,860.33	14.14	15.63	145.09	-528.86	-151.53	824.85	797.63	27.22	30.299		
4,100.00	4,080.25	4,007.19	3,956.08	14.50	16.05	144.87	-545.62	-153.31	848.06	820.13	27.92	30.373		
4,200.00	4,179.70	4,104.41	4,051.83	14.87	16.47	144.67	-562.38	-155.09	871.27	842.65	28.62	30.444		
4,300.00	4,279.15	4,201.63	4,147.58	15.23	16.88	144.47	-579.14	-156.87	894.49	865.18	29.32	30.512		
4,400.00	4,378.60	4,298.85	4,243.33	15.60	17.30	144.29	-595.90	-158.65	917.73	887.71	30.01	30.576		
4,500.00	4,478.05	4,396.08	4,339.08	15.96	17.72	144.11	-612.67	-160.44	940.97	910.26	30.71	30.638		
4,599.99	4,577.49	4,493.29	4,434.82	16.33	18.14	143.95	-629.43	-162.22	964.22	932.81	31.41	30.697		
4,700.00	4,677.09	4,590.76	4,530.82	16.65	18.56	143.98	-646.23	-164.00	986.31	954.25	32.06	30.764		
4,800.00	4,776.94	4,698.42	4,636.88	16.91	19.00	143.86	-664.61	-165.95	1,005.56	972.85	32.71	30.744		
4,899.99	4,876.90	4,840.90	4,777.99	17.16	19.37	143.55	-684.13	-168.03	1,019.11	985.66	33.45	30.465		
5,000.00	4,976.91	4,985.27	4,921.78	17.44	19.72	-144.22	-696.77	-169.37	1,026.76	992.59	34.17	30.050		

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-3116
Project:	Weld County, CO	TVD Reference:	KBE @ 4745.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4745.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-3116	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		
5,099.99	5,076.90	6,502.58	5,823.00	17.74	21.42	-89.79	137.16	-166.93	954.72	928.97	25.75	37.077		
5,200.00	5,176.44	6,494.51	5,823.00	18.01	21.39	100.93	129.10	-166.96	879.27	851.55	27.72	31.723		
5,300.00	5,272.61	6,467.67	5,823.00	18.27	21.30	108.50	102.26	-167.05	811.36	781.61	29.75	27.274		
5,400.00	5,361.89	6,422.97	5,823.00	18.52	21.14	112.41	57.56	-167.21	753.91	722.18	31.72	23.766		
5,500.00	5,441.00	6,362.05	5,823.00	18.76	20.98	113.67	-3.36	-167.44	708.59	675.07	33.52	21.140		
5,600.00	5,507.03	6,287.16	5,823.00	19.01	20.81	113.22	-78.25	-167.71	675.62	640.59	35.03	19.289		
5,700.00	5,557.57	6,201.05	5,823.00	19.27	20.69	111.93	-164.36	-168.02	653.88	617.66	36.22	18.052		
5,800.00	5,590.74	6,048.46	5,805.47	19.59	20.65	107.99	-315.43	-168.57	637.93	600.47	37.46	17.028		
5,900.00	5,605.33	5,910.95	5,753.08	19.97	20.71	103.37	-442.13	-169.03	622.25	583.28	38.97	15.968		
6,000.00	5,606.00	5,800.89	5,688.38	20.42	20.78	97.73	-530.91	-169.35	609.05	568.87	40.18	15.157		
6,100.00	5,606.00	5,720.76	5,630.28	20.96	20.82	92.22	-585.98	-169.55	600.59	559.63	40.96	14.663		
6,143.19	5,606.00	5,693.39	5,608.58	21.23	20.84	90.15	-602.66	-169.61	599.61	558.45	41.16	14.567 SF		
6,200.00	5,606.00	5,662.56	5,583.13	21.60	20.84	87.72	-620.05	-169.67	601.44	560.15	41.29	14.568		
6,300.00	5,606.00	5,619.37	5,545.85	22.31	20.85	84.18	-641.83	-169.75	614.23	572.99	41.24	14.893		
6,400.00	5,606.00	5,586.46	5,516.30	23.10	20.84	81.40	-656.30	-169.80	639.74	598.80	40.94	15.626		
6,500.00	5,606.00	5,560.75	5,492.61	23.96	20.83	79.20	-666.29	-169.84	677.38	636.89	40.49	16.728		
6,600.00	5,606.00	5,550.00	5,482.57	24.87	20.83	78.28	-670.12	-169.85	725.88	685.78	40.10	18.102		
6,700.00	5,606.00	5,523.43	5,457.42	25.84	20.81	76.00	-678.69	-169.88	783.19	743.67	39.52	19.816		
6,800.00	5,606.00	5,500.00	5,434.91	26.85	20.79	73.99	-685.18	-169.91	848.13	809.13	39.00	21.749		
6,900.00	5,606.00	5,500.00	5,434.91	27.90	20.79	73.99	-685.18	-169.91	918.79	880.03	38.76	23.704		
7,000.00	5,606.00	5,500.00	5,434.91	28.99	20.79	73.99	-685.18	-169.91	994.50	955.95	38.55	25.795		
7,100.00	5,606.00	5,479.26	5,414.76	30.11	20.76	72.23	-690.06	-169.93	1,073.65	1,035.46	38.20	28.107		
7,200.00	5,606.00	5,471.78	5,407.44	31.27	20.75	71.60	-691.63	-169.93	1,156.05	1,118.04	38.01	30.416		
7,300.00	5,606.00	5,450.00	5,386.02	32.44	20.73	69.78	-695.59	-169.95	1,241.21	1,203.48	37.73	32.896		
7,400.00	5,606.00	5,450.00	5,386.02	33.65	20.73	69.78	-695.59	-169.95	1,327.92	1,290.25	37.67	35.254		
7,500.00	5,606.00	5,450.00	5,386.02	34.87	20.73	69.78	-695.59	-169.95	1,416.39	1,378.77	37.62	37.649		
7,600.00	5,606.00	5,450.00	5,386.02	36.11	20.73	69.78	-695.59	-169.95	1,506.30	1,468.71	37.59	40.075		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30H-3116
Project:	Weld County, CO	TVD Reference:	KBE @ 4745.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4745.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-3116	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	1.00	1.00	0.00	0.00	-30.65	50.61	-29.99	58.83					
100.00	100.00	101.00	101.00	0.13	0.14	-30.65	50.61	-29.99	58.83	58.56	0.27	218.109		
200.00	200.00	201.00	201.00	0.47	0.47	-30.65	50.61	-29.99	58.83	57.88	0.94	62.317		
300.00	300.00	301.02	301.02	0.81	0.81	-30.65	50.61	-29.99	58.83	57.21	1.62	36.358		
400.00	399.98	402.99	402.97	1.13	1.12	-105.41	48.84	-29.45	57.50	55.19	2.31	24.882		
500.00	499.84	504.57	504.40	1.47	1.43	-112.49	43.63	-27.86	54.13	51.10	3.03	17.880		
600.00	599.45	605.39	604.81	1.81	1.75	-125.80	35.05	-25.25	50.58	46.86	3.72	13.592		
692.28	691.23	697.61	696.33	2.13	2.06	-142.86	24.26	-21.96	49.23	44.94	4.29	11.472 CC		
700.00	698.90	705.29	703.94	2.15	2.09	-144.42	23.23	-21.65	49.25	44.91	4.34	11.356 ES		
800.00	798.35	804.19	801.59	2.50	2.45	-165.52	8.28	-17.09	52.15	47.21	4.93	10.568		
900.00	897.81	902.04	897.77	2.86	2.84	175.30	-8.94	-11.85	61.27	55.63	5.64	10.855		
1,000.00	997.26	999.74	993.77	3.22	3.24	161.92	-26.29	-6.56	75.45	69.03	6.42	11.760		
1,100.00	1,096.71	1,097.45	1,089.78	3.58	3.64	153.01	-43.65	-1.28	92.40	85.23	7.17	12.889		
1,200.00	1,196.16	1,195.15	1,185.79	3.94	4.06	146.93	-61.00	4.01	110.86	102.96	7.90	14.036		
1,300.00	1,295.61	1,292.86	1,281.80	4.30	4.48	142.60	-78.35	9.30	130.19	121.57	8.61	15.114		
1,400.00	1,395.06	1,390.57	1,377.80	4.66	4.90	139.39	-95.70	14.58	150.05	140.73	9.32	16.096		
1,500.00	1,494.51	1,488.27	1,473.81	5.02	5.32	136.94	-113.05	19.87	170.26	160.23	10.03	16.981		
1,600.00	1,593.96	1,585.98	1,569.82	5.39	5.74	135.01	-130.40	25.15	190.70	179.98	10.73	17.773		
1,700.00	1,693.42	1,683.68	1,665.83	5.75	6.17	133.45	-147.75	30.44	211.32	199.89	11.43	18.484		
1,800.00	1,792.87	1,781.39	1,761.83	6.11	6.59	132.17	-165.11	35.73	232.06	219.92	12.14	19.122		
1,900.00	1,892.32	1,879.10	1,857.84	6.48	7.02	131.10	-182.46	41.01	252.89	240.05	12.84	19.697		
2,000.00	1,991.77	1,976.80	1,953.85	6.84	7.45	130.19	-199.81	46.30	273.79	260.25	13.54	20.216		
2,100.00	2,091.22	2,074.51	2,049.86	7.21	7.87	129.42	-217.16	51.58	294.75	280.50	14.25	20.687		
2,200.00	2,190.67	2,172.21	2,145.86	7.57	8.30	128.74	-234.51	56.87	315.75	300.80	14.95	21.115		
2,300.00	2,290.12	2,269.92	2,241.87	7.93	8.73	128.15	-251.86	62.15	336.79	321.13	15.66	21.506		
2,400.00	2,389.58	2,367.63	2,337.88	8.30	9.16	127.63	-269.21	67.44	357.86	341.50	16.37	21.864		
2,500.00	2,489.03	2,465.33	2,433.89	8.66	9.59	127.16	-286.57	72.73	378.96	361.88	17.08	22.193		
2,600.00	2,588.48	2,563.04	2,529.89	9.03	10.02	126.75	-303.92	78.01	400.08	382.29	17.78	22.496		
2,700.00	2,687.93	2,660.74	2,625.90	9.39	10.45	126.38	-321.27	83.30	421.21	402.72	18.49	22.776		
2,800.00	2,787.38	2,758.45	2,721.91	9.76	10.88	126.04	-338.62	88.58	442.36	423.16	19.20	23.036		
2,900.00	2,886.83	2,856.16	2,817.92	10.12	11.31	125.73	-355.97	93.87	463.53	443.62	19.91	23.278		
3,000.00	2,986.28	2,953.86	2,913.92	10.49	11.74	125.45	-373.32	99.16	484.70	464.08	20.62	23.502		
3,100.00	3,085.73	3,051.57	3,009.93	10.85	12.18	125.20	-390.67	104.44	505.89	484.56	21.33	23.712		
3,200.00	3,185.19	3,149.27	3,105.94	11.22	12.61	124.96	-408.03	109.73	527.09	505.04	22.05	23.909		
3,300.00	3,284.64	3,246.98	3,201.95	11.58	13.04	124.74	-425.38	115.01	548.29	525.53	22.76	24.093		
3,400.00	3,384.09	3,344.69	3,297.95	11.95	13.47	124.54	-442.73	120.30	569.50	546.03	23.47	24.266		
3,500.00	3,483.54	3,442.39	3,393.96	12.31	13.90	124.35	-460.08	125.58	590.71	566.53	24.18	24.428		
3,600.00	3,582.99	3,540.10	3,489.97	12.68	14.33	124.18	-477.43	130.87	611.94	587.04	24.89	24.581		
3,700.00	3,682.44	3,637.80	3,585.98	13.04	14.76	124.02	-494.78	136.16	633.16	607.56	25.61	24.726		
3,800.00	3,781.89	3,735.51	3,681.98	13.41	15.20	123.86	-512.14	141.44	654.39	628.07	26.32	24.863		
3,900.00	3,881.34	3,833.21	3,777.99	13.77	15.63	123.72	-529.49	146.73	675.63	648.60	27.03	24.992		
4,000.00	3,980.80	3,930.92	3,874.00	14.14	16.06	123.59	-546.84	152.01	696.87	669.12	27.75	25.115		
4,100.00	4,080.25	4,028.63	3,970.01	14.50	16.49	123.46	-564.19	157.30	718.11	689.65	28.46	25.232		
4,200.00	4,179.70	4,126.33	4,066.01	14.87	16.92	123.34	-581.54	162.59	739.36	710.18	29.17	25.342		
4,300.00	4,279.15	4,224.04	4,162.02	15.23	17.36	123.23	-598.89	167.87	760.60	730.72	29.89	25.448		
4,400.00	4,378.60	4,321.74	4,258.03	15.60	17.79	123.13	-616.24	173.16	781.86	751.25	30.60	25.548		
4,500.00	4,478.05	4,419.45	4,354.04	15.96	18.22	123.03	-633.60	178.44	803.11	771.79	31.32	25.644		
4,599.99	4,577.49	4,517.15	4,450.04	16.33	18.65	122.93	-650.95	183.73	824.36	792.33	32.03	25.735		
4,700.00	4,677.09	4,636.47	4,567.51	16.65	19.07	123.07	-670.90	189.81	844.01	811.21	32.80	25.735		
4,800.00	4,776.94	4,768.41	4,698.27	16.91	19.42	123.07	-687.70	194.92	858.21	824.73	33.48	25.632		
4,899.99	4,876.90	4,901.88	4,831.23	17.16	19.74	122.95	-698.81	198.31	866.65	832.53	34.12	25.401		
5,000.00	4,976.91	6,421.28	5,735.00	17.44	21.23	-90.07	134.72	198.98	791.55	775.64	15.91	49.759		

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-3116
Project:	Weld County, CO	TVD Reference:	KBE @ 4745.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4745.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-3116	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-1948 - Hz - APD		Offset Site Error:		0.00 usft	
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:		0.00 usft			
Reference		Offset		Semi Major Axis			Distance							Warning				
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre	Between Centres	Between Ellipses	Minimum Separation	Separation Factor							
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(°)	+N/-S (usft)	+E/-W (usft)	(usft)	(usft)	(usft)							
5,099.99	5,076.90	6,421.28	5,735.00	17.74	21.23	-90.07	134.72	198.98	696.53	679.34	17.19	40.520						
5,200.00	5,176.44	6,413.21	5,735.00	18.01	21.20	112.87	126.65	198.99	603.52	584.69	18.84	32.041						
5,300.00	5,272.61	6,386.37	5,735.00	18.27	21.11	125.67	99.81	199.03	515.98	495.08	20.90	24.688						
5,400.00	5,361.89	6,341.67	5,735.00	18.52	20.97	130.54	55.11	199.08	437.94	414.47	23.47	18.659						
5,500.00	5,441.00	6,280.75	5,735.00	18.76	20.81	130.90	-5.81	199.16	373.01	346.52	26.50	14.078						
5,600.00	5,507.03	6,205.86	5,735.00	19.01	20.67	128.52	-80.70	199.25	323.67	293.98	29.69	10.902						
5,700.00	5,557.57	6,119.75	5,735.00	19.27	20.60	124.73	-166.81	199.35	290.39	257.83	32.56	8.918						
5,800.00	5,590.74	5,997.61	5,724.34	19.59	20.59	117.91	-288.23	199.50	267.34	231.94	35.40	7.552						
5,900.00	5,605.33	5,883.06	5,689.19	19.97	20.66	109.34	-397.01	199.63	247.67	209.30	38.37	6.454						
6,000.00	5,606.00	5,783.86	5,640.18	20.42	20.74	98.20	-483.08	199.74	233.83	193.57	40.26	5.808						
6,066.33	5,606.00	5,729.55	5,606.68	20.77	20.78	89.92	-525.80	199.79	230.21	189.78	40.43	5.694 SF						
6,100.00	5,606.00	5,705.24	5,590.28	20.96	20.80	85.85	-543.74	199.81	231.33	191.26	40.07	5.774						
6,200.00	5,606.00	5,644.17	5,545.56	21.60	20.84	75.05	-585.27	199.86	249.48	211.75	37.73	6.612						
6,300.00	5,606.00	5,600.00	5,510.33	22.31	20.86	67.21	-611.91	199.90	289.94	254.73	35.21	8.235						
6,400.00	5,606.00	5,559.02	5,475.75	23.10	20.86	60.30	-633.87	199.92	347.94	314.48	33.45	10.401						
6,500.00	5,606.00	5,528.93	5,449.30	23.96	20.86	55.57	-648.23	199.94	417.93	385.13	32.80	12.740						
6,600.00	5,606.00	5,500.00	5,423.15	24.87	20.86	51.37	-660.57	199.96	495.83	463.25	32.58	15.218						
6,700.00	5,606.00	5,484.16	5,408.54	25.84	20.85	49.21	-666.71	199.96	578.89	546.01	32.89	17.602						
6,800.00	5,606.00	5,467.18	5,392.69	26.85	20.84	47.03	-672.79	199.97	665.61	632.46	33.15	20.079						
6,900.00	5,606.00	5,450.00	5,376.46	27.90	20.84	44.94	-678.41	199.98	754.92	721.54	33.38	22.616						
7,000.00	5,606.00	5,450.00	5,376.46	28.99	20.84	44.94	-678.41	199.98	846.23	812.37	33.87	24.987						
7,100.00	5,606.00	5,429.69	5,357.05	30.11	20.82	42.62	-684.37	199.99	938.72	904.75	33.96	27.638						
7,200.00	5,606.00	5,420.33	5,348.02	31.27	20.81	41.61	-686.86	199.99	1,032.45	998.25	34.20	30.189						
7,300.00	5,606.00	5,400.00	5,328.28	32.44	20.79	39.53	-691.70	199.99	1,127.26	1,092.99	34.27	32.890						
7,400.00	5,606.00	5,400.00	5,328.28	33.65	20.79	39.53	-691.70	199.99	1,222.40	1,187.84	34.56	35.369						
7,500.00	5,606.00	5,400.00	5,328.28	34.87	20.79	39.53	-691.70	199.99	1,318.27	1,283.46	34.81	37.872						
7,600.00	5,606.00	5,400.00	5,328.28	36.11	20.79	39.53	-691.70	199.99	1,414.70	1,379.68	35.03	40.391						
7,700.00	5,606.00	5,400.00	5,328.28	37.37	20.79	39.53	-691.70	199.99	1,511.60	1,476.38	35.22	42.921						



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30H-3116
Project:	Weld County, CO	TVD Reference:	KBE @ 4745.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4745.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-3116	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-89.67	1.03	-179.94	179.94					
100.00	100.00	100.00	100.00	0.13	0.13	-89.67	1.03	-179.94	179.94	179.67	0.27	675.576		
200.00	200.00	200.00	200.00	0.47	0.47	-89.67	1.03	-179.94	179.94	179.00	0.94	191.292		
300.00	300.00	300.00	300.00	0.81	0.81	-89.67	1.03	-179.94	179.94	178.32	1.61	111.421 CC, ES		
400.00	399.98	389.21	389.15	1.13	1.11	-162.07	1.98	-182.55	184.53	182.11	2.42	76.118		
500.00	499.84	487.23	486.93	1.47	1.44	-161.80	4.30	-188.93	196.03	192.96	3.07	63.828		
600.00	599.45	586.11	585.58	1.81	1.76	-161.82	6.66	-195.41	210.85	207.15	3.70	56.952		
700.00	698.90	684.74	683.97	2.15	2.10	-162.06	9.02	-201.88	227.33	223.00	4.33	52.484		
800.00	798.35	783.37	782.36	2.50	2.44	-162.26	11.37	-208.34	243.81	238.85	4.96	49.170		
900.00	897.81	882.00	880.75	2.86	2.78	-162.44	13.72	-214.81	260.29	254.69	5.60	46.519		
1,000.00	997.26	980.63	979.14	3.22	3.12	-162.60	16.08	-221.27	276.77	270.53	6.24	44.365		
1,100.00	1,096.71	1,079.26	1,077.53	3.58	3.46	-162.74	18.43	-227.74	293.25	286.37	6.89	42.578		
1,200.00	1,196.16	1,177.89	1,175.92	3.94	3.81	-162.87	20.78	-234.20	309.74	302.20	7.54	41.081		
1,300.00	1,295.61	1,276.52	1,274.31	4.30	4.15	-162.98	23.13	-240.67	326.23	318.03	8.19	39.809		
1,400.00	1,395.06	1,375.15	1,372.69	4.66	4.50	-163.09	25.49	-247.13	342.71	333.86	8.85	38.716		
1,500.00	1,494.51	1,473.78	1,471.08	5.02	4.84	-163.18	27.84	-253.60	359.20	349.69	9.51	37.767		
1,600.00	1,593.96	1,572.41	1,569.47	5.39	5.19	-163.26	30.19	-260.07	375.69	365.52	10.17	36.937		
1,700.00	1,693.42	1,671.04	1,667.86	5.75	5.53	-163.34	32.55	-266.53	392.19	381.35	10.83	36.204		
1,800.00	1,792.87	1,769.67	1,766.25	6.11	5.88	-163.41	34.90	-273.00	408.68	397.18	11.50	35.553		
1,900.00	1,892.32	1,868.30	1,864.64	6.48	6.22	-163.48	37.25	-279.46	425.17	413.01	12.16	34.970		
2,000.00	1,991.77	1,966.93	1,963.03	6.84	6.57	-163.54	39.61	-285.93	441.66	428.84	12.82	34.446		
2,100.00	2,091.22	2,065.56	2,061.42	7.21	6.91	-163.60	41.96	-292.39	458.16	444.67	13.49	33.972		
2,200.00	2,190.67	2,164.19	2,159.81	7.57	7.26	-163.65	44.31	-298.86	474.65	460.50	14.15	33.542		
2,300.00	2,290.12	2,262.82	2,258.20	7.93	7.60	-163.70	46.67	-305.32	491.14	476.33	14.82	33.149		
2,400.00	2,389.58	2,361.45	2,356.59	8.30	7.95	-163.74	49.02	-311.79	507.64	492.16	15.48	32.790		
2,500.00	2,489.03	2,460.08	2,454.98	8.66	8.29	-163.79	51.37	-318.25	524.13	507.98	16.15	32.459		
2,600.00	2,588.48	2,558.71	2,553.37	9.03	8.64	-163.83	53.73	-324.72	540.63	523.81	16.81	32.154		
2,700.00	2,687.93	2,657.34	2,651.76	9.39	8.98	-163.86	56.08	-331.18	557.12	539.64	17.48	31.872		
2,800.00	2,787.38	2,755.96	2,750.14	9.76	9.33	-163.90	58.43	-337.65	573.62	555.47	18.15	31.610		
2,900.00	2,886.83	2,854.59	2,848.53	10.12	9.68	-163.93	60.79	-344.11	590.11	571.30	18.81	31.367		
3,000.00	2,986.28	2,953.22	2,946.92	10.49	10.02	-163.97	63.14	-350.58	606.61	587.13	19.48	31.140		
3,100.00	3,085.73	3,051.85	3,045.31	10.85	10.37	-164.00	65.49	-357.04	623.10	602.96	20.15	30.928		
3,200.00	3,185.19	3,150.48	3,143.70	11.22	10.71	-164.03	67.84	-363.51	639.60	618.79	20.81	30.729		
3,300.00	3,284.64	3,249.11	3,242.09	11.58	11.06	-164.05	70.20	-369.97	656.10	634.61	21.48	30.542		
3,400.00	3,384.09	3,347.74	3,340.48	11.95	11.41	-164.08	72.55	-376.44	672.59	650.44	22.15	30.366		
3,500.00	3,483.54	3,446.37	3,438.87	12.31	11.75	-164.10	74.90	-382.90	689.09	666.27	22.82	30.201		
3,600.00	3,582.99	3,545.00	3,537.26	12.68	12.10	-164.13	77.26	-389.37	705.59	682.10	23.48	30.045		
3,700.00	3,682.44	3,641.97	3,634.01	13.04	12.54	-164.23	79.72	-396.14	720.92	696.60	24.32	29.643		
3,800.00	3,781.89	3,739.85	3,731.89	13.41	12.85	-164.47	79.76	-396.25	731.06	706.07	24.98	29.261		
3,900.00	3,881.34	3,839.30	3,831.34	13.77	13.16	-164.68	79.76	-396.25	741.15	715.52	25.63	28.917		
4,000.00	3,980.80	3,938.75	3,930.80	14.14	13.46	-164.89	79.76	-396.25	751.24	724.96	26.28	28.587		
4,100.00	4,080.25	4,038.20	4,030.25	14.50	13.77	-165.10	79.76	-396.25	761.35	734.42	26.93	28.272		
4,200.00	4,179.70	4,137.66	4,129.70	14.87	14.08	-165.30	79.76	-396.25	771.47	743.89	27.58	27.971		
4,300.00	4,279.15	4,237.11	4,229.15	15.23	14.40	-165.49	79.76	-396.25	781.60	753.36	28.23	27.683		
4,400.00	4,378.60	4,336.56	4,328.60	15.60	14.71	-165.68	79.76	-396.25	791.73	762.85	28.89	27.408		
4,500.00	4,478.05	4,436.01	4,428.05	15.96	15.02	-165.87	79.76	-396.25	801.88	772.34	29.54	27.144		
4,599.99	4,577.49	4,535.45	4,527.49	16.33	15.34	-166.05	79.76	-396.25	812.03	781.83	30.20	26.892		
4,700.00	4,677.09	4,635.05	4,627.09	16.65	15.65	-166.24	79.76	-396.25	820.76	789.94	30.82	26.634		
4,800.00	4,776.94	4,734.89	4,726.94	16.91	15.97	-166.35	79.76	-396.25	826.11	794.72	31.40	26.313		
4,899.99	4,876.90	4,834.86	4,826.90	17.16	16.29	-166.39	79.76	-396.25	828.08	796.10	31.99	25.888		
5,000.00	4,976.91	4,934.87	4,926.91	17.44	16.61	-93.82	79.76	-396.25	828.10	795.49	32.60	25.401		
5,009.96	4,986.87	4,944.83	4,936.87	17.47	16.64	-93.82	79.76	-396.25	828.10	795.43	32.66	25.352		

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-3116
Project:	Weld County, CO	TVD Reference:	KBE @ 4745.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4745.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-3116	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		
5,099.99	5,076.90	5,078.93	5,070.88	17.74	16.89	-94.02	76.98	-396.25	828.31	795.13	33.18	24.963		
5,200.00	5,176.44	5,167.51	5,157.78	18.01	17.13	85.24	60.41	-396.25	829.13	795.48	33.66	24.634		
5,300.00	5,272.61	5,254.81	5,239.48	18.27	17.37	84.65	29.92	-396.25	829.89	795.81	34.08	24.354		
5,400.00	5,361.89	5,341.22	5,314.21	18.52	17.60	84.23	-13.26	-396.25	830.47	796.01	34.46	24.100		
5,500.00	5,441.00	5,427.08	5,380.39	18.76	17.82	84.00	-67.81	-396.25	830.81	795.96	34.85	23.839		
5,600.00	5,507.03	5,512.70	5,436.58	19.01	18.04	83.96	-132.29	-396.25	830.87	795.58	35.29	23.543		
5,700.00	5,557.57	5,600.00	5,482.22	19.27	18.27	84.11	-206.59	-396.25	830.65	794.81	35.84	23.179		
5,800.00	5,590.74	5,684.55	5,514.01	19.59	18.53	84.45	-284.83	-396.25	830.16	793.67	36.49	22.752		
5,900.00	5,605.33	5,771.44	5,533.06	19.97	18.86	84.97	-369.51	-396.25	829.47	792.19	37.28	22.249		
5,999.93	5,607.86	5,861.52	5,538.00	20.42	19.26	85.17	-459.36	-396.26	829.20	791.01	38.20	21.709		
6,000.00	5,606.00	5,861.63	5,538.00	20.42	19.26	85.30	-459.46	-396.26	829.05	790.84	38.21	21.699		
6,100.00	5,606.00	5,961.63	5,538.00	20.96	19.81	85.30	-559.46	-396.26	829.05	789.69	39.36	21.063		
6,200.00	5,606.00	6,061.63	5,538.00	21.60	20.45	85.30	-659.46	-396.26	829.05	788.36	40.69	20.375		
6,300.00	5,606.00	6,161.63	5,538.00	22.31	21.17	85.30	-759.46	-396.26	829.05	786.87	42.18	19.655		
6,400.00	5,606.00	6,261.63	5,538.00	23.10	21.97	85.30	-859.46	-396.26	829.05	785.23	43.82	18.921		
6,500.00	5,606.00	6,361.63	5,538.00	23.96	22.84	85.30	-959.46	-396.26	829.05	783.47	45.58	18.187		
6,600.00	5,606.00	6,461.63	5,538.00	24.87	23.77	85.30	-1,059.46	-396.26	829.05	781.59	47.47	17.466		
6,700.00	5,606.00	6,561.63	5,538.00	25.84	24.75	85.30	-1,159.46	-396.26	829.05	779.60	49.45	16.765		
6,800.00	5,606.00	6,661.63	5,538.00	26.85	25.78	85.30	-1,259.46	-396.26	829.05	777.53	51.53	16.089		
6,900.00	5,606.00	6,761.63	5,538.00	27.90	26.85	85.30	-1,359.46	-396.26	829.06	775.37	53.69	15.443		
7,000.00	5,606.00	6,861.63	5,538.00	28.99	27.96	85.30	-1,459.46	-396.26	829.06	773.14	55.91	14.828		
7,100.00	5,606.00	6,961.63	5,538.00	30.11	29.10	85.30	-1,559.46	-396.26	829.06	770.85	58.20	14.244		
7,200.00	5,606.00	7,061.63	5,538.00	31.27	30.27	85.30	-1,659.46	-396.26	829.06	768.51	60.55	13.693		
7,300.00	5,606.00	7,161.63	5,538.00	32.44	31.47	85.30	-1,759.46	-396.26	829.06	766.12	62.94	13.172		
7,400.00	5,606.00	7,261.63	5,538.00	33.65	32.68	85.30	-1,859.46	-396.27	829.06	763.68	65.38	12.680		
7,500.00	5,606.00	7,361.63	5,538.00	34.87	33.92	85.30	-1,959.46	-396.27	829.06	761.20	67.86	12.217		
7,600.00	5,606.00	7,461.63	5,538.00	36.11	35.18	85.30	-2,059.46	-396.27	829.06	758.69	70.37	11.781		
7,700.00	5,606.00	7,561.63	5,538.00	37.37	36.45	85.30	-2,159.46	-396.27	829.06	756.14	72.92	11.370		
7,800.00	5,606.00	7,661.63	5,538.00	38.64	37.73	85.30	-2,259.46	-396.27	829.06	753.57	75.49	10.982		
7,900.00	5,606.00	7,761.63	5,538.00	39.93	39.03	85.30	-2,359.46	-396.27	829.06	750.97	78.09	10.617		
8,000.00	5,606.00	7,861.63	5,538.00	41.22	40.34	85.30	-2,459.46	-396.27	829.06	748.35	80.71	10.272		
8,100.00	5,606.00	7,961.63	5,538.00	42.53	41.67	85.30	-2,559.46	-396.27	829.06	745.71	83.35	9.946		
8,200.00	5,606.00	8,061.63	5,538.00	43.86	43.00	85.30	-2,659.46	-396.27	829.06	743.05	86.02	9.639		
8,300.00	5,606.00	8,161.63	5,538.00	45.19	44.34	85.30	-2,759.46	-396.27	829.07	740.37	88.69	9.347		
8,400.00	5,606.00	8,261.63	5,538.00	46.52	45.69	85.30	-2,859.46	-396.27	829.07	737.68	91.39	9.072		
8,500.00	5,606.00	8,361.62	5,538.00	47.80	47.04	85.30	-2,959.46	-396.27	830.01	735.98	94.02	8.828		
8,600.00	5,606.00	8,471.08	5,538.00	49.03	48.42	85.32	-3,068.91	-395.63	833.26	736.61	96.65	8.622		
8,700.00	5,606.00	8,571.03	5,538.00	50.40	49.75	85.33	-3,168.85	-394.48	836.37	737.01	99.36	8.418		
8,800.00	5,606.00	8,670.98	5,538.00	51.78	51.13	85.35	-3,268.80	-393.34	839.48	737.36	102.12	8.221		
8,900.00	5,606.00	8,770.93	5,538.00	53.16	52.51	85.37	-3,368.74	-392.19	842.58	737.70	104.88	8.034		
9,000.00	5,606.00	8,870.88	5,538.00	54.55	53.90	85.39	-3,468.69	-391.04	845.69	738.04	107.66	7.855		
9,100.00	5,606.00	8,970.83	5,538.00	55.94	55.29	85.40	-3,568.63	-389.90	848.80	738.36	110.44	7.686		
9,200.00	5,606.00	9,070.78	5,538.00	57.34	56.68	85.42	-3,668.58	-388.75	851.91	738.67	113.23	7.523		
9,300.00	5,606.00	9,170.74	5,538.00	58.74	58.08	85.44	-3,768.52	-387.61	855.02	738.98	116.03	7.369		
9,400.00	5,606.00	9,270.69	5,538.00	60.15	59.48	85.45	-3,868.47	-386.46	858.13	739.28	118.84	7.221		
9,500.00	5,606.00	9,370.64	5,538.00	61.56	60.89	85.47	-3,968.41	-385.31	861.23	739.58	121.66	7.079		
9,600.00	5,606.00	9,470.59	5,538.00	62.97	62.29	85.49	-4,068.36	-384.17	864.34	739.86	124.48	6.944		
9,700.00	5,606.00	9,570.54	5,538.00	64.39	63.71	85.50	-4,168.30	-383.02	867.45	740.15	127.31	6.814		
9,800.00	5,606.00	9,670.49	5,538.00	65.81	65.12	85.52	-4,268.25	-381.87	870.56	740.42	130.14	6.690		
9,900.00	5,606.00	9,770.44	5,538.00	67.23	66.54	85.53	-4,368.19	-380.73	873.67	740.69	132.98	6.570		
10,000.00	5,606.00	9,870.39	5,538.00	68.65	67.96	85.55	-4,468.14	-379.58	876.78	740.96	135.82	6.456		
10,100.00	5,606.00	9,970.35	5,538.00	70.08	69.38	85.57	-4,568.08	-378.44	879.89	741.22	138.66	6.345		

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-3116
Project:	Weld County, CO	TVD Reference:	KBE @ 4745.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4745.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-3116	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-3113 - Hz - APD		Offset Site Error:		0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:		0.00 usft		
Reference		Offset		Semi Major Axis		Distance								Warning			
Measured Depth	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbore Centre	Between	Between	Minimum	Separation						
Depth	Depth	Depth	Depth			Toolface	+N/-S	+E/-W	Centres	Ellipses	Separation	Factor					
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)						
10,200.00	5,606.00	10,070.30	5,538.00	71.51	70.80	85.58	-4,668.03	-377.29	883.00	741.48	141.52	6.240					
10,300.00	5,606.00	10,170.25	5,538.00	72.94	72.23	85.60	-4,767.97	-376.14	886.11	741.74	144.37	6.138					
10,400.00	5,606.00	10,270.20	5,538.00	74.37	73.65	85.61	-4,867.92	-375.00	889.22	741.99	147.23	6.040					
10,500.00	5,606.00	10,370.15	5,538.00	75.81	75.08	85.63	-4,967.86	-373.85	892.32	742.23	150.09	5.945					
10,600.00	5,606.00	10,470.10	5,538.00	77.25	76.51	85.64	-5,067.81	-372.71	895.43	742.48	152.96	5.854					
10,700.00	5,606.00	10,570.05	5,538.00	78.68	77.95	85.66	-5,167.75	-371.56	898.54	742.72	155.83	5.766					
10,800.00	5,606.00	10,670.01	5,538.00	80.12	79.38	85.67	-5,267.69	-370.41	901.65	742.95	158.70	5.682					
10,900.00	5,606.00	10,769.96	5,538.00	81.57	80.82	85.69	-5,367.64	-369.27	904.76	743.19	161.57	5.600					
11,000.00	5,606.00	10,869.91	5,538.00	83.01	82.25	85.70	-5,467.58	-368.12	907.87	743.42	164.45	5.521					
11,100.00	5,606.00	10,969.86	5,538.00	84.45	83.69	85.72	-5,567.53	-366.98	910.98	743.65	167.33	5.444					
11,200.00	5,606.00	11,069.81	5,538.00	85.90	85.13	85.73	-5,667.47	-365.83	914.09	743.88	170.21	5.370					
11,300.00	5,606.00	11,169.76	5,538.00	87.34	86.57	85.75	-5,767.42	-364.68	917.20	744.10	173.10	5.299					
11,400.00	5,606.00	11,269.71	5,538.00	88.79	88.01	85.76	-5,867.36	-363.54	920.31	744.33	175.99	5.229					
11,500.00	5,606.00	11,369.67	5,538.00	90.24	89.45	85.78	-5,967.31	-362.39	923.42	744.55	178.88	5.162					
11,600.00	5,606.00	11,469.62	5,538.00	91.69	90.90	85.79	-6,067.25	-361.25	926.53	744.76	181.77	5.097					
11,700.00	5,606.00	11,569.57	5,538.00	93.14	92.34	85.80	-6,167.20	-360.10	929.64	744.98	184.66	5.034					
11,800.00	5,606.00	11,669.52	5,538.00	94.59	93.79	85.82	-6,267.14	-358.95	932.75	745.20	187.55	4.973					
11,900.00	5,606.00	11,769.47	5,538.00	96.05	95.23	85.83	-6,367.09	-357.81	935.86	745.41	190.45	4.914					
12,000.00	5,606.00	11,869.42	5,538.00	97.50	96.68	85.85	-6,467.03	-356.66	938.97	745.62	193.35	4.856					
12,100.00	5,606.00	11,969.37	5,538.00	98.96	98.13	85.86	-6,566.98	-355.51	942.08	745.83	196.25	4.800					
12,200.00	5,606.00	12,069.32	5,538.00	100.41	99.58	85.87	-6,666.92	-354.37	945.19	746.04	199.15	4.746					
12,300.00	5,606.00	12,169.28	5,538.00	101.87	101.03	85.89	-6,766.87	-353.22	948.30	746.25	202.05	4.693					
12,400.00	5,606.00	12,269.23	5,538.00	103.32	102.48	85.90	-6,866.81	-352.08	951.41	746.45	204.96	4.642					
12,500.00	5,606.00	12,369.18	5,538.00	104.78	103.93	85.91	-6,966.76	-350.93	954.52	746.66	207.87	4.592					
12,600.00	5,606.00	12,469.13	5,538.00	106.24	105.38	85.93	-7,066.70	-349.78	957.63	746.86	210.77	4.543					
12,700.00	5,606.00	12,569.08	5,538.00	107.70	106.83	85.94	-7,166.65	-348.64	960.74	747.06	213.68	4.496					
12,800.00	5,606.00	12,669.03	5,538.00	109.16	108.28	85.95	-7,266.59	-347.49	963.86	747.26	216.59	4.450					
12,900.00	5,606.00	12,768.98	5,538.00	110.62	109.74	85.97	-7,366.54	-346.35	966.97	747.46	219.50	4.405					
13,000.00	5,606.00	12,868.94	5,538.00	112.08	111.19	85.98	-7,466.48	-345.20	970.08	747.66	222.41	4.362					
13,100.00	5,606.00	12,968.89	5,538.00	113.54	112.64	85.99	-7,566.42	-344.05	973.19	747.86	225.33	4.319					
13,200.00	5,606.00	13,068.84	5,538.00	115.00	114.10	86.00	-7,666.37	-342.91	976.30	748.06	228.24	4.278					
13,300.00	5,606.00	13,168.79	5,538.00	116.46	115.55	86.02	-7,766.31	-341.76	979.41	748.25	231.15	4.237					
13,400.00	5,606.00	13,268.74	5,538.00	117.93	117.01	86.03	-7,866.26	-340.62	982.52	748.45	234.07	4.198					
13,500.00	5,606.00	13,368.69	5,538.00	119.39	118.46	86.04	-7,966.20	-339.47	985.63	748.64	236.99	4.159					
13,600.00	5,606.00	13,468.64	5,538.00	120.85	119.92	86.05	-8,066.15	-338.32	988.74	748.84	239.91	4.121					
13,699.97	5,606.00	13,555.53	5,538.00	122.32	121.19	86.07	-8,153.03	-337.33	991.94	749.38	242.56	4.089 SF					
13,700.31	5,606.00	13,555.53	5,538.00	122.32	121.19	86.07	-8,153.03	-337.33	991.95	749.39	242.56	4.089					



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30H-3116
Project:	Weld County, CO	TVD Reference:	KBE @ 4745.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4745.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-3116	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-89.51	1.03	-119.96	119.96					
100.00	100.00	100.00	100.00	0.13	0.13	-89.51	1.03	-119.96	119.96	119.70	0.27	450.393		
200.00	200.00	200.00	200.00	0.47	0.47	-89.51	1.03	-119.96	119.96	119.02	0.94	127.531		
300.00	300.00	300.00	300.00	0.81	0.81	-89.51	1.03	-119.96	119.96	118.35	1.61	74.282 CC, ES		
400.00	399.98	400.23	400.21	1.13	1.15	-161.50	2.78	-119.83	121.52	119.24	2.28	53.359		
500.00	499.84	500.09	500.01	1.47	1.49	-160.60	6.35	-119.57	126.30	123.36	2.94	42.924		
600.00	599.45	599.76	599.61	1.81	1.82	-160.25	9.92	-119.32	134.39	130.78	3.62	37.162		
700.00	698.90	699.29	699.07	2.15	2.16	-160.23	13.48	-119.06	144.13	139.84	4.28	33.644		
800.00	798.35	798.81	798.53	2.50	2.49	-160.21	17.04	-118.81	153.86	148.91	4.95	31.111		
900.00	897.81	898.34	897.99	2.86	2.83	-160.20	20.60	-118.55	163.59	157.98	5.61	29.159		
1,000.00	997.26	997.86	997.46	3.22	3.16	-160.18	24.16	-118.29	173.33	167.05	6.28	27.612		
1,100.00	1,096.71	1,097.39	1,096.92	3.58	3.50	-160.17	27.72	-118.04	183.06	176.12	6.95	26.356		
1,200.00	1,196.16	1,196.91	1,196.38	3.94	3.83	-160.16	31.28	-117.78	192.80	185.18	7.62	25.317		
1,300.00	1,295.61	1,296.44	1,295.84	4.30	4.17	-160.15	34.84	-117.52	202.53	194.25	8.29	24.444		
1,400.00	1,395.06	1,395.96	1,395.30	4.66	4.51	-160.14	38.40	-117.27	212.27	203.31	8.96	23.699		
1,500.00	1,494.51	1,495.49	1,494.76	5.02	4.84	-160.13	41.97	-117.01	222.00	212.37	9.63	23.058		
1,600.00	1,593.96	1,595.01	1,594.22	5.39	5.18	-160.12	45.53	-116.76	231.73	221.43	10.30	22.499		
1,700.00	1,693.42	1,694.54	1,693.68	5.75	5.51	-160.12	49.09	-116.50	241.47	230.50	10.97	22.007		
1,800.00	1,792.87	1,794.06	1,793.14	6.11	5.85	-160.11	52.65	-116.24	251.20	239.56	11.64	21.572		
1,900.00	1,892.32	1,893.59	1,892.60	6.48	6.18	-160.11	56.21	-115.99	260.94	248.62	12.32	21.184		
2,000.00	1,991.77	1,993.11	1,992.07	6.84	6.52	-160.10	59.77	-115.73	270.67	257.68	12.99	20.836		
2,100.00	2,091.22	2,092.64	2,091.53	7.21	6.86	-160.10	63.33	-115.47	280.41	266.74	13.66	20.522		
2,200.00	2,190.67	2,192.16	2,190.99	7.57	7.19	-160.09	66.89	-115.22	290.14	275.80	14.34	20.238		
2,300.00	2,290.12	2,291.69	2,290.45	7.93	7.53	-160.09	70.45	-114.96	299.87	284.86	15.01	19.978		
2,400.00	2,389.58	2,391.21	2,389.91	8.30	7.86	-160.08	74.02	-114.71	309.61	293.93	15.68	19.741		
2,500.00	2,489.03	2,490.74	2,489.37	8.66	8.20	-160.08	77.58	-114.45	319.34	302.99	16.36	19.523		
2,600.00	2,588.48	2,590.26	2,588.83	9.03	8.53	-160.07	81.14	-114.19	329.08	312.05	17.03	19.323		
2,700.00	2,687.93	2,689.79	2,688.29	9.39	8.87	-160.07	84.70	-113.94	338.81	321.11	17.70	19.137		
2,800.00	2,787.38	2,789.31	2,787.75	9.76	9.21	-160.07	88.26	-113.68	348.55	330.17	18.38	18.965		
2,900.00	2,886.83	2,888.84	2,887.21	10.12	9.54	-160.06	91.82	-113.42	358.28	339.23	19.05	18.805		
3,000.00	2,986.28	2,988.36	2,986.68	10.49	9.88	-160.06	95.38	-113.17	368.02	348.29	19.73	18.656		
3,100.00	3,085.73	3,087.89	3,086.14	10.85	10.21	-160.06	98.94	-112.91	377.75	357.35	20.40	18.517		
3,200.00	3,185.19	3,187.41	3,185.60	11.22	10.55	-160.06	102.51	-112.66	387.48	366.41	21.07	18.387		
3,300.00	3,284.64	3,286.94	3,285.06	11.58	10.89	-160.05	106.07	-112.40	397.22	375.47	21.75	18.265		
3,400.00	3,384.09	3,386.46	3,384.52	11.95	11.22	-160.05	109.63	-112.14	406.95	384.53	22.42	18.150		
3,500.00	3,483.54	3,485.99	3,483.98	12.31	11.56	-160.05	113.19	-111.89	416.69	393.59	23.10	18.042		
3,600.00	3,582.99	3,585.51	3,583.44	12.68	11.89	-160.05	116.75	-111.63	426.42	402.65	23.77	17.939		
3,700.00	3,682.44	3,685.04	3,682.90	13.04	12.23	-160.04	120.31	-111.37	436.16	411.71	24.44	17.843		
3,800.00	3,781.89	3,784.56	3,782.36	13.41	12.56	-160.04	123.87	-111.12	445.89	420.77	25.12	17.752		
3,900.00	3,881.34	3,884.09	3,881.83	13.77	12.90	-160.04	127.43	-110.86	455.62	429.83	25.79	17.665		
4,000.00	3,980.80	3,983.61	3,981.29	14.14	13.24	-160.04	130.99	-110.61	465.36	438.89	26.47	17.583		
4,100.00	4,080.25	4,083.14	4,080.75	14.50	13.57	-160.04	134.56	-110.35	475.09	447.95	27.14	17.505		
4,200.00	4,179.70	4,182.66	4,180.21	14.87	13.91	-160.04	138.12	-110.09	484.83	457.01	27.82	17.430		
4,300.00	4,279.15	4,282.16	4,279.18	15.23	14.16	-160.22	140.02	-109.96	494.61	466.20	28.41	17.407		
4,400.00	4,378.60	4,381.08	4,378.60	15.60	14.49	-160.63	140.03	-109.96	504.48	475.40	29.07	17.352		
4,500.00	4,478.05	4,480.53	4,478.05	15.96	14.82	-161.01	140.03	-109.96	514.36	484.62	29.74	17.294		
4,599.99	4,577.49	4,579.97	4,577.49	16.33	15.16	-161.38	140.03	-109.96	524.27	493.86	30.41	17.240		
4,700.00	4,677.09	4,679.57	4,677.09	16.65	15.49	-161.74	140.03	-109.96	532.80	501.75	31.04	17.162		
4,800.00	4,776.94	4,779.41	4,776.94	16.91	15.83	-161.96	140.03	-109.96	538.04	506.40	31.64	17.006		
4,899.99	4,876.90	4,879.38	4,876.90	17.16	16.16	-162.04	140.03	-109.96	539.97	507.73	32.24	16.747		
5,000.00	4,976.91	4,979.39	4,976.91	17.44	16.50	-89.47	140.03	-109.96	539.98	507.11	32.87	16.428		
5,099.99	5,076.90	5,079.38	5,076.90	17.74	16.84	-89.47	140.03	-109.96	539.98	506.47	33.51	16.113		

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-3116
Project:	Weld County, CO	TVD Reference:	KBE @ 4745.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4745.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-3116	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	5,176.44	5,180.28	5,177.31	18.01	17.11	90.53	131.81	-109.96	539.98	505.94	34.04	15.863		
5,300.00	5,272.61	5,281.21	5,274.31	18.27	17.37	90.50	104.46	-109.96	539.98	505.49	34.49	15.658		
5,400.00	5,361.89	5,382.08	5,364.17	18.52	17.62	90.45	58.98	-109.96	539.97	505.09	34.89	15.478		
5,500.00	5,441.00	5,482.85	5,443.52	18.76	17.85	90.39	-2.87	-109.96	539.97	504.68	35.29	15.302		
5,600.00	5,507.03	5,583.48	5,509.42	19.01	18.03	90.31	-78.71	-109.96	539.97	504.23	35.74	15.110		
5,700.00	5,557.57	5,683.97	5,559.48	19.27	18.17	90.22	-165.66	-109.96	539.96	503.68	36.28	14.884		
5,800.00	5,590.74	5,784.28	5,591.89	19.59	18.37	90.13	-260.43	-109.96	539.96	503.02	36.94	14.617		
5,895.54	5,605.09	5,879.95	5,605.36	19.95	18.72	90.03	-355.02	-109.96	539.96	502.27	37.69	14.325		
5,900.00	5,605.33	5,884.41	5,605.56	19.97	18.74	90.02	-359.47	-109.96	539.96	502.23	37.73	14.311		
6,000.00	5,606.00	5,984.41	5,606.00	20.42	19.19	90.00	-459.47	-109.96	539.96	501.29	38.67	13.963		
6,100.00	5,606.00	6,084.41	5,606.00	20.96	19.74	90.00	-559.47	-109.96	539.96	500.15	39.81	13.564		
6,200.00	5,606.00	6,184.41	5,606.00	21.60	20.39	90.00	-659.47	-109.96	539.96	498.83	41.13	13.129		
6,300.00	5,606.00	6,284.41	5,606.00	22.31	21.11	90.00	-759.47	-109.96	539.96	497.35	42.61	12.673		
6,400.00	5,606.00	6,384.41	5,606.00	23.10	21.92	90.00	-859.47	-109.96	539.96	495.73	44.23	12.207		
6,500.00	5,606.00	6,484.41	5,606.00	23.96	22.78	90.00	-959.47	-109.96	539.96	493.97	45.99	11.740		
6,600.00	5,606.00	6,584.41	5,606.00	24.87	23.71	90.00	-1,059.47	-109.96	539.96	492.10	47.87	11.280		
6,700.00	5,606.00	6,684.41	5,606.00	25.84	24.69	90.00	-1,159.47	-109.96	539.96	490.12	49.85	10.833		
6,800.00	5,606.00	6,784.41	5,606.00	26.85	25.72	90.00	-1,259.47	-109.96	539.96	488.05	51.91	10.401		
6,900.00	5,606.00	6,884.41	5,606.00	27.90	26.79	90.00	-1,359.47	-109.96	539.96	485.90	54.07	9.987		
7,000.00	5,606.00	6,984.41	5,606.00	28.99	27.90	90.00	-1,459.47	-109.96	539.96	483.68	56.29	9.593		
7,100.00	5,606.00	7,084.41	5,606.00	30.11	29.04	90.00	-1,559.47	-109.96	539.96	481.39	58.57	9.218		
7,200.00	5,606.00	7,184.41	5,606.00	31.27	30.20	90.00	-1,659.47	-109.97	539.97	479.05	60.92	8.864		
7,300.00	5,606.00	7,284.41	5,606.00	32.44	31.40	90.00	-1,759.47	-109.97	539.97	476.66	63.31	8.529		
7,400.00	5,606.00	7,384.41	5,606.00	33.65	32.61	90.00	-1,859.47	-109.97	539.97	474.22	65.75	8.213		
7,500.00	5,606.00	7,484.41	5,606.00	34.87	33.85	90.00	-1,959.47	-109.97	539.97	471.74	68.22	7.915		
7,600.00	5,606.00	7,584.41	5,606.00	36.11	35.10	90.00	-2,059.47	-109.97	539.97	469.23	70.74	7.633		
7,700.00	5,606.00	7,684.41	5,606.00	37.37	36.38	90.00	-2,159.47	-109.97	539.97	466.68	73.28	7.368		
7,800.00	5,606.00	7,784.41	5,606.00	38.64	37.66	90.00	-2,259.47	-109.97	539.97	464.11	75.86	7.118		
7,900.00	5,606.00	7,884.41	5,606.00	39.93	38.96	90.00	-2,359.47	-109.97	539.97	461.51	78.46	6.882		
8,000.00	5,606.00	7,984.41	5,606.00	41.22	40.27	90.00	-2,459.47	-109.97	539.97	458.89	81.08	6.660		
8,100.00	5,606.00	8,084.41	5,606.00	42.53	41.59	90.00	-2,559.47	-109.97	539.97	456.24	83.73	6.449		
8,200.00	5,606.00	8,184.41	5,606.00	43.86	42.92	90.00	-2,659.47	-109.97	539.97	453.58	86.39	6.250		
8,300.00	5,606.00	8,284.41	5,606.00	45.19	44.26	90.00	-2,759.47	-109.97	539.97	450.90	89.07	6.062		
8,400.00	5,606.00	8,384.41	5,606.00	46.52	45.61	90.00	-2,859.47	-109.97	539.97	448.20	91.77	5.884		
8,477.52	5,606.00	8,472.51	5,606.00	47.51	46.74	90.00	-2,947.56	-109.21	540.09	446.10	93.98	5.747		
8,500.00	5,606.00	8,494.98	5,606.00	47.80	47.02	90.00	-2,970.03	-108.77	539.82	445.27	94.56	5.709		
8,600.00	5,606.00	8,594.96	5,606.00	49.03	48.38	90.00	-3,069.99	-106.82	541.72	444.57	97.15	5.576		
8,700.00	5,606.00	8,694.94	5,606.00	50.40	49.75	90.00	-3,169.94	-104.86	544.03	444.13	99.89	5.446		
8,800.00	5,606.00	8,794.91	5,606.00	51.78	51.13	90.00	-3,269.90	-102.91	546.34	443.68	102.65	5.322		
8,900.00	5,606.00	8,894.88	5,606.00	53.16	52.51	90.00	-3,369.85	-100.95	548.65	443.22	105.42	5.204		
9,000.00	5,606.00	8,994.86	5,606.00	54.55	53.90	90.00	-3,469.80	-98.99	550.95	442.75	108.20	5.092		
9,100.00	5,606.00	9,094.83	5,606.00	55.94	55.29	90.00	-3,569.76	-97.04	553.26	442.27	110.99	4.985		
9,200.00	5,606.00	9,194.80	5,606.00	57.34	56.69	90.00	-3,669.71	-95.08	555.57	441.78	113.79	4.882		
9,300.00	5,606.00	9,294.78	5,606.00	58.74	58.09	90.00	-3,769.67	-93.12	557.88	441.28	116.60	4.785		
9,400.00	5,606.00	9,394.75	5,606.00	60.15	59.50	90.00	-3,869.62	-91.17	560.19	440.78	119.41	4.691		
9,500.00	5,606.00	9,494.72	5,606.00	61.56	60.90	90.00	-3,969.57	-89.21	562.50	440.27	122.23	4.602		
9,600.00	5,606.00	9,594.70	5,606.00	62.97	62.31	90.00	-4,069.53	-87.26	564.80	439.75	125.06	4.516		
9,700.00	5,606.00	9,694.67	5,606.00	64.39	63.73	90.00	-4,169.48	-85.30	567.11	439.22	127.89	4.434		
9,800.00	5,606.00	9,794.64	5,606.00	65.81	65.14	90.00	-4,269.44	-83.34	569.42	438.69	130.73	4.356		
9,900.00	5,606.00	9,894.62	5,606.00	67.23	66.56	90.00	-4,369.39	-81.39	571.73	438.16	133.57	4.280		
10,000.00	5,606.00	9,994.59	5,606.00	68.65	67.98	90.00	-4,469.35	-79.43	574.04	437.62	136.42	4.208		
10,100.00	5,606.00	10,094.56	5,606.00	70.08	69.41	90.00	-4,569.30	-77.47	576.35	437.08	139.27	4.138		

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-3116
Project:	Weld County, CO	TVD Reference:	KBE @ 4745.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4745.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-3116	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-3114 - 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					
10,200.00	5,606.00	10,194.54	5,606.00	71.51	70.83	90.00	-4,669.25	-75.52	578.66	436.53	142.13	4.071					
10,300.00	5,606.00	10,294.51	5,606.00	72.94	72.26	90.00	-4,769.21	-73.56	580.96	435.98	144.99	4.007					
10,400.00	5,606.00	10,394.48	5,606.00	74.37	73.69	90.00	-4,869.16	-71.61	583.27	435.42	147.85	3.945					
10,500.00	5,606.00	10,494.46	5,606.00	75.81	75.12	90.00	-4,969.12	-69.65	585.58	434.86	150.72	3.885					
10,600.00	5,606.00	10,594.43	5,606.00	77.25	76.56	90.00	-5,069.07	-67.69	587.89	434.30	153.59	3.828					
10,700.00	5,606.00	10,694.40	5,606.00	78.68	77.99	90.00	-5,169.03	-65.74	590.20	433.73	156.47	3.772					
10,800.00	5,606.00	10,794.38	5,606.00	80.12	79.43	90.00	-5,268.98	-63.78	592.51	433.16	159.34	3.718					
10,900.00	5,606.00	10,894.35	5,606.00	81.57	80.87	90.00	-5,368.93	-61.82	594.81	432.59	162.22	3.667					
11,000.00	5,606.00	10,994.32	5,606.00	83.01	82.30	90.00	-5,468.89	-59.87	597.12	432.02	165.11	3.617					
11,100.00	5,606.00	11,094.30	5,606.00	84.45	83.74	90.00	-5,568.84	-57.91	599.43	431.44	167.99	3.568					
11,200.00	5,606.00	11,194.27	5,606.00	85.90	85.19	90.00	-5,668.80	-55.96	601.74	430.86	170.88	3.521					
11,300.00	5,606.00	11,294.24	5,606.00	87.34	86.63	90.00	-5,768.75	-54.00	604.05	430.28	173.77	3.476					
11,400.00	5,606.00	11,394.22	5,606.00	88.79	88.07	90.00	-5,868.70	-52.04	606.36	429.69	176.66	3.432					
11,500.00	5,606.00	11,494.19	5,606.00	90.24	89.52	90.00	-5,968.66	-50.09	608.67	429.11	179.56	3.390					
11,600.00	5,606.00	11,594.16	5,606.00	91.69	90.96	90.00	-6,068.61	-48.13	610.97	428.52	182.45	3.349					
11,700.00	5,606.00	11,694.14	5,606.00	93.14	92.41	90.00	-6,168.57	-46.17	613.28	427.93	185.35	3.309					
11,800.00	5,606.00	11,794.11	5,606.00	94.59	93.86	90.00	-6,268.52	-44.22	615.59	427.34	188.25	3.270					
11,900.00	5,606.00	11,894.08	5,606.00	96.05	95.31	90.00	-6,368.48	-42.26	617.90	426.74	191.16	3.232					
12,000.00	5,606.00	11,994.06	5,606.00	97.50	96.75	90.00	-6,468.43	-40.31	620.21	426.15	194.06	3.196					
12,100.00	5,606.00	12,094.03	5,606.00	98.96	98.20	90.00	-6,568.38	-38.35	622.52	425.55	196.97	3.161					
12,200.00	5,606.00	12,194.00	5,606.00	100.41	99.66	90.00	-6,668.34	-36.39	624.83	424.95	199.87	3.126					
12,300.00	5,606.00	12,293.98	5,606.00	101.87	101.11	90.00	-6,768.29	-34.44	627.13	424.35	202.78	3.093					
12,400.00	5,606.00	12,393.95	5,606.00	103.32	102.56	90.00	-6,868.25	-32.48	629.44	423.75	205.69	3.060					
12,500.00	5,606.00	12,493.92	5,606.00	104.78	104.01	90.00	-6,968.20	-30.52	631.75	423.15	208.60	3.028					
12,600.00	5,606.00	12,593.90	5,606.00	106.24	105.47	90.00	-7,068.16	-28.57	634.06	422.54	211.51	2.998					
12,700.00	5,606.00	12,693.87	5,606.00	107.70	106.92	90.00	-7,168.11	-26.61	636.37	421.94	214.43	2.968					
12,800.00	5,606.00	12,793.84	5,606.00	109.16	108.37	90.00	-7,268.06	-24.66	638.68	421.33	217.34	2.939					
12,900.00	5,606.00	12,893.82	5,606.00	110.62	109.83	90.00	-7,368.02	-22.70	640.98	420.73	220.26	2.910					
13,000.00	5,606.00	12,993.79	5,606.00	112.08	111.29	90.00	-7,467.97	-20.74	643.29	420.12	223.18	2.882					
13,100.00	5,606.00	13,093.76	5,606.00	113.54	112.74	90.00	-7,567.93	-18.79	645.60	419.51	226.09	2.855					
13,200.00	5,606.00	13,193.74	5,606.00	115.00	114.20	90.00	-7,667.88	-16.83	647.91	418.90	229.01	2.829					
13,300.00	5,606.00	13,293.71	5,606.00	116.46	115.66	90.00	-7,767.83	-14.87	650.22	418.29	231.93	2.803					
13,400.00	5,606.00	13,393.68	5,606.00	117.93	117.11	90.00	-7,867.79	-12.92	652.53	417.67	234.85	2.778					
13,500.00	5,606.00	13,493.66	5,606.00	119.39	118.57	90.00	-7,967.74	-10.96	654.84	417.06	237.78	2.754					
13,600.00	5,606.00	13,593.63	5,606.00	120.85	120.03	90.00	-8,067.70	-9.01	657.14	416.45	240.70	2.730					
13,699.97	5,606.00	13,679.98	5,606.00	122.32	121.29	90.00	-8,154.03	-7.32	659.59	416.34	243.25	2.712 SF					
13,700.31	5,606.00	13,679.98	5,606.00	122.32	121.29	90.00	-8,154.03	-7.32	659.61	416.36	243.25	2.712					



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30H-3116
Project:	Weld County, CO	TVD Reference:	KBE @ 4745.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4745.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-3116	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
0.00	0.00	0.00	0.00	0.00	0.00	-89.98	0.02	-59.98	59.98					
100.00	100.00	100.00	100.00	0.13	0.13	-89.98	0.02	-59.98	59.98	59.71	0.27	225.188		
200.00	200.00	200.00	200.00	0.47	0.47	-89.98	0.02	-59.98	59.98	59.04	0.94	63.763		
300.00	300.00	300.00	300.00	0.81	0.81	-89.98	0.02	-59.98	59.98	58.36	1.61	37.140 CC		
400.00	399.98	401.72	401.70	1.13	1.15	-162.05	1.07	-58.51	60.21	57.89	2.32	26.005 ES		
500.00	499.84	502.59	502.44	1.47	1.49	-160.83	3.96	-54.51	61.25	58.26	2.99	20.469		
600.00	599.45	602.50	602.21	1.81	1.82	-160.45	7.09	-50.16	65.24	61.60	3.64	17.910		
700.00	698.90	702.34	701.91	2.15	2.15	-160.62	10.22	-45.82	70.88	66.58	4.30	16.487		
800.00	798.35	802.18	801.61	2.50	2.49	-160.77	13.35	-41.48	76.52	71.57	4.96	15.438		
900.00	897.81	902.02	901.30	2.86	2.83	-160.89	16.48	-37.14	82.17	76.55	5.62	14.623		
1,000.00	997.26	1,001.86	1,001.00	3.22	3.17	-161.00	19.61	-32.80	87.81	81.53	6.28	13.973		
1,100.00	1,096.71	1,101.70	1,100.70	3.58	3.51	-161.10	22.74	-28.46	93.45	86.50	6.95	13.443		
1,200.00	1,196.16	1,201.54	1,200.40	3.94	3.85	-161.18	25.87	-24.12	99.10	91.48	7.62	13.004		
1,300.00	1,295.61	1,301.38	1,300.09	4.30	4.19	-161.26	29.00	-19.78	104.74	96.45	8.29	12.633		
1,400.00	1,395.06	1,401.23	1,399.79	4.66	4.53	-161.33	32.13	-15.43	110.38	101.42	8.96	12.317		
1,500.00	1,494.51	1,501.07	1,499.49	5.02	4.87	-161.39	35.26	-11.09	116.03	106.39	9.63	12.044		
1,600.00	1,593.96	1,600.91	1,599.18	5.39	5.21	-161.45	38.39	-6.75	121.67	111.36	10.31	11.806		
1,700.00	1,693.42	1,700.75	1,698.88	5.75	5.55	-161.50	41.53	-2.41	127.32	116.34	10.98	11.596		
1,800.00	1,792.87	1,800.59	1,798.58	6.11	5.90	-161.54	44.66	1.93	132.96	121.31	11.65	11.410		
1,900.00	1,892.32	1,900.43	1,898.27	6.48	6.24	-161.59	47.79	6.27	138.60	126.28	12.33	11.245		
2,000.00	1,991.77	2,000.27	1,997.97	6.84	6.58	-161.63	50.92	10.61	144.25	131.25	13.00	11.096		
2,100.00	2,091.22	2,100.11	2,097.67	7.21	6.92	-161.66	54.05	14.95	149.89	136.22	13.67	10.961		
2,200.00	2,190.67	2,199.95	2,197.36	7.57	7.26	-161.70	57.18	19.30	155.54	141.19	14.35	10.840		
2,300.00	2,290.12	2,299.79	2,297.06	7.93	7.60	-161.73	60.31	23.64	161.18	146.16	15.02	10.729		
2,400.00	2,389.58	2,399.63	2,396.76	8.30	7.95	-161.76	63.44	27.98	166.83	151.13	15.70	10.627		
2,500.00	2,489.03	2,499.47	2,496.46	8.66	8.29	-161.78	66.57	32.32	172.47	156.10	16.37	10.534		
2,600.00	2,588.48	2,599.31	2,596.15	9.03	8.63	-161.81	69.70	36.66	178.12	161.07	17.05	10.448		
2,700.00	2,687.93	2,699.15	2,695.85	9.39	8.97	-161.83	72.83	41.00	183.76	166.04	17.72	10.368		
2,800.00	2,787.38	2,798.99	2,795.55	9.76	9.31	-161.86	75.96	45.34	189.41	171.01	18.40	10.295		
2,900.00	2,886.83	2,898.83	2,895.24	10.12	9.65	-161.88	79.09	49.69	195.05	175.98	19.07	10.226		
3,000.00	2,986.28	2,998.67	2,994.94	10.49	10.00	-161.90	82.22	54.03	200.69	180.95	19.75	10.162		
3,100.00	3,085.73	3,098.51	3,094.64	10.85	10.34	-161.92	85.35	58.37	206.34	185.91	20.42	10.102		
3,200.00	3,185.19	3,198.35	3,194.33	11.22	10.68	-161.93	88.48	62.71	211.98	190.88	21.10	10.047		
3,300.00	3,284.64	3,298.20	3,294.03	11.58	11.02	-161.95	91.61	67.05	217.63	195.85	21.78	9.994		
3,400.00	3,384.09	3,398.04	3,393.73	11.95	11.36	-161.97	94.74	71.39	223.27	200.82	22.45	9.945		
3,500.00	3,483.54	3,497.88	3,493.43	12.31	11.71	-161.98	97.87	75.73	228.92	205.79	23.13	9.898		
3,600.00	3,582.99	3,597.72	3,593.12	12.68	12.05	-162.00	101.00	80.07	234.56	210.76	23.80	9.854		
3,700.00	3,682.44	3,697.56	3,692.82	13.04	12.39	-162.01	104.13	84.42	240.21	215.73	24.48	9.813		
3,800.00	3,781.89	3,797.40	3,792.52	13.41	12.73	-162.02	107.26	88.76	245.85	220.70	25.15	9.774		
3,900.00	3,881.34	3,897.24	3,892.21	13.77	13.07	-162.04	110.39	93.10	251.50	225.67	25.83	9.737		
4,000.00	3,980.80	3,997.08	3,991.91	14.14	13.42	-162.05	113.52	97.44	257.14	230.64	26.51	9.701		
4,100.00	4,080.25	4,096.92	4,091.61	14.50	13.76	-162.06	116.65	101.78	262.79	235.61	27.18	9.668		
4,200.00	4,179.70	4,196.76	4,191.30	14.87	14.10	-162.07	119.78	106.12	268.43	240.58	27.86	9.636		
4,300.00	4,279.15	4,296.60	4,291.00	15.23	14.44	-162.08	122.91	110.46	274.08	245.54	28.53	9.605		
4,400.00	4,378.60	4,396.44	4,390.70	15.60	14.78	-162.09	126.04	114.80	279.72	250.51	29.21	9.576		
4,500.00	4,478.05	4,496.28	4,490.40	15.96	15.13	-162.10	129.17	119.15	285.37	255.48	29.89	9.549		
4,599.99	4,577.49	4,596.11	4,590.08	16.33	15.47	-162.11	132.30	123.49	291.01	260.45	30.56	9.522		
4,700.00	4,677.09	4,694.00	4,687.83	16.65	15.79	-162.07	135.31	127.66	295.34	264.16	31.18	9.472		
4,800.00	4,776.94	4,786.25	4,780.04	16.91	16.03	-162.09	136.88	129.83	298.25	266.60	31.65	9.423		
4,899.99	4,876.90	4,883.11	4,876.90	17.16	16.30	-162.18	137.02	130.02	299.97	267.80	32.18	9.323		
5,000.00	4,976.91	4,983.12	4,976.91	17.44	16.62	-89.62	137.02	130.02	299.98	267.20	32.78	9.150		
5,085.98	5,062.89	5,069.16	5,062.89	17.70	16.87	-90.00	135.00	130.02	299.98	266.68	33.30	9.008		

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-3116
Project:	Weld County, CO	TVD Reference:	KBE @ 4745.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4745.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-3116	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		
5,099.99	5,076.90	5,083.08	5,076.74	17.74	16.91	-90.27	133.59	130.02	299.98	266.61	33.38	8.988		
5,200.00	5,176.44	5,180.81	5,172.21	18.01	17.17	87.31	113.39	130.02	300.31	266.47	33.84	8.874		
5,300.00	5,272.61	5,276.34	5,260.30	18.27	17.42	85.01	76.77	130.02	301.14	266.92	34.21	8.801		
5,400.00	5,361.89	5,369.96	5,338.73	18.52	17.66	82.91	25.88	130.02	302.32	267.80	34.51	8.760		
5,500.00	5,441.00	5,461.97	5,405.72	18.76	17.89	81.08	-37.01	130.02	303.68	268.92	34.76	8.737		
5,600.00	5,507.03	5,552.67	5,459.94	19.01	18.11	79.56	-109.58	130.02	305.05	270.06	34.99	8.717		
5,700.00	5,557.57	5,642.37	5,500.39	19.27	18.35	78.41	-189.52	130.02	306.24	270.96	35.28	8.679		
5,800.00	5,590.74	5,731.37	5,526.40	19.59	18.63	77.63	-274.52	130.02	307.11	271.42	35.69	8.605		
5,900.00	5,605.33	5,819.95	5,537.55	19.97	18.97	77.26	-362.29	130.02	307.55	271.30	36.25	8.483		
6,000.00	5,606.00	5,917.13	5,538.00	20.42	19.42	77.23	-459.47	130.02	307.59	270.44	37.15	8.280		
6,100.00	5,606.00	6,017.13	5,538.00	20.96	19.98	77.23	-559.47	130.02	307.59	269.30	38.29	8.033		
6,200.00	5,606.00	6,117.13	5,538.00	21.60	20.63	77.23	-659.47	130.02	307.59	267.99	39.60	7.767		
6,300.00	5,606.00	6,217.13	5,538.00	22.31	21.37	77.23	-759.47	130.02	307.59	266.51	41.08	7.488		
6,400.00	5,606.00	6,317.13	5,538.00	23.10	22.18	77.23	-859.47	130.02	307.59	264.89	42.70	7.204		
6,500.00	5,606.00	6,417.13	5,538.00	23.96	23.06	77.23	-959.47	130.02	307.59	263.15	44.45	6.921		
6,600.00	5,606.00	6,517.13	5,538.00	24.87	23.99	77.23	-1,059.47	130.02	307.59	261.29	46.31	6.643		
6,700.00	5,606.00	6,617.13	5,538.00	25.84	24.98	77.23	-1,159.47	130.02	307.59	259.33	48.27	6.373		
6,800.00	5,606.00	6,717.13	5,538.00	26.85	26.01	77.23	-1,259.47	130.02	307.59	257.28	50.31	6.113		
6,900.00	5,606.00	6,817.13	5,538.00	27.90	27.09	77.23	-1,359.47	130.02	307.59	255.15	52.44	5.866		
7,000.00	5,606.00	6,917.13	5,538.00	28.99	28.20	77.23	-1,459.47	130.02	307.59	252.96	54.64	5.630		
7,100.00	5,606.00	7,017.13	5,538.00	30.11	29.35	77.23	-1,559.47	130.02	307.59	250.70	56.89	5.407		
7,200.00	5,606.00	7,117.13	5,538.00	31.27	30.52	77.23	-1,659.47	130.02	307.59	248.39	59.20	5.196		
7,300.00	5,606.00	7,217.13	5,538.00	32.44	31.71	77.23	-1,759.47	130.02	307.59	246.03	61.56	4.997		
7,400.00	5,606.00	7,317.13	5,538.00	33.65	32.93	77.23	-1,859.47	130.02	307.59	243.63	63.96	4.809		
7,500.00	5,606.00	7,417.13	5,538.00	34.87	34.17	77.23	-1,959.47	130.02	307.59	241.19	66.40	4.632		
7,600.00	5,606.00	7,517.13	5,538.00	36.11	35.43	77.23	-2,059.47	130.02	307.59	238.72	68.87	4.466		
7,700.00	5,606.00	7,617.13	5,538.00	37.37	36.70	77.23	-2,159.47	130.02	307.59	236.22	71.38	4.309		
7,800.00	5,606.00	7,717.13	5,538.00	38.64	37.99	77.23	-2,259.47	130.02	307.59	233.69	73.91	4.162		
7,900.00	5,606.00	7,817.13	5,538.00	39.93	39.29	77.23	-2,359.47	130.02	307.59	231.13	76.46	4.023		
8,000.00	5,606.00	7,917.13	5,538.00	41.22	40.60	77.23	-2,459.47	130.02	307.60	228.55	79.04	3.892		
8,100.00	5,606.00	8,017.13	5,538.00	42.53	41.92	77.23	-2,559.47	130.02	307.60	225.96	81.64	3.768		
8,200.00	5,606.00	8,117.13	5,538.00	43.86	43.26	77.23	-2,659.47	130.02	307.60	223.34	84.26	3.651		
8,300.00	5,606.00	8,217.13	5,538.00	45.19	44.60	77.23	-2,759.47	130.01	307.60	220.71	86.89	3.540		
8,400.00	5,606.00	8,317.13	5,538.00	46.52	45.94	77.23	-2,859.47	130.01	307.60	218.06	89.54	3.435		
8,500.00	5,606.00	8,425.98	5,538.00	47.80	47.32	77.22	-2,968.30	131.26	307.43	215.10	92.34	3.329		
8,565.66	5,606.00	8,493.84	5,538.00	48.61	48.16	77.21	-3,036.12	133.68	307.14	213.15	93.99	3.268		
8,600.00	5,606.00	8,528.18	5,538.00	49.03	48.63	77.23	-3,070.44	134.95	307.66	212.80	94.87	3.243		
8,700.00	5,606.00	8,628.18	5,538.00	50.40	50.01	77.25	-3,170.37	138.63	308.23	210.66	97.58	3.159		
8,800.00	5,606.00	8,728.18	5,538.00	51.78	51.39	77.28	-3,270.30	142.31	308.80	208.51	100.30	3.079		
8,900.00	5,606.00	8,828.17	5,538.00	53.16	52.78	77.30	-3,370.23	145.99	309.37	206.34	103.03	3.003		
9,000.00	5,606.00	8,928.17	5,538.00	54.55	54.17	77.33	-3,470.16	149.67	309.94	204.17	105.77	2.930		
9,100.00	5,606.00	9,028.17	5,538.00	55.94	55.57	77.35	-3,570.09	153.36	310.51	201.99	108.51	2.861		
9,200.00	5,606.00	9,128.17	5,538.00	57.34	56.97	77.37	-3,670.02	157.04	311.07	199.80	111.27	2.796		
9,300.00	5,606.00	9,228.17	5,538.00	58.74	58.38	77.40	-3,769.95	160.72	311.64	197.61	114.04	2.733		
9,400.00	5,606.00	9,328.17	5,538.00	60.15	59.79	77.42	-3,869.88	164.40	312.21	195.40	116.81	2.673		
9,500.00	5,606.00	9,428.16	5,538.00	61.56	61.20	77.44	-3,969.81	168.08	312.78	193.19	119.59	2.615		
9,600.00	5,606.00	9,528.16	5,538.00	62.97	62.62	77.47	-4,069.74	171.77	313.35	190.98	122.37	2.561		
9,700.00	5,606.00	9,628.16	5,538.00	64.39	64.04	77.49	-4,169.67	175.45	313.92	188.75	125.17	2.508		
9,800.00	5,606.00	9,728.16	5,538.00	65.81	65.46	77.51	-4,269.60	179.13	314.49	186.52	127.96	2.458		
9,900.00	5,606.00	9,828.16	5,538.00	67.23	66.88	77.54	-4,369.53	182.81	315.06	184.29	130.76	2.409		
10,000.00	5,606.00	9,928.16	5,538.00	68.65	68.31	77.56	-4,469.46	186.50	315.62	182.05	133.57	2.363		
10,100.00	5,606.00	10,028.15	5,538.00	70.08	69.74	77.58	-4,569.39	190.18	316.19	179.81	136.38	2.318		

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-3116
Project:	Weld County, CO	TVD Reference:	KBE @ 4745.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4745.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-3116	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-3115 - 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	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre	Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning					
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(°)	+N/-S (usft)	+E/-W (usft)	(usft)	(usft)	(usft)						
10,200.00	5,606.00	10,128.15	5,538.00	71.51	71.17	77.60	-4,669.32	193.86	316.76	177.56	139.20	2.276					
10,300.00	5,606.00	10,228.15	5,538.00	72.94	72.60	77.63	-4,769.25	197.54	317.33	175.31	142.02	2.234					
10,400.00	5,606.00	10,328.15	5,538.00	74.37	74.04	77.65	-4,869.18	201.22	317.90	173.05	144.85	2.195					
10,500.00	5,606.00	10,428.15	5,538.00	75.81	75.47	77.67	-4,969.11	204.91	318.47	170.80	147.67	2.157					
10,600.00	5,606.00	10,528.15	5,538.00	77.25	76.91	77.69	-5,069.05	208.59	319.04	168.53	150.51	2.120					
10,700.00	5,606.00	10,628.14	5,538.00	78.68	78.35	77.72	-5,168.98	212.27	319.61	166.27	153.34	2.084					
10,800.00	5,606.00	10,728.14	5,538.00	80.12	79.79	77.74	-5,268.91	215.95	320.18	164.00	156.18	2.050					
10,900.00	5,606.00	10,828.14	5,538.00	81.57	81.23	77.76	-5,368.84	219.63	320.75	161.72	159.02	2.017					
11,000.00	5,606.00	10,928.14	5,538.00	83.01	82.68	77.78	-5,468.77	223.32	321.32	159.45	161.87	1.985					
11,100.00	5,606.00	11,028.14	5,538.00	84.45	84.12	77.80	-5,568.70	227.00	321.88	157.17	164.71	1.954					
11,200.00	5,606.00	11,128.14	5,538.00	85.90	85.57	77.83	-5,668.63	230.68	322.45	154.89	167.56	1.924					
11,300.00	5,606.00	11,228.13	5,538.00	87.34	87.02	77.85	-5,768.56	234.36	323.02	152.61	170.41	1.896					
11,400.00	5,606.00	11,328.13	5,538.00	88.79	88.47	77.87	-5,868.49	238.05	323.59	150.32	173.27	1.868					
11,500.00	5,606.00	11,428.13	5,538.00	90.24	89.92	77.89	-5,968.42	241.73	324.16	148.04	176.13	1.841					
11,600.00	5,606.00	11,528.13	5,538.00	91.69	91.37	77.91	-6,068.35	245.41	324.73	145.75	178.99	1.814					
11,700.00	5,606.00	11,628.13	5,538.00	93.14	92.82	77.93	-6,168.28	249.09	325.30	143.45	181.85	1.789					
11,800.00	5,606.00	11,728.13	5,538.00	94.59	94.27	77.96	-6,268.21	252.77	325.87	141.16	184.71	1.764					
11,900.00	5,606.00	11,828.12	5,538.00	96.05	95.72	77.98	-6,368.14	256.46	326.44	138.86	187.58	1.740					
12,000.00	5,606.00	11,928.12	5,538.00	97.50	97.18	78.00	-6,468.07	260.14	327.01	136.57	190.44	1.717					
12,100.00	5,606.00	12,028.12	5,538.00	98.96	98.63	78.02	-6,568.00	263.82	327.58	134.27	193.31	1.695					
12,200.00	5,606.00	12,128.12	5,538.00	100.41	100.09	78.04	-6,667.93	267.50	328.15	131.97	196.18	1.673					
12,300.00	5,606.00	12,228.12	5,538.00	101.87	101.54	78.06	-6,767.86	271.18	328.72	129.66	199.06	1.651					
12,400.00	5,606.00	12,328.12	5,538.00	103.32	103.00	78.08	-6,867.79	274.87	329.29	127.36	201.93	1.631					
12,500.00	5,606.00	12,428.11	5,538.00	104.78	104.46	78.10	-6,967.72	278.55	329.86	125.05	204.81	1.611					
12,600.00	5,606.00	12,528.11	5,538.00	106.24	105.92	78.12	-7,067.65	282.23	330.43	122.75	207.68	1.591					
12,700.00	5,606.00	12,628.11	5,538.00	107.70	107.38	78.14	-7,167.59	285.91	331.00	120.44	210.56	1.572					
12,800.00	5,606.00	12,728.11	5,538.00	109.16	108.84	78.17	-7,267.52	289.60	331.57	118.13	213.44	1.553					
12,900.00	5,606.00	12,828.11	5,538.00	110.62	110.30	78.19	-7,367.45	293.28	332.14	115.82	216.32	1.535					
13,000.00	5,606.00	12,928.10	5,538.00	112.08	111.76	78.21	-7,467.38	296.96	332.71	113.50	219.21	1.518					
13,100.00	5,606.00	13,028.10	5,538.00	113.54	113.22	78.23	-7,567.31	300.64	333.28	111.19	222.09	1.501					
13,200.00	5,606.00	13,128.10	5,538.00	115.00	114.68	78.25	-7,667.24	304.32	333.85	108.87	224.98	1.484	Level 3				
13,300.00	5,606.00	13,228.10	5,538.00	116.46	116.14	78.27	-7,767.17	308.01	334.42	106.56	227.86	1.468	Level 3				
13,400.00	5,606.00	13,328.10	5,538.00	117.93	117.60	78.29	-7,867.10	311.69	334.99	104.24	230.75	1.452	Level 3				
13,500.00	5,606.00	13,428.10	5,538.00	119.39	119.07	78.31	-7,967.03	315.37	335.56	101.92	233.64	1.436	Level 3				
13,600.00	5,606.00	13,528.09	5,538.00	120.85	120.53	78.33	-8,066.96	319.05	336.13	99.60	236.53	1.421	Level 3				
13,604.31	5,606.00	13,532.40	5,538.00	120.92	120.59	78.33	-8,071.26	319.21	336.16	99.50	236.66	1.420	Level 3				
13,699.97	5,606.00	13,616.26	5,538.00	122.32	121.82	78.35	-8,155.06	322.30	336.91	98.00	238.91	1.410	Level 3, SF				
13,700.31	5,606.00	13,616.26	5,538.00	122.32	121.82	78.35	-8,155.06	322.30	336.92	98.03	238.90	1.410	Level 3				



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30H-3116
Project:	Weld County, CO	TVD Reference:	KBE @ 4745.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4745.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-3116	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-89.61	1.03	-149.95	149.95					
100.00	100.00	100.00	100.00	0.13	0.13	-89.61	1.03	-149.95	149.95	149.68	0.27	562.984		
200.00	200.00	200.00	200.00	0.47	0.47	-89.61	1.03	-149.95	149.95	149.01	0.94	159.411		
300.00	300.00	300.00	300.00	0.81	0.81	-89.61	1.03	-149.95	149.95	148.33	1.61	92.851 CC, ES		
400.00	399.98	397.36	397.34	1.13	1.14	-161.82	2.46	-150.77	152.47	150.19	2.28	66.732		
500.00	499.84	497.06	496.98	1.47	1.47	-161.29	5.46	-152.50	159.22	156.27	2.95	54.025		
600.00	599.45	596.54	596.40	1.81	1.81	-161.17	8.46	-154.22	169.26	165.65	3.62	46.793		
700.00	698.90	695.86	695.66	2.15	2.14	-161.30	11.45	-155.94	180.96	176.68	4.28	42.286		
800.00	798.35	795.17	794.91	2.50	2.48	-161.41	14.44	-157.66	192.66	187.73	4.94	39.037		
900.00	897.81	894.48	894.16	2.86	2.81	-161.51	17.43	-159.38	204.36	198.77	5.60	36.524		
1,000.00	997.26	993.80	993.42	3.22	3.15	-161.60	20.42	-161.10	216.06	209.80	6.26	34.526		
1,100.00	1,096.71	1,093.11	1,092.67	3.58	3.48	-161.68	23.41	-162.83	227.76	220.84	6.92	32.902		
1,200.00	1,196.16	1,192.42	1,191.92	3.94	3.82	-161.75	26.40	-164.55	239.46	231.87	7.59	31.556		
1,300.00	1,295.61	1,291.73	1,291.17	4.30	4.15	-161.82	29.39	-166.27	251.16	242.91	8.26	30.423		
1,400.00	1,395.06	1,391.05	1,390.43	4.66	4.49	-161.88	32.38	-167.99	262.86	253.94	8.92	29.457		
1,500.00	1,494.51	1,490.36	1,489.68	5.02	4.82	-161.93	35.37	-169.71	274.57	264.97	9.59	28.624		
1,600.00	1,593.96	1,589.67	1,588.93	5.39	5.16	-161.98	38.36	-171.43	286.27	276.01	10.26	27.898		
1,700.00	1,693.42	1,688.98	1,688.19	5.75	5.50	-162.03	41.35	-173.15	297.97	287.04	10.93	27.260		
1,800.00	1,792.87	1,788.30	1,787.44	6.11	5.83	-162.07	44.33	-174.87	309.67	298.07	11.60	26.694		
1,900.00	1,892.32	1,887.61	1,886.69	6.48	6.17	-162.11	47.32	-176.59	321.37	309.10	12.27	26.190		
2,000.00	1,991.77	1,986.92	1,985.94	6.84	6.51	-162.15	50.31	-178.31	333.08	320.14	12.94	25.737		
2,100.00	2,091.22	2,086.23	2,085.20	7.21	6.84	-162.18	53.30	-180.03	344.78	331.17	13.61	25.329		
2,200.00	2,190.67	2,185.55	2,184.45	7.57	7.18	-162.21	56.29	-181.75	356.48	342.20	14.28	24.959		
2,300.00	2,290.12	2,284.86	2,283.70	7.93	7.51	-162.24	59.28	-183.47	368.19	353.23	14.95	24.621		
2,400.00	2,389.58	2,384.17	2,382.95	8.30	7.85	-162.27	62.27	-185.19	379.89	364.26	15.63	24.313		
2,500.00	2,489.03	2,483.49	2,482.21	8.66	8.19	-162.30	65.26	-186.92	391.59	375.29	16.30	24.029		
2,600.00	2,588.48	2,582.80	2,581.46	9.03	8.52	-162.32	68.25	-188.64	403.29	386.33	16.97	23.768		
2,700.00	2,687.93	2,682.11	2,680.71	9.39	8.86	-162.35	71.24	-190.36	415.00	397.36	17.64	23.527		
2,800.00	2,787.38	2,781.42	2,779.97	9.76	9.20	-162.37	74.23	-192.08	426.70	408.39	18.31	23.303		
2,900.00	2,886.83	2,880.74	2,879.22	10.12	9.53	-162.39	77.22	-193.80	438.40	419.42	18.98	23.095		
3,000.00	2,986.28	2,980.05	2,978.47	10.49	9.87	-162.41	80.21	-195.52	450.11	430.45	19.65	22.901		
3,100.00	3,085.73	3,079.36	3,077.72	10.85	10.21	-162.43	83.20	-197.24	461.81	441.49	20.33	22.720		
3,200.00	3,185.19	3,178.67	3,176.98	11.22	10.54	-162.45	86.19	-198.96	473.51	452.52	21.00	22.551		
3,300.00	3,284.64	3,277.99	3,276.23	11.58	10.88	-162.46	89.18	-200.68	485.22	463.55	21.67	22.392		
3,400.00	3,384.09	3,377.30	3,375.48	11.95	11.21	-162.48	92.17	-202.40	496.92	474.58	22.34	22.242		
3,500.00	3,483.54	3,476.61	3,474.74	12.31	11.55	-162.50	95.16	-204.12	508.63	485.61	23.01	22.101		
3,600.00	3,582.99	3,575.92	3,573.99	12.68	11.89	-162.51	98.15	-205.84	520.33	496.64	23.69	21.968		
3,700.00	3,682.44	3,675.24	3,673.24	13.04	12.22	-162.52	101.14	-207.56	532.03	507.68	24.36	21.843		
3,800.00	3,781.89	3,774.55	3,772.49	13.41	12.56	-162.54	104.13	-209.28	543.74	518.71	25.03	21.724		
3,900.00	3,881.34	3,873.86	3,871.75	13.77	12.90	-162.55	107.12	-211.01	555.44	529.74	25.70	21.611		
4,000.00	3,980.80	3,973.18	3,971.00	14.14	13.23	-162.56	110.11	-212.73	567.14	540.77	26.37	21.504		
4,100.00	4,080.25	4,072.49	4,070.25	14.50	13.57	-162.58	113.10	-214.45	578.85	551.80	27.05	21.403		
4,200.00	4,179.70	4,171.80	4,169.50	14.87	13.91	-162.59	116.09	-216.17	590.55	562.83	27.72	21.306		
4,300.00	4,279.15	4,271.11	4,268.76	15.23	14.24	-162.60	119.08	-217.89	602.26	573.87	28.39	21.214		
4,400.00	4,378.60	4,370.43	4,368.01	15.60	14.58	-162.61	122.07	-219.61	613.96	584.90	29.06	21.126		
4,500.00	4,478.05	4,469.74	4,467.26	15.96	14.92	-162.62	125.06	-221.33	625.66	595.93	29.73	21.042		
4,599.99	4,577.49	4,569.04	4,566.51	16.33	15.25	-162.63	128.05	-223.05	637.37	606.96	30.41	20.961		
4,700.00	4,677.09	4,668.51	4,665.92	16.65	15.59	-162.66	131.04	-224.77	647.66	616.62	31.04	20.863		
4,800.00	4,776.94	4,768.26	4,765.60	16.91	15.93	-162.58	134.05	-226.50	654.65	623.01	31.64	20.690		
4,899.99	4,876.90	4,868.14	4,865.43	17.16	16.26	-162.39	137.05	-228.23	658.32	626.08	32.25	20.414		
5,000.00	4,976.91	4,974.79	4,972.03	17.44	16.60	-89.59	139.76	-229.79	659.83	626.93	32.89	20.060		
5,099.99	5,076.90	5,079.67	5,076.90	17.74	16.90	-89.56	140.03	-229.95	659.96	626.45	33.51	19.693		

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-3116
Project:	Weld County, CO	TVD Reference:	KBE @ 4745.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4745.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-3116	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		
5,102.66	5,079.57	5,082.34	5,079.57	17.74	16.91	90.44	140.03	-229.95	659.96	626.44	33.53	19.684		
5,200.00	5,176.44	5,179.20	5,176.44	18.01	17.22	91.12	140.03	-229.95	660.08	625.96	34.11	19.350		
5,300.00	5,272.61	5,279.92	5,277.00	18.27	17.52	93.06	136.22	-229.95	660.95	626.29	34.65	19.073		
5,400.00	5,361.89	5,387.00	5,381.23	18.52	17.80	95.08	112.50	-229.95	662.69	627.58	35.11	18.874		
5,500.00	5,441.00	5,500.09	5,483.58	18.76	18.08	96.96	64.92	-229.95	665.06	629.55	35.51	18.729		
5,600.00	5,507.03	5,619.38	5,577.74	19.01	18.35	98.60	-7.89	-229.95	667.67	631.80	35.87	18.614		
5,700.00	5,557.57	5,744.48	5,656.02	19.27	18.58	99.90	-105.09	-229.95	670.07	633.80	36.27	18.473		
5,800.00	5,590.74	5,874.23	5,710.36	19.59	18.82	100.75	-222.54	-229.95	671.79	634.94	36.84	18.233		
5,900.00	5,605.33	6,006.66	5,734.22	19.97	19.23	101.07	-352.44	-229.95	672.45	634.76	37.69	17.840		
5,999.94	5,607.86	6,113.61	5,735.00	20.42	19.69	100.90	-459.37	-229.95	672.08	633.41	38.67	17.379		
6,000.00	5,606.00	6,113.70	5,735.00	20.42	19.69	101.06	-459.47	-229.95	672.44	633.78	38.66	17.395		
6,100.00	5,606.00	6,213.70	5,735.00	20.96	20.22	101.06	-559.47	-229.95	672.44	632.66	39.77	16.906		
6,200.00	5,606.00	6,313.70	5,735.00	21.60	20.85	101.06	-659.47	-229.95	672.44	631.37	41.07	16.375		
6,300.00	5,606.00	6,413.70	5,735.00	22.31	21.56	101.06	-759.47	-229.95	672.44	629.93	42.52	15.816		
6,400.00	5,606.00	6,513.70	5,735.00	23.10	22.35	101.06	-859.47	-229.95	672.44	628.33	44.11	15.245		
6,500.00	5,606.00	6,613.70	5,735.00	23.96	23.21	101.06	-959.47	-229.95	672.44	626.61	45.83	14.673		
6,600.00	5,606.00	6,713.70	5,735.00	24.87	24.12	101.06	-1,059.47	-229.95	672.44	624.78	47.66	14.108		
6,700.00	5,606.00	6,813.70	5,735.00	25.84	25.09	101.06	-1,159.47	-229.95	672.44	622.84	49.60	13.557		
6,800.00	5,606.00	6,913.70	5,735.00	26.85	26.10	101.06	-1,259.47	-229.95	672.44	620.82	51.63	13.025		
6,900.00	5,606.00	7,013.70	5,735.00	27.90	27.16	101.06	-1,359.47	-229.95	672.44	618.71	53.73	12.515		
7,000.00	5,606.00	7,113.70	5,735.00	28.99	28.25	101.06	-1,459.47	-229.96	672.44	616.53	55.91	12.027		
7,100.00	5,606.00	7,213.70	5,735.00	30.11	29.38	101.06	-1,559.47	-229.96	672.45	614.30	58.15	11.564		
7,200.00	5,606.00	7,313.70	5,735.00	31.27	30.54	101.06	-1,659.47	-229.96	672.45	612.00	60.45	11.125		
7,300.00	5,606.00	7,413.70	5,735.00	32.44	31.72	101.06	-1,759.47	-229.96	672.45	609.65	62.79	10.709		
7,400.00	5,606.00	7,513.70	5,735.00	33.65	32.93	101.06	-1,859.47	-229.96	672.45	607.27	65.18	10.317		
7,500.00	5,606.00	7,613.70	5,735.00	34.87	34.15	101.06	-1,959.47	-229.96	672.45	604.84	67.61	9.946		
7,600.00	5,606.00	7,713.70	5,735.00	36.11	35.40	101.06	-2,059.47	-229.96	672.45	602.37	70.08	9.596		
7,700.00	5,606.00	7,813.70	5,735.00	37.37	36.66	101.06	-2,159.47	-229.96	672.45	599.87	72.57	9.266		
7,800.00	5,606.00	7,913.70	5,735.00	38.64	37.94	101.06	-2,259.47	-229.96	672.45	597.35	75.10	8.954		
7,900.00	5,606.00	8,013.70	5,735.00	39.93	39.23	101.06	-2,359.47	-229.96	672.45	594.80	77.65	8.660		
8,000.00	5,606.00	8,113.70	5,735.00	41.22	40.53	101.06	-2,459.47	-229.96	672.45	592.22	80.23	8.382		
8,100.00	5,606.00	8,213.70	5,735.00	42.53	41.85	101.06	-2,559.47	-229.96	672.45	589.63	82.82	8.119		
8,200.00	5,606.00	8,313.70	5,735.00	43.86	43.17	101.06	-2,659.47	-229.96	672.45	587.01	85.44	7.870		
8,300.00	5,606.00	8,413.70	5,735.00	45.19	44.50	101.06	-2,759.47	-229.96	672.45	584.38	88.07	7.635		
8,400.00	5,606.00	8,513.70	5,735.00	46.52	45.85	101.06	-2,859.47	-229.96	672.45	581.73	90.72	7.412		
8,400.22	5,606.00	8,513.92	5,735.00	46.53	45.85	101.06	-2,859.68	-229.96	672.45	581.72	90.73	7.412		
8,500.00	5,606.00	8,620.75	5,735.00	47.80	47.22	101.06	-2,966.51	-229.21	672.68	579.30	93.38	7.204		
8,600.00	5,606.00	8,720.71	5,735.00	49.03	48.58	101.02	-3,066.46	-228.15	675.41	579.47	95.94	7.040		
8,700.00	5,606.00	8,820.66	5,735.00	50.40	49.94	100.96	-3,166.41	-227.08	678.55	579.90	98.65	6.878		
8,800.00	5,606.00	8,920.61	5,735.00	51.78	51.31	100.91	-3,266.35	-226.01	681.69	580.32	101.38	6.724		
8,900.00	5,606.00	9,020.56	5,735.00	53.16	52.69	100.86	-3,366.29	-224.94	684.83	580.72	104.11	6.578		
9,000.00	5,606.00	9,120.50	5,735.00	54.55	54.07	100.81	-3,466.24	-223.88	687.97	581.11	106.86	6.438		
9,100.00	5,606.00	9,220.45	5,735.00	55.94	55.46	100.76	-3,566.18	-222.81	691.11	581.50	109.61	6.305		
9,200.00	5,606.00	9,320.40	5,735.00	57.34	56.85	100.71	-3,666.12	-221.74	694.26	581.88	112.38	6.178		
9,300.00	5,606.00	9,420.35	5,735.00	58.74	58.24	100.66	-3,766.07	-220.68	697.40	582.24	115.15	6.056		
9,400.00	5,606.00	9,520.30	5,735.00	60.15	59.64	100.62	-3,866.01	-219.61	700.54	582.61	117.93	5.940		
9,500.00	5,606.00	9,620.25	5,735.00	61.56	61.04	100.57	-3,965.95	-218.54	703.68	582.96	120.72	5.829		
9,600.00	5,606.00	9,720.20	5,735.00	62.97	62.45	100.52	-4,065.90	-217.48	706.83	583.31	123.52	5.722		
9,700.00	5,606.00	9,820.15	5,735.00	64.39	63.86	100.47	-4,165.84	-216.41	709.97	583.65	126.32	5.620		
9,800.00	5,606.00	9,920.10	5,735.00	65.81	65.27	100.43	-4,265.78	-215.34	713.12	583.99	129.13	5.522		
9,900.00	5,606.00	10,020.04	5,735.00	67.23	66.68	100.38	-4,365.73	-214.27	716.26	584.32	131.94	5.429		
10,000.00	5,606.00	10,119.99	5,735.00	68.65	68.10	100.34	-4,465.67	-213.21	719.41	584.64	134.76	5.338		

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-3116
Project:	Weld County, CO	TVD Reference:	KBE @ 4745.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4745.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-3116	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	10,219.94	5,735.00	70.08	69.52	100.29	-4,565.61	-212.14	722.55	584.97	137.59	5.252		
10,200.00	5,606.00	10,319.89	5,735.00	71.51	70.94	100.24	-4,665.55	-211.07	725.70	585.28	140.42	5.168		
10,300.00	5,606.00	10,419.84	5,735.00	72.94	72.36	100.20	-4,765.50	-210.01	728.85	585.60	143.25	5.088		
10,400.00	5,606.00	10,519.79	5,735.00	74.37	73.79	100.16	-4,865.44	-208.94	731.99	585.91	146.09	5.011		
10,500.00	5,606.00	10,619.74	5,735.00	75.81	75.21	100.11	-4,965.38	-207.87	735.14	586.21	148.93	4.936		
10,600.00	5,606.00	10,719.69	5,735.00	77.25	76.64	100.07	-5,065.33	-206.81	738.29	586.51	151.78	4.864		
10,700.00	5,606.00	10,819.64	5,735.00	78.68	78.07	100.02	-5,165.27	-205.74	741.44	586.81	154.63	4.795		
10,800.00	5,606.00	10,919.58	5,735.00	80.12	79.50	99.98	-5,265.21	-204.67	744.59	587.11	157.48	4.728		
10,900.00	5,606.00	11,019.53	5,735.00	81.57	80.94	99.94	-5,365.16	-203.60	747.74	587.40	160.33	4.664		
11,000.00	5,606.00	11,119.48	5,735.00	83.01	82.37	99.90	-5,465.10	-202.54	750.89	587.69	163.19	4.601		
11,100.00	5,606.00	11,219.43	5,735.00	84.45	83.81	99.86	-5,565.04	-201.47	754.04	587.98	166.06	4.541		
11,200.00	5,606.00	11,319.38	5,735.00	85.90	85.24	99.81	-5,664.99	-200.40	757.19	588.26	168.92	4.482		
11,300.00	5,606.00	11,419.33	5,735.00	87.34	86.68	99.77	-5,764.93	-199.34	760.34	588.55	171.79	4.426		
11,400.00	5,606.00	11,519.28	5,735.00	88.79	88.12	99.73	-5,864.87	-198.27	763.49	588.83	174.66	4.371		
11,500.00	5,606.00	11,619.23	5,735.00	90.24	89.56	99.69	-5,964.82	-197.20	766.64	589.11	177.53	4.318		
11,600.00	5,606.00	11,719.18	5,735.00	91.69	91.01	99.65	-6,064.76	-196.14	769.79	589.38	180.41	4.267		
11,700.00	5,606.00	11,819.12	5,735.00	93.14	92.45	99.61	-6,164.70	-195.07	772.94	589.66	183.29	4.217		
11,800.00	5,606.00	11,919.07	5,735.00	94.59	93.89	99.57	-6,264.65	-194.00	776.10	589.93	186.17	4.169		
11,900.00	5,606.00	12,019.02	5,735.00	96.05	95.34	99.53	-6,364.59	-192.93	779.25	590.20	189.05	4.122		
12,000.00	5,606.00	12,118.97	5,735.00	97.50	96.78	99.49	-6,464.53	-191.87	782.40	590.47	191.93	4.076		
12,100.00	5,606.00	12,218.92	5,735.00	98.96	98.23	99.46	-6,564.48	-190.80	785.56	590.74	194.82	4.032		
12,200.00	5,606.00	12,318.87	5,735.00	100.41	99.68	99.42	-6,664.42	-189.73	788.71	591.00	197.71	3.989		
12,300.00	5,606.00	12,418.82	5,735.00	101.87	101.12	99.38	-6,764.36	-188.67	791.87	591.27	200.60	3.948		
12,400.00	5,606.00	12,518.77	5,735.00	103.32	102.57	99.34	-6,864.30	-187.60	795.02	591.53	203.49	3.907		
12,500.00	5,606.00	12,618.71	5,735.00	104.78	104.02	99.31	-6,964.25	-186.53	798.18	591.80	206.38	3.867		
12,600.00	5,606.00	12,718.66	5,735.00	106.24	105.47	99.27	-7,064.19	-185.47	801.33	592.06	209.28	3.829		
12,700.00	5,606.00	12,818.61	5,735.00	107.70	106.92	99.23	-7,164.13	-184.40	804.49	592.32	212.17	3.792		
12,800.00	5,606.00	12,918.56	5,735.00	109.16	108.37	99.20	-7,264.08	-183.33	807.64	592.57	215.07	3.755		
12,900.00	5,606.00	13,018.51	5,735.00	110.62	109.82	99.16	-7,364.02	-182.27	810.80	592.83	217.97	3.720		
13,000.00	5,606.00	13,118.46	5,735.00	112.08	111.28	99.12	-7,463.96	-181.20	813.96	593.09	220.87	3.685		
13,100.00	5,606.00	13,218.41	5,735.00	113.54	112.73	99.09	-7,563.91	-180.13	817.12	593.34	223.77	3.652		
13,200.00	5,606.00	13,318.36	5,735.00	115.00	114.18	99.05	-7,663.85	-179.06	820.27	593.60	226.68	3.619		
13,300.00	5,606.00	13,418.31	5,735.00	116.46	115.64	99.02	-7,763.79	-178.00	823.43	593.85	229.58	3.587		
13,400.00	5,606.00	13,518.25	5,735.00	117.93	117.09	98.98	-7,863.74	-176.93	826.59	594.10	232.48	3.555		
13,500.00	5,606.00	13,618.20	5,735.00	119.39	118.55	98.95	-7,963.68	-175.86	829.75	594.36	235.39	3.525		
13,600.00	5,606.00	13,718.15	5,735.00	120.85	120.00	98.91	-8,063.62	-174.80	832.91	594.61	238.30	3.495		
13,699.97	5,606.00	13,808.22	5,735.00	122.32	121.31	98.88	-8,153.68	-173.83	836.12	595.14	240.98	3.470 SF		
13,700.31	5,606.00	13,808.22	5,735.00	122.32	121.31	98.88	-8,153.68	-173.83	836.14	595.15	240.98	3.470		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30H-3116
Project:	Weld County, CO	TVD Reference:	KBE @ 4745.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4745.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-3116	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-89.35	1.02	-89.97	89.97					
100.00	100.00	100.00	100.00	0.13	0.13	-89.35	1.02	-89.97	89.97	89.71	0.27	337.804		
200.00	200.00	200.00	200.00	0.47	0.47	-89.35	1.02	-89.97	89.97	89.03	0.94	95.651		
300.00	300.00	300.00	300.00	0.81	0.81	-89.35	1.02	-89.97	89.97	88.36	1.61	55.713 CC		
400.00	399.98	402.17	402.14	1.13	1.15	-161.42	2.35	-88.72	90.43	88.12	2.31	39.204 ES		
500.00	499.84	502.42	502.31	1.47	1.49	-160.59	5.27	-85.96	92.71	89.75	2.96	31.323		
600.00	599.45	602.25	602.07	1.81	1.82	-160.48	8.21	-83.19	98.27	94.64	3.62	27.128		
700.00	698.90	701.99	701.73	2.15	2.15	-160.73	11.14	-80.43	105.47	101.19	4.29	24.614		
800.00	798.35	801.73	801.39	2.50	2.49	-160.94	14.08	-77.67	112.68	107.74	4.95	22.784		
900.00	897.81	901.47	901.04	2.86	2.83	-161.13	17.01	-74.90	119.90	114.29	5.61	21.373		
1,000.00	997.26	1,001.21	1,000.70	3.22	3.16	-161.30	19.95	-72.14	127.11	120.83	6.28	20.252		
1,100.00	1,096.71	1,100.95	1,100.36	3.58	3.50	-161.45	22.88	-69.37	134.32	127.38	6.94	19.343		
1,200.00	1,196.16	1,200.69	1,200.02	3.94	3.84	-161.59	25.82	-66.61	141.54	133.92	7.61	18.589		
1,300.00	1,295.61	1,300.43	1,299.67	4.30	4.17	-161.71	28.75	-63.84	148.75	140.47	8.28	17.956		
1,400.00	1,395.06	1,400.17	1,399.33	4.66	4.51	-161.82	31.69	-61.08	155.97	147.01	8.96	17.416		
1,500.00	1,494.51	1,499.91	1,498.99	5.02	4.85	-161.92	34.62	-58.31	163.19	153.56	9.63	16.951		
1,600.00	1,593.96	1,599.64	1,598.65	5.39	5.19	-162.02	37.56	-55.55	170.40	160.10	10.30	16.545		
1,700.00	1,693.42	1,699.38	1,698.30	5.75	5.53	-162.10	40.49	-52.78	177.62	166.65	10.97	16.189		
1,800.00	1,792.87	1,799.12	1,797.96	6.11	5.86	-162.18	43.43	-50.02	184.84	173.20	11.64	15.874		
1,900.00	1,892.32	1,898.86	1,897.62	6.48	6.20	-162.25	46.36	-47.25	192.06	179.74	12.32	15.592		
2,000.00	1,991.77	1,998.60	1,997.27	6.84	6.54	-162.32	49.30	-44.49	199.28	186.29	12.99	15.340		
2,100.00	2,091.22	2,098.34	2,096.93	7.21	6.88	-162.38	52.23	-41.73	206.50	192.83	13.66	15.112		
2,200.00	2,190.67	2,198.08	2,196.59	7.57	7.22	-162.44	55.17	-38.96	213.71	199.38	14.34	14.905		
2,300.00	2,290.12	2,297.82	2,296.25	7.93	7.55	-162.50	58.10	-36.20	220.93	205.92	15.01	14.717		
2,400.00	2,389.58	2,397.56	2,395.90	8.30	7.89	-162.55	61.04	-33.43	228.15	212.47	15.69	14.545		
2,500.00	2,489.03	2,497.29	2,495.56	8.66	8.23	-162.60	63.97	-30.67	235.37	219.01	16.36	14.387		
2,600.00	2,588.48	2,597.03	2,595.22	9.03	8.57	-162.64	66.90	-27.90	242.59	225.56	17.03	14.242		
2,700.00	2,687.93	2,696.77	2,694.88	9.39	8.91	-162.68	69.84	-25.14	249.81	232.10	17.71	14.107		
2,800.00	2,787.38	2,796.51	2,794.53	9.76	9.25	-162.72	72.77	-22.37	257.03	238.65	18.38	13.983		
2,900.00	2,886.83	2,896.25	2,894.19	10.12	9.58	-162.76	75.71	-19.61	264.25	245.20	19.06	13.867		
3,000.00	2,986.28	2,995.99	2,993.85	10.49	9.92	-162.80	78.64	-16.84	271.47	251.74	19.73	13.759		
3,100.00	3,085.73	3,095.73	3,093.51	10.85	10.26	-162.83	81.58	-14.08	278.69	258.29	20.41	13.658		
3,200.00	3,185.19	3,195.47	3,193.16	11.22	10.60	-162.86	84.51	-11.31	285.91	264.83	21.08	13.563		
3,300.00	3,284.64	3,295.21	3,292.82	11.58	10.94	-162.89	87.45	-8.55	293.13	271.38	21.75	13.475		
3,400.00	3,384.09	3,394.94	3,392.48	11.95	11.28	-162.92	90.38	-5.78	300.35	277.93	22.43	13.392		
3,500.00	3,483.54	3,494.68	3,492.13	12.31	11.61	-162.95	93.32	-3.02	307.58	284.47	23.10	13.313		
3,600.00	3,582.99	3,594.42	3,591.79	12.68	11.95	-162.98	96.25	-0.26	314.80	291.02	23.78	13.239		
3,700.00	3,682.44	3,694.16	3,691.45	13.04	12.29	-163.00	99.19	2.51	322.02	297.56	24.45	13.169		
3,800.00	3,781.89	3,793.90	3,791.11	13.41	12.63	-163.03	102.12	5.27	329.24	304.11	25.13	13.103		
3,900.00	3,881.34	3,893.64	3,890.76	13.77	12.97	-163.05	105.06	8.04	336.46	310.66	25.80	13.040		
4,000.00	3,980.80	3,993.38	3,990.42	14.14	13.31	-163.07	107.99	10.80	343.68	317.20	26.48	12.980		
4,100.00	4,080.25	4,093.12	4,090.08	14.50	13.64	-163.10	110.93	13.57	350.90	323.75	27.15	12.924		
4,200.00	4,179.70	4,192.85	4,189.74	14.87	13.98	-163.12	113.86	16.33	358.12	330.30	27.83	12.870		
4,300.00	4,279.15	4,292.59	4,289.39	15.23	14.32	-163.14	116.80	19.10	365.34	336.84	28.50	12.819		
4,400.00	4,378.60	4,392.33	4,389.05	15.60	14.66	-163.15	119.73	21.86	372.56	343.39	29.18	12.770		
4,500.00	4,478.05	4,492.07	4,488.71	15.96	15.00	-163.17	122.67	24.63	379.79	349.93	29.85	12.723		
4,599.99	4,577.49	4,591.80	4,588.36	16.33	15.34	-163.19	125.60	27.39	387.01	356.48	30.53	12.678		
4,700.00	4,677.09	4,691.64	4,688.11	16.65	15.68	-163.17	128.54	30.16	392.81	361.65	31.16	12.604		
4,800.00	4,776.94	4,791.59	4,787.98	16.91	16.02	-163.00	131.48	32.93	395.29	363.53	31.76	12.445		
4,899.99	4,876.90	4,891.55	4,887.86	17.16	16.35	-162.66	134.42	35.70	394.44	362.07	32.37	12.184		
5,000.00	4,976.91	4,991.35	4,987.57	17.44	16.69	-89.66	137.36	38.47	391.69	358.68	33.00	11.868		
5,099.99	5,076.90	5,082.82	5,079.02	17.74	16.93	-89.42	138.95	39.97	390.06	356.53	33.53	11.634		

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-3116
Project:	Weld County, CO	TVD Reference:	KBE @ 4745.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4745.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-3116	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		
5,124.90	5,101.80	5,105.80	5,102.00	17.80	16.99	90.67	139.02	40.03	389.99	356.35	33.65	11.590		
5,200.00	5,176.44	5,180.24	5,176.44	18.01	17.21	91.75	139.02	40.03	390.15	356.07	34.08	11.448		
5,300.00	5,272.61	5,276.41	5,272.61	18.27	17.52	95.32	139.02	40.03	391.91	357.26	34.65	11.311		
5,400.00	5,361.89	5,376.68	5,372.66	18.52	17.81	100.53	134.22	40.03	398.00	362.79	35.21	11.305		
5,500.00	5,441.00	5,490.07	5,482.45	18.76	18.11	105.80	106.81	40.03	407.94	372.33	35.60	11.458		
5,600.00	5,507.03	5,616.90	5,594.95	19.01	18.44	110.66	48.92	40.03	420.16	384.57	35.59	11.806		
5,700.00	5,557.57	5,759.30	5,700.38	19.27	18.78	114.81	-46.14	40.03	432.39	397.33	35.06	12.332		
5,800.00	5,590.74	5,917.11	5,782.40	19.59	19.14	117.77	-180.25	40.03	441.91	407.45	34.46	12.825		
5,900.00	5,605.33	6,085.75	5,821.59	19.97	19.66	119.07	-343.52	40.03	446.20	411.43	34.77	12.831		
6,000.00	5,606.00	6,201.73	5,823.00	20.42	20.14	119.09	-459.47	40.03	446.28	410.53	35.75	12.485		
6,100.00	5,606.00	6,301.73	5,823.00	20.96	20.67	119.09	-559.47	40.03	446.28	409.50	36.78	12.133		
6,200.00	5,606.00	6,401.73	5,823.00	21.60	21.29	119.09	-659.47	40.03	446.28	408.31	37.97	11.753		
6,300.00	5,606.00	6,501.73	5,823.00	22.31	22.00	119.09	-759.47	40.03	446.28	406.98	39.30	11.356		
6,400.00	5,606.00	6,601.73	5,823.00	23.10	22.78	119.09	-859.47	40.03	446.28	405.52	40.76	10.950		
6,500.00	5,606.00	6,701.73	5,823.00	23.96	23.63	119.09	-959.47	40.03	446.28	403.96	42.32	10.544		
6,600.00	5,606.00	6,801.73	5,823.00	24.87	24.53	119.09	-1,059.47	40.03	446.28	402.29	43.99	10.144		
6,700.00	5,606.00	6,901.73	5,823.00	25.84	25.49	119.09	-1,159.47	40.03	446.28	400.53	45.76	9.754		
6,800.00	5,606.00	7,001.73	5,823.00	26.85	26.50	119.09	-1,259.47	40.03	446.28	398.69	47.60	9.377		
6,900.00	5,606.00	7,101.73	5,823.00	27.90	27.55	119.09	-1,359.47	40.03	446.28	396.78	49.51	9.015		
7,000.00	5,606.00	7,201.73	5,823.00	28.99	28.64	119.09	-1,459.47	40.03	446.28	394.80	51.48	8.669		
7,100.00	5,606.00	7,301.73	5,823.00	30.11	29.76	119.09	-1,559.47	40.03	446.28	392.77	53.51	8.340		
7,200.00	5,606.00	7,401.73	5,823.00	31.27	30.91	119.09	-1,659.47	40.03	446.28	390.69	55.59	8.028		
7,300.00	5,606.00	7,501.73	5,823.00	32.44	32.08	119.09	-1,759.47	40.03	446.28	388.57	57.72	7.732		
7,400.00	5,606.00	7,601.73	5,823.00	33.65	33.28	119.09	-1,859.47	40.03	446.28	386.40	59.88	7.453		
7,500.00	5,606.00	7,701.73	5,823.00	34.87	34.50	119.09	-1,959.47	40.03	446.28	384.20	62.08	7.188		
7,600.00	5,606.00	7,801.73	5,823.00	36.11	35.74	119.09	-2,059.47	40.02	446.28	381.97	64.32	6.939		
7,700.00	5,606.00	7,901.73	5,823.00	37.37	37.00	119.09	-2,159.47	40.02	446.28	379.71	66.58	6.703		
7,800.00	5,606.00	8,001.73	5,823.00	38.64	38.27	119.09	-2,259.47	40.02	446.29	377.42	68.87	6.480		
7,900.00	5,606.00	8,101.73	5,823.00	39.93	39.56	119.09	-2,359.47	40.02	446.29	375.11	71.18	6.270		
8,000.00	5,606.00	8,201.73	5,823.00	41.22	40.85	119.09	-2,459.47	40.02	446.29	372.77	73.51	6.071		
8,100.00	5,606.00	8,301.73	5,823.00	42.53	42.16	119.09	-2,559.47	40.02	446.29	370.42	75.86	5.883		
8,200.00	5,606.00	8,401.73	5,823.00	43.86	43.48	119.09	-2,659.47	40.02	446.29	368.05	78.23	5.705		
8,300.00	5,606.00	8,501.73	5,823.00	45.19	44.81	119.09	-2,759.47	40.02	446.29	365.67	80.62	5.536		
8,400.00	5,606.00	8,601.73	5,823.00	46.52	46.15	119.09	-2,859.47	40.02	446.29	363.27	83.02	5.376		
8,483.36	5,606.00	8,693.80	5,823.00	47.59	47.33	119.08	-2,951.53	40.86	446.42	361.26	85.15	5.242		
8,500.00	5,606.00	8,710.43	5,823.00	47.80	47.55	119.10	-2,968.16	41.23	446.14	360.61	85.53	5.216		
8,600.00	5,606.00	8,810.41	5,823.00	49.03	48.90	119.01	-3,068.12	43.46	447.56	359.64	87.92	5.091		
8,700.00	5,606.00	8,910.39	5,823.00	50.40	50.27	118.88	-3,168.07	45.69	449.34	358.89	90.45	4.968		
8,800.00	5,606.00	9,010.37	5,823.00	51.78	51.64	118.76	-3,268.03	47.92	451.12	358.12	93.00	4.851		
8,900.00	5,606.00	9,110.35	5,823.00	53.16	53.02	118.63	-3,367.98	50.15	452.91	357.34	95.57	4.739		
9,000.00	5,606.00	9,210.33	5,823.00	54.55	54.40	118.51	-3,467.93	52.38	454.69	356.55	98.15	4.633		
9,100.00	5,606.00	9,310.31	5,823.00	55.94	55.79	118.39	-3,567.89	54.61	456.48	355.75	100.74	4.531		
9,200.00	5,606.00	9,410.29	5,823.00	57.34	57.18	118.27	-3,667.84	56.84	458.27	354.94	103.34	4.435		
9,300.00	5,606.00	9,510.27	5,823.00	58.74	58.57	118.15	-3,767.80	59.07	460.07	354.12	105.95	4.342		
9,400.00	5,606.00	9,610.25	5,823.00	60.15	59.97	118.03	-3,867.75	61.30	461.86	353.29	108.57	4.254		
9,500.00	5,606.00	9,710.23	5,823.00	61.56	61.38	117.91	-3,967.71	63.53	463.66	352.45	111.21	4.169		
9,600.00	5,606.00	9,810.21	5,823.00	62.97	62.78	117.79	-4,067.66	65.76	465.46	351.61	113.85	4.088		
9,700.00	5,606.00	9,910.19	5,823.00	64.39	64.19	117.68	-4,167.61	67.99	467.26	350.76	116.50	4.011		
9,800.00	5,606.00	10,010.17	5,823.00	65.81	65.61	117.56	-4,267.57	70.22	469.06	349.91	119.16	3.936		
9,900.00	5,606.00	10,110.15	5,823.00	67.23	67.02	117.45	-4,367.52	72.45	470.87	349.04	121.83	3.865		
10,000.00	5,606.00	10,210.12	5,823.00	68.65	68.44	117.33	-4,467.48	74.68	472.68	348.17	124.50	3.797		
10,100.00	5,606.00	10,310.10	5,823.00	70.08	69.86	117.22	-4,567.43	76.91	474.49	347.30	127.18	3.731		

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-3116
Project:	Weld County, CO	TVD Reference:	KBE @ 4745.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4745.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-3116	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
10,200.00	5,606.00	10,410.08	5,823.00	71.51	71.28	117.11	-4,667.39	79.14	476.30	346.42	129.87	3.667		
10,300.00	5,606.00	10,510.06	5,823.00	72.94	72.71	117.00	-4,767.34	81.37	478.11	345.54	132.57	3.606		
10,400.00	5,606.00	10,610.04	5,823.00	74.37	74.13	116.89	-4,867.30	83.60	479.92	344.65	135.28	3.548		
10,500.00	5,606.00	10,710.02	5,823.00	75.81	75.56	116.78	-4,967.25	85.83	481.74	343.75	137.99	3.491		
10,600.00	5,606.00	10,810.00	5,823.00	77.25	76.99	116.67	-5,067.20	88.06	483.56	342.86	140.70	3.437		
10,700.00	5,606.00	10,909.98	5,823.00	78.68	78.42	116.56	-5,167.16	90.29	485.38	341.95	143.42	3.384		
10,800.00	5,606.00	11,009.96	5,823.00	80.12	79.86	116.45	-5,267.11	92.52	487.20	341.05	146.15	3.334		
10,900.00	5,606.00	11,109.94	5,823.00	81.57	81.29	116.35	-5,367.07	94.75	489.02	340.14	148.88	3.285		
11,000.00	5,606.00	11,209.92	5,823.00	83.01	82.73	116.24	-5,467.02	96.98	490.85	339.22	151.62	3.237		
11,100.00	5,606.00	11,309.90	5,823.00	84.45	84.17	116.14	-5,566.98	99.21	492.67	338.31	154.37	3.192		
11,200.00	5,606.00	11,409.88	5,823.00	85.90	85.61	116.03	-5,666.93	101.44	494.50	337.38	157.11	3.147		
11,300.00	5,606.00	11,509.86	5,823.00	87.34	87.05	115.93	-5,766.89	103.67	496.33	336.46	159.87	3.105		
11,400.00	5,606.00	11,609.83	5,823.00	88.79	88.49	115.83	-5,866.84	105.90	498.16	335.53	162.63	3.063		
11,500.00	5,606.00	11,709.81	5,823.00	90.24	89.93	115.73	-5,966.79	108.13	499.99	334.60	165.39	3.023		
11,600.00	5,606.00	11,809.79	5,823.00	91.69	91.38	115.63	-6,066.75	110.36	501.83	333.67	168.16	2.984		
11,700.00	5,606.00	11,909.77	5,823.00	93.14	92.82	115.53	-6,166.70	112.59	503.66	332.73	170.93	2.947		
11,800.00	5,606.00	12,009.75	5,823.00	94.59	94.27	115.43	-6,266.66	114.82	505.50	331.80	173.70	2.910		
11,900.00	5,606.00	12,109.73	5,823.00	96.05	95.71	115.33	-6,366.61	117.05	507.34	330.86	176.48	2.875		
12,000.00	5,606.00	12,209.71	5,823.00	97.50	97.16	115.23	-6,466.57	119.28	509.18	329.91	179.27	2.840		
12,100.00	5,606.00	12,309.69	5,823.00	98.96	98.61	115.13	-6,566.52	121.50	511.02	328.97	182.05	2.807		
12,200.00	5,606.00	12,409.67	5,823.00	100.41	100.06	115.04	-6,666.48	123.73	512.86	328.02	184.84	2.775		
12,300.00	5,606.00	12,509.65	5,823.00	101.87	101.51	114.94	-6,766.43	125.96	514.71	327.07	187.64	2.743		
12,400.00	5,606.00	12,609.63	5,823.00	103.32	102.96	114.84	-6,866.38	128.19	516.55	326.12	190.44	2.712		
12,500.00	5,606.00	12,709.61	5,823.00	104.78	104.41	114.75	-6,966.34	130.42	518.40	325.16	193.24	2.683		
12,600.00	5,606.00	12,809.59	5,823.00	106.24	105.87	114.66	-7,066.29	132.65	520.25	324.21	196.04	2.654		
12,700.00	5,606.00	12,909.57	5,823.00	107.70	107.32	114.56	-7,166.25	134.88	522.10	323.25	198.85	2.626		
12,800.00	5,606.00	13,009.54	5,823.00	109.16	108.77	114.47	-7,266.20	137.11	523.95	322.29	201.66	2.598		
12,900.00	5,606.00	13,109.52	5,823.00	110.62	110.23	114.38	-7,366.16	139.34	525.81	321.33	204.48	2.571		
13,000.00	5,606.00	13,209.50	5,823.00	112.08	111.68	114.29	-7,466.11	141.57	527.66	320.36	207.30	2.545		
13,100.00	5,606.00	13,309.48	5,823.00	113.54	113.14	114.20	-7,566.07	143.80	529.52	319.40	210.12	2.520		
13,200.00	5,606.00	13,409.46	5,823.00	115.00	114.59	114.11	-7,666.02	146.03	531.37	318.43	212.94	2.495		
13,300.00	5,606.00	13,509.44	5,823.00	116.46	116.05	114.02	-7,765.97	148.26	533.23	317.46	215.77	2.471		
13,400.00	5,606.00	13,609.42	5,823.00	117.93	117.51	113.93	-7,865.93	150.49	535.09	316.49	218.60	2.448		
13,500.00	5,606.00	13,709.40	5,823.00	119.39	118.96	113.84	-7,965.88	152.72	536.95	315.52	221.43	2.425		
13,600.00	5,606.00	13,809.38	5,823.00	120.85	120.42	113.75	-8,065.84	154.95	538.81	314.55	224.26	2.403		
13,699.97	5,606.00	13,897.62	5,823.00	122.32	121.71	113.68	-8,154.05	156.92	540.80	314.07	226.73	2.385 SF		
13,700.31	5,606.00	13,897.62	5,823.00	122.32	121.71	113.68	-8,154.05	156.92	540.82	314.09	226.73	2.385		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30H-3116
Project:	Weld County, CO	TVD Reference:	KBE @ 4745.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4745.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-3116	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-89.98	0.01	-29.99	29.99					
100.00	100.00	100.00	100.00	0.13	0.13	-89.98	0.01	-29.99	29.99	29.72	0.27	112.594		
200.00	200.00	200.00	200.00	0.47	0.47	-89.98	0.01	-29.99	29.99	29.05	0.94	31.882		
300.00	300.00	300.00	300.00	0.81	0.81	-89.98	0.01	-29.99	29.99	28.37	1.61	18.570 CC		
400.00	399.98	400.97	400.95	1.13	1.14	-162.23	0.70	-28.35	30.03	27.71	2.32	12.940		
500.00	499.84	501.94	501.77	1.47	1.48	-161.28	2.79	-23.44	30.17	27.11	3.06	9.844		
600.00	599.45	602.11	601.65	1.81	1.82	-160.62	5.79	-16.39	31.46	27.74	3.71	8.469		
700.00	698.90	702.07	701.31	2.15	2.15	-160.99	8.81	-9.29	34.34	29.99	4.35	7.886		
800.00	798.35	802.03	800.97	2.50	2.50	-161.29	11.82	-2.19	37.23	32.23	5.00	7.442		
900.00	897.81	901.99	900.63	2.86	2.84	-161.55	14.84	4.91	40.11	34.46	5.66	7.090		
1,000.00	997.26	1,001.95	1,000.29	3.22	3.19	-161.78	17.86	12.01	43.00	36.69	6.32	6.807		
1,100.00	1,096.71	1,101.90	1,099.95	3.58	3.54	-161.98	20.87	19.11	45.89	38.91	6.98	6.574		
1,200.00	1,196.16	1,201.86	1,199.61	3.94	3.88	-162.15	23.89	26.20	48.78	41.13	7.65	6.379		
1,300.00	1,295.61	1,301.82	1,299.27	4.30	4.23	-162.31	26.91	33.30	51.67	43.36	8.31	6.215		
1,400.00	1,395.06	1,401.78	1,398.93	4.66	4.58	-162.45	29.92	40.40	54.56	45.58	8.98	6.073		
1,500.00	1,494.51	1,501.74	1,498.59	5.02	4.93	-162.57	32.94	47.50	57.45	47.80	9.65	5.951		
1,600.00	1,593.96	1,601.70	1,598.25	5.39	5.28	-162.68	35.96	54.60	60.34	50.01	10.32	5.844		
1,700.00	1,693.42	1,701.65	1,697.91	5.75	5.63	-162.79	38.97	61.70	63.23	52.23	11.00	5.750		
1,800.00	1,792.87	1,801.61	1,797.57	6.11	5.98	-162.88	41.99	68.80	66.12	54.45	11.67	5.666		
1,900.00	1,892.32	1,901.57	1,897.23	6.48	6.33	-162.97	45.01	75.89	69.01	56.67	12.34	5.591		
2,000.00	1,991.77	2,001.53	1,996.89	6.84	6.68	-163.04	48.03	82.99	71.90	58.88	13.02	5.524		
2,100.00	2,091.22	2,101.49	2,096.55	7.21	7.03	-163.12	51.04	90.09	74.79	61.10	13.69	5.463		
2,200.00	2,190.67	2,201.44	2,196.21	7.57	7.38	-163.18	54.06	97.19	77.68	63.32	14.37	5.408		
2,300.00	2,290.12	2,301.40	2,295.88	7.93	7.74	-163.25	57.08	104.29	80.57	65.53	15.04	5.357		
2,400.00	2,389.58	2,401.36	2,395.54	8.30	8.09	-163.30	60.09	111.39	83.47	67.75	15.72	5.311		
2,500.00	2,489.03	2,501.32	2,495.20	8.66	8.44	-163.36	63.11	118.49	86.36	69.97	16.39	5.269		
2,600.00	2,588.48	2,601.28	2,594.86	9.03	8.79	-163.41	66.13	125.58	89.25	72.18	17.07	5.230		
2,700.00	2,687.93	2,701.24	2,694.52	9.39	9.14	-163.46	69.14	132.68	92.14	74.40	17.74	5.193		
2,800.00	2,787.38	2,801.19	2,794.18	9.76	9.49	-163.50	72.16	139.78	95.03	76.61	18.42	5.160		
2,900.00	2,886.83	2,901.15	2,893.84	10.12	9.84	-163.54	75.18	146.88	97.92	78.83	19.09	5.129		
3,000.00	2,986.28	3,001.11	2,993.50	10.49	10.19	-163.58	78.19	153.98	100.82	81.05	19.77	5.100		
3,100.00	3,085.73	3,101.07	3,093.16	10.85	10.54	-163.62	81.21	161.08	103.71	83.26	20.45	5.072		
3,200.00	3,185.19	3,201.03	3,192.82	11.22	10.89	-163.66	84.23	168.18	106.60	85.48	21.12	5.047		
3,300.00	3,284.64	3,300.98	3,292.48	11.58	11.25	-163.69	87.24	175.27	109.49	87.69	21.80	5.023		
3,400.00	3,384.09	3,400.94	3,392.14	11.95	11.60	-163.72	90.26	182.37	112.38	89.91	22.47	5.000		
3,500.00	3,483.54	3,500.90	3,491.80	12.31	11.95	-163.75	93.28	189.47	115.27	92.12	23.15	4.979		
3,600.00	3,582.99	3,600.86	3,591.46	12.68	12.30	-163.78	96.30	196.57	118.17	94.34	23.83	4.959		
3,700.00	3,682.44	3,700.82	3,691.12	13.04	12.65	-163.81	99.31	203.67	121.06	96.55	24.50	4.940		
3,800.00	3,781.89	3,800.77	3,790.78	13.41	13.00	-163.83	102.33	210.77	123.95	98.77	25.18	4.922		
3,900.00	3,881.34	3,900.73	3,890.44	13.77	13.35	-163.86	105.35	217.87	126.84	100.98	25.86	4.905		
4,000.00	3,980.80	4,000.69	3,990.10	14.14	13.70	-163.88	108.36	224.96	129.73	103.20	26.53	4.889		
4,100.00	4,080.25	4,100.65	4,089.76	14.50	14.06	-163.90	111.38	232.06	132.63	105.41	27.21	4.874		
4,200.00	4,179.70	4,200.61	4,189.42	14.87	14.41	-163.93	114.40	239.16	135.52	107.63	27.89	4.859		
4,300.00	4,279.15	4,300.57	4,289.08	15.23	14.76	-163.95	117.41	246.26	138.41	109.84	28.56	4.845		
4,400.00	4,378.60	4,400.52	4,388.74	15.60	15.11	-163.97	120.43	253.36	141.30	112.06	29.24	4.832		
4,500.00	4,478.05	4,500.48	4,488.40	15.96	15.46	-163.99	123.45	260.46	144.19	114.28	29.92	4.820		
4,599.99	4,577.49	4,600.43	4,588.05	16.33	15.81	-164.00	126.46	267.56	147.09	116.49	30.60	4.807		
4,700.00	4,677.09	4,700.42	4,687.74	16.65	16.16	-163.87	129.48	274.66	148.55	117.32	31.24	4.756		
4,800.00	4,776.94	4,800.39	4,787.41	16.91	16.51	-163.34	132.50	281.76	146.69	114.85	31.84	4.607		
4,899.99	4,876.90	4,896.09	4,882.92	17.16	16.81	-162.64	134.83	287.25	142.87	110.48	32.38	4.412		
5,000.00	4,976.91	4,991.72	4,978.51	17.44	17.05	-89.62	135.92	289.81	140.20	107.32	32.88	4.264		
5,052.98	5,029.89	5,043.10	5,029.89	17.60	17.19	-89.59	136.01	290.01	139.99	106.83	33.16	4.222		

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-3116
Project:	Weld County, CO	TVD Reference:	KBE @ 4745.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4745.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-3116	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		
5,099.99	5,076.90	5,090.12	5,076.90	17.74	17.32	-89.59	136.01	290.01	139.99	106.55	33.44	4.186		
5,100.18	5,077.09	5,090.30	5,077.09	17.74	17.32	-89.59	136.01	290.01	139.99	106.55	33.44	4.186		
5,200.00	5,176.44	5,189.65	5,176.44	18.01	17.63	93.65	136.01	290.01	140.28	106.22	34.06	4.119		
5,300.00	5,272.61	5,289.85	5,276.49	18.27	17.91	102.65	132.26	290.01	143.69	108.94	34.75	4.135		
5,400.00	5,361.89	5,396.01	5,379.86	18.52	18.20	111.42	108.94	290.01	150.95	115.70	35.25	4.282		
5,500.00	5,441.00	5,508.09	5,481.48	18.76	18.49	118.84	62.16	290.01	160.68	125.63	35.05	4.584		
5,600.00	5,507.03	5,626.37	5,575.26	19.01	18.78	124.68	-9.51	290.01	171.11	137.21	33.91	5.046		
5,700.00	5,557.57	5,750.57	5,653.70	19.27	19.10	128.89	-105.42	290.01	180.48	148.36	32.12	5.619		
5,800.00	5,590.74	5,879.66	5,708.81	19.59	19.47	131.53	-221.78	290.01	187.23	156.65	30.58	6.123		
5,900.00	5,605.33	6,011.78	5,733.91	19.97	19.94	132.62	-351.14	290.01	190.26	159.84	30.41	6.256		
6,000.00	5,606.00	6,120.13	5,735.00	20.42	20.42	132.66	-459.47	290.01	190.36	159.05	31.31	6.080		
6,100.00	5,606.00	6,220.13	5,735.00	20.96	20.97	132.66	-559.47	290.01	190.36	158.10	32.26	5.901		
6,200.00	5,606.00	6,320.13	5,735.00	21.60	21.60	132.66	-659.47	290.01	190.36	157.02	33.34	5.710		
6,300.00	5,606.00	6,420.13	5,735.00	22.31	22.31	132.66	-759.47	290.01	190.36	155.83	34.54	5.512		
6,400.00	5,606.00	6,520.13	5,735.00	23.10	23.09	132.66	-859.47	290.01	190.36	154.52	35.84	5.311		
6,500.00	5,606.00	6,620.13	5,735.00	23.96	23.94	132.66	-959.47	290.01	190.36	153.12	37.24	5.112		
6,600.00	5,606.00	6,720.13	5,735.00	24.87	24.85	132.66	-1,059.47	290.01	190.36	151.64	38.72	4.916		
6,700.00	5,606.00	6,820.13	5,735.00	25.84	25.81	132.66	-1,159.47	290.01	190.36	150.08	40.28	4.726		
6,800.00	5,606.00	6,920.13	5,735.00	26.85	26.82	132.66	-1,259.47	290.01	190.36	148.46	41.91	4.542		
6,900.00	5,606.00	7,020.13	5,735.00	27.90	27.87	132.66	-1,359.47	290.01	190.36	146.77	43.59	4.367		
7,000.00	5,606.00	7,120.13	5,735.00	28.99	28.96	132.66	-1,459.47	290.01	190.36	145.03	45.33	4.199		
7,100.00	5,606.00	7,220.13	5,735.00	30.11	30.08	132.66	-1,559.47	290.01	190.36	143.25	47.12	4.040		
7,200.00	5,606.00	7,320.13	5,735.00	31.27	31.23	132.66	-1,659.47	290.01	190.36	141.42	48.94	3.889		
7,300.00	5,606.00	7,420.13	5,735.00	32.44	32.40	132.66	-1,759.47	290.01	190.36	139.56	50.81	3.747		
7,400.00	5,606.00	7,520.13	5,735.00	33.65	33.60	132.66	-1,859.47	290.01	190.36	137.66	52.71	3.612		
7,500.00	5,606.00	7,620.13	5,735.00	34.87	34.82	132.66	-1,959.47	290.01	190.36	135.73	54.63	3.484		
7,600.00	5,606.00	7,720.13	5,735.00	36.11	36.06	132.66	-2,059.47	290.01	190.36	133.78	56.59	3.364		
7,700.00	5,606.00	7,820.13	5,735.00	37.37	37.32	132.66	-2,159.47	290.01	190.36	131.80	58.57	3.250		
7,800.00	5,606.00	7,920.13	5,735.00	38.64	38.59	132.66	-2,259.47	290.01	190.36	129.80	60.57	3.143		
7,900.00	5,606.00	8,020.13	5,735.00	39.93	39.87	132.66	-2,359.47	290.01	190.36	127.78	62.59	3.041		
8,000.00	5,606.00	8,120.13	5,735.00	41.22	41.17	132.66	-2,459.47	290.01	190.36	125.74	64.63	2.946		
8,100.00	5,606.00	8,220.13	5,735.00	42.53	42.48	132.66	-2,559.47	290.01	190.37	123.68	66.68	2.855		
8,200.00	5,606.00	8,320.13	5,735.00	43.86	43.80	132.66	-2,659.47	290.01	190.37	121.61	68.75	2.769		
8,300.00	5,606.00	8,420.13	5,735.00	45.19	45.13	132.66	-2,759.47	290.01	190.37	119.53	70.83	2.687		
8,400.00	5,606.00	8,520.13	5,735.00	46.52	46.46	132.66	-2,859.47	290.01	190.37	117.44	72.93	2.610		
8,500.00	5,606.00	8,623.97	5,735.00	47.80	47.77	132.68	-2,963.29	291.08	190.31	115.21	75.10	2.534		
8,567.71	5,606.00	8,693.12	5,735.00	48.63	48.62	132.73	-3,032.41	293.54	190.10	113.68	76.42	2.488		
8,600.00	5,606.00	8,725.41	5,735.00	49.03	49.05	132.63	-3,064.67	294.75	190.48	113.30	77.17	2.468		
8,700.00	5,606.00	8,825.41	5,735.00	50.40	50.42	132.53	-3,164.60	298.53	190.84	111.43	79.41	2.403		
8,800.00	5,606.00	8,925.41	5,735.00	51.78	51.79	132.43	-3,264.53	302.30	191.20	109.55	81.65	2.342		
8,900.00	5,606.00	9,025.41	5,735.00	53.16	53.17	132.33	-3,364.46	306.07	191.57	107.65	83.92	2.283		
9,000.00	5,606.00	9,125.41	5,735.00	54.55	54.56	132.23	-3,464.38	309.84	191.93	105.74	86.19	2.227		
9,100.00	5,606.00	9,225.41	5,735.00	55.94	55.95	132.13	-3,564.31	313.62	192.30	103.82	88.47	2.173		
9,200.00	5,606.00	9,325.41	5,735.00	57.34	57.35	132.03	-3,664.24	317.39	192.66	101.89	90.77	2.122		
9,300.00	5,606.00	9,425.40	5,735.00	58.74	58.75	131.94	-3,764.17	321.16	193.03	99.95	93.08	2.074		
9,400.00	5,606.00	9,525.40	5,735.00	60.15	60.15	131.84	-3,864.09	324.93	193.39	98.00	95.40	2.027		
9,500.00	5,606.00	9,625.40	5,735.00	61.56	61.56	131.74	-3,964.02	328.70	193.76	96.04	97.72	1.983		
9,600.00	5,606.00	9,725.40	5,735.00	62.97	62.97	131.65	-4,063.95	332.48	194.13	94.07	100.06	1.940		
9,700.00	5,606.00	9,825.40	5,735.00	64.39	64.38	131.55	-4,163.88	336.25	194.50	92.09	102.41	1.899		
9,800.00	5,606.00	9,925.40	5,735.00	65.81	65.80	131.45	-4,263.80	340.02	194.87	90.10	104.76	1.860		
9,900.00	5,606.00	10,025.40	5,735.00	67.23	67.22	131.36	-4,363.73	343.79	195.23	88.11	107.13	1.822		
10,000.00	5,606.00	10,125.40	5,735.00	68.65	68.64	131.26	-4,463.66	347.56	195.60	86.10	109.50	1.786		

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-3116
Project:	Weld County, CO	TVD Reference:	KBE @ 4745.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4745.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-3116	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-3148 - 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	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbore	Centre	Between	Between	Minimum	Separation	Warning				
Depth	Depth	Depth	Depth			Toolface	+N/-S	+E/-W	Centres	Ellipses	Separation	Factor					
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)						
10,100.00	5,606.00	10,225.39	5,735.00	70.08	70.06	131.17	-4,563.59	351.34	195.98	84.09	111.88	1.752					
10,200.00	5,606.00	10,325.39	5,735.00	71.51	71.49	131.07	-4,663.51	355.11	196.35	82.07	114.27	1.718					
10,300.00	5,606.00	10,425.39	5,735.00	72.94	72.92	130.98	-4,763.44	358.88	196.72	80.05	116.67	1.686					
10,400.00	5,606.00	10,525.39	5,735.00	74.37	74.35	130.88	-4,863.37	362.65	197.09	78.02	119.07	1.655					
10,500.00	5,606.00	10,625.39	5,735.00	75.81	75.78	130.79	-4,963.30	366.43	197.46	75.98	121.48	1.625					
10,600.00	5,606.00	10,725.39	5,735.00	77.25	77.22	130.70	-5,063.23	370.20	197.84	73.93	123.90	1.597					
10,700.00	5,606.00	10,825.39	5,735.00	78.68	78.65	130.60	-5,163.15	373.97	198.21	71.88	126.33	1.569					
10,800.00	5,606.00	10,925.39	5,735.00	80.12	80.09	130.51	-5,263.08	377.74	198.58	69.82	128.76	1.542					
10,900.00	5,606.00	11,025.38	5,735.00	81.57	81.53	130.42	-5,363.01	381.51	198.96	67.76	131.20	1.516					
11,000.00	5,606.00	11,125.38	5,735.00	83.01	82.97	130.33	-5,462.94	385.29	199.33	65.69	133.64	1.492	Level 3				
11,100.00	5,606.00	11,225.38	5,735.00	84.45	84.41	130.24	-5,562.86	389.06	199.71	63.61	136.09	1.467	Level 3				
11,200.00	5,606.00	11,325.38	5,735.00	85.90	85.86	130.15	-5,662.79	392.83	200.09	61.53	138.55	1.444	Level 3				
11,300.00	5,606.00	11,425.38	5,735.00	87.34	87.30	130.05	-5,762.72	396.60	200.46	59.45	141.02	1.422	Level 3				
11,400.00	5,606.00	11,525.38	5,735.00	88.79	88.75	129.96	-5,862.65	400.37	200.84	57.35	143.48	1.400	Level 3				
11,500.00	5,606.00	11,625.38	5,735.00	90.24	90.19	129.87	-5,962.57	404.15	201.22	55.26	145.96	1.379	Level 3				
11,600.00	5,606.00	11,725.38	5,735.00	91.69	91.64	129.78	-6,062.50	407.92	201.60	53.15	148.44	1.358	Level 3				
11,700.00	5,606.00	11,825.38	5,735.00	93.14	93.09	129.69	-6,162.43	411.69	201.97	51.05	150.93	1.338	Level 3				
11,800.00	5,606.00	11,925.37	5,735.00	94.59	94.54	129.61	-6,262.36	415.46	202.35	48.93	153.42	1.319	Level 3				
11,900.00	5,606.00	12,025.37	5,735.00	96.05	95.99	129.52	-6,362.28	419.24	202.73	46.82	155.92	1.300	Level 3				
12,000.00	5,606.00	12,125.37	5,735.00	97.50	97.44	129.43	-6,462.21	423.01	203.11	44.69	158.42	1.282	Level 3				
12,100.00	5,606.00	12,225.37	5,735.00	98.96	98.90	129.34	-6,562.14	426.78	203.49	42.57	160.93	1.265	Level 3				
12,200.00	5,606.00	12,325.37	5,735.00	100.41	100.35	129.25	-6,662.07	430.55	203.88	40.44	163.44	1.247	Level 2				
12,300.00	5,606.00	12,425.37	5,735.00	101.87	101.80	129.17	-6,761.99	434.32	204.26	38.30	165.96	1.231	Level 2				
12,400.00	5,606.00	12,525.37	5,735.00	103.32	103.26	129.08	-6,861.92	438.10	204.64	36.16	168.48	1.215	Level 2				
12,500.00	5,606.00	12,625.37	5,735.00	104.78	104.71	128.99	-6,961.85	441.87	205.02	34.01	171.01	1.199	Level 2				
12,600.00	5,606.00	12,725.36	5,735.00	106.24	106.17	128.91	-7,061.78	445.64	205.40	31.87	173.54	1.184	Level 2				
12,700.00	5,606.00	12,825.36	5,735.00	107.70	107.63	128.82	-7,161.71	449.41	205.79	29.71	176.08	1.169	Level 2				
12,800.00	5,606.00	12,925.36	5,735.00	109.16	109.09	128.73	-7,261.63	453.18	206.17	27.55	178.62	1.154	Level 2				
12,900.00	5,606.00	13,025.36	5,735.00	110.62	110.54	128.65	-7,361.56	456.96	206.56	25.39	181.16	1.140	Level 2				
13,000.00	5,606.00	13,125.36	5,735.00	112.08	112.00	128.56	-7,461.49	460.73	206.94	23.23	183.71	1.126	Level 2				
13,100.00	5,606.00	13,225.36	5,735.00	113.54	113.46	128.48	-7,561.42	464.50	207.33	21.06	186.27	1.113	Level 2				
13,200.00	5,606.00	13,325.36	5,735.00	115.00	114.92	128.39	-7,661.34	468.27	207.71	18.88	188.83	1.100	Level 2				
13,300.00	5,606.00	13,425.36	5,735.00	116.46	116.38	128.31	-7,761.27	472.05	208.10	16.70	191.39	1.087	Level 2				
13,400.00	5,606.00	13,525.35	5,735.00	117.93	117.84	128.23	-7,861.20	475.82	208.49	14.52	193.96	1.075	Level 2				
13,500.00	5,606.00	13,625.35	5,735.00	119.39	119.31	128.14	-7,961.13	479.59	208.87	12.34	196.53	1.063	Level 2				
13,600.00	5,606.00	13,725.35	5,735.00	120.85	120.77	128.06	-8,061.05	483.36	209.26	10.15	199.11	1.051	Level 2				
13,600.26	5,606.00	13,725.62	5,735.00	120.86	120.77	128.06	-8,061.32	483.37	209.26	10.14	199.12	1.051	Level 2				
13,699.97	5,606.00	13,819.43	5,735.00	122.32	122.14	127.98	-8,155.06	486.91	209.73	8.38	201.35	1.042	Level 2, ES, SF				
13,700.31	5,606.00	13,819.43	5,735.00	122.32	122.14	127.98	-8,155.06	486.91	209.74	8.40	201.34	1.042	Level 2				



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30H-3116
Project:	Weld County, CO	TVD Reference:	KBE @ 4745.00usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4745.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30H-3116	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 31-T10N-R57W - Maddy #1-31 - Wellbore #1 - Wellbore #1												Offset Site Error:	0.00 usft
Survey Program: 6430-MWD												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
11,700.00	5,606.00	5,579.00	5,579.00	93.14	9.38	90.00	-7,592.98	126.27	1,502.50	1,452.47	50.03	30.033	
11,800.00	5,606.00	5,579.00	5,579.00	94.59	9.38	90.00	-7,592.98	126.27	1,408.63	1,356.44	52.20	26.987	
11,900.00	5,606.00	5,579.00	5,579.00	96.05	9.38	90.00	-7,592.98	126.27	1,315.67	1,260.98	54.69	24.059	
12,000.00	5,606.00	5,579.00	5,579.00	97.50	9.38	90.00	-7,592.98	126.27	1,223.81	1,166.26	57.56	21.263	
12,100.00	5,606.00	5,579.00	5,579.00	98.96	9.38	90.00	-7,592.98	126.27	1,133.34	1,072.45	60.89	18.613	
12,200.00	5,606.00	5,579.00	5,579.00	100.41	9.38	90.00	-7,592.98	126.27	1,044.60	979.83	64.77	16.128	
12,300.00	5,606.00	5,579.00	5,579.00	101.87	9.38	90.00	-7,592.98	126.27	958.09	888.78	69.31	13.823	
12,400.00	5,606.00	5,579.00	5,579.00	103.32	9.38	90.00	-7,592.98	126.27	874.46	799.83	74.62	11.718	
12,500.00	5,606.00	5,579.00	5,579.00	104.78	9.38	90.00	-7,592.98	126.27	794.61	713.80	80.82	9.832	
12,600.00	5,606.00	5,579.00	5,579.00	106.24	9.38	90.00	-7,592.98	126.27	719.83	631.86	87.96	8.183	
12,700.00	5,606.00	5,579.00	5,579.00	107.70	9.38	90.00	-7,592.98	126.27	651.83	555.84	95.99	6.791	
12,800.00	5,606.00	5,579.00	5,579.00	109.16	9.38	90.00	-7,592.98	126.27	592.98	488.42	104.56	5.671	
12,900.00	5,606.00	5,579.00	5,579.00	110.62	9.38	90.00	-7,592.98	126.27	546.23	433.38	112.85	4.840	
13,000.00	5,606.00	5,579.00	5,579.00	112.08	9.38	90.00	-7,592.98	126.27	514.88	395.39	119.50	4.309	
13,100.00	5,606.00	5,579.00	5,579.00	113.54	9.38	90.00	-7,592.98	126.27	501.84	378.92	122.92	4.083	
13,116.31	5,606.00	5,579.00	5,579.00	113.78	9.38	90.00	-7,592.98	126.27	501.57	378.49	123.09	4.075	CC, ES, SF
13,200.00	5,606.00	5,579.00	5,579.00	115.00	9.38	90.00	-7,592.98	126.27	508.51	386.33	122.18	4.162	
13,300.00	5,606.00	5,579.00	5,579.00	116.46	9.38	90.00	-7,592.98	126.27	534.15	416.47	117.68	4.539	
13,400.00	5,606.00	5,579.00	5,579.00	117.93	9.38	90.00	-7,592.98	126.27	576.24	465.44	110.80	5.201	
13,500.00	5,606.00	5,579.00	5,579.00	119.39	9.38	90.00	-7,592.98	126.27	631.50	528.46	103.04	6.129	
13,600.00	5,606.00	5,579.00	5,579.00	120.85	9.38	90.00	-7,592.98	126.27	696.80	601.38	95.42	7.302	
13,699.97	5,606.00	5,579.00	5,579.00	122.32	9.38	90.00	-7,592.98	126.27	769.57	681.09	88.48	8.698	
13,700.31	5,606.00	5,579.00	5,579.00	122.32	9.38	90.00	-7,592.98	126.27	769.83	681.37	88.45	8.703	



WOG

Anticollision Report

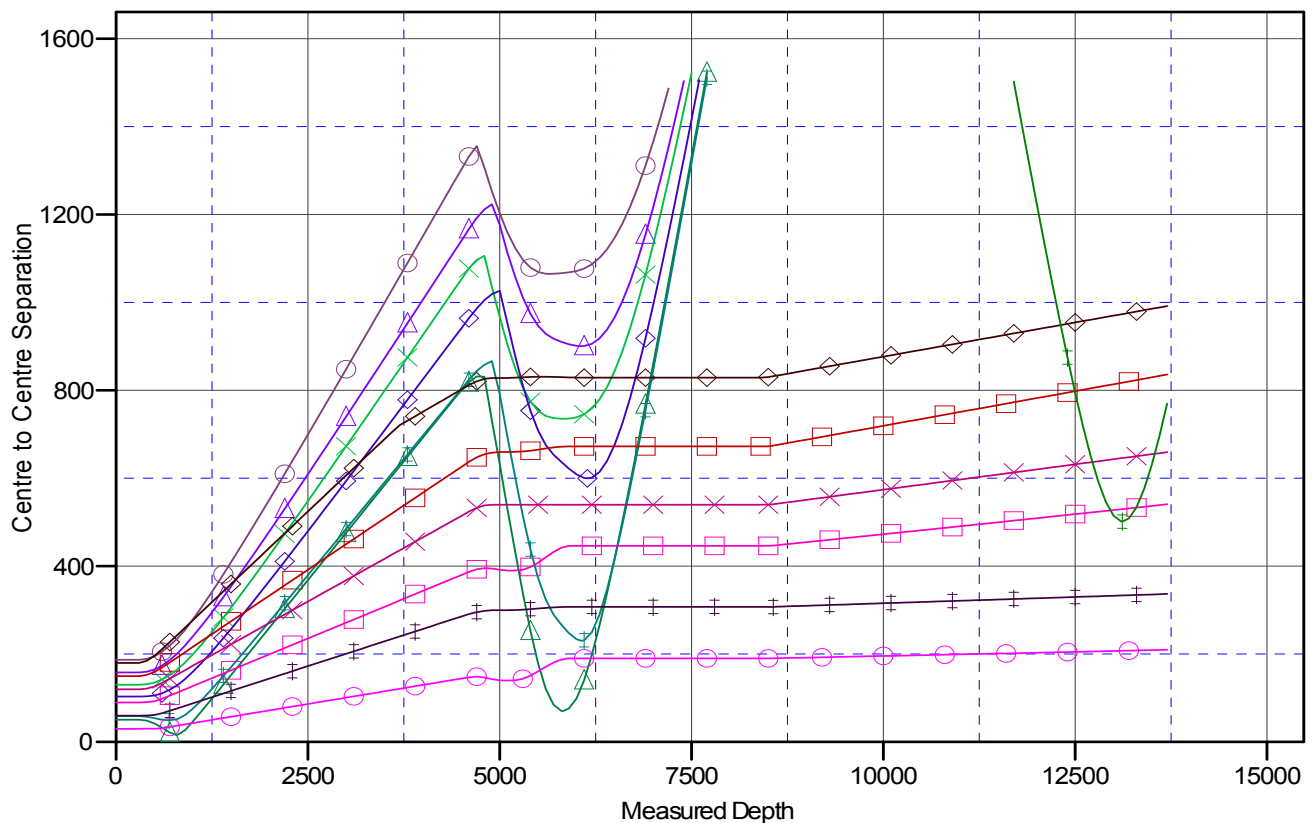
Company: Whiting Petroleum Corp.
Project: Weld County, CO
Reference Site: Sec 30-T10N-R57W
Site Error: 0.00 usft
Reference Well: Horsetail #30H-3116
Well Error: 0.00 usft
Reference Wellbore: Hz
Reference Design: APD

Local Co-ordinate Reference: Well Horsetail #30H-3116
TVD Reference: KBE @ 4745.00usft (Original Well Elev)
MD Reference: KBE @ 4745.00usft (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 @ 4745.00usft (Original Well Ele)
Offset Depths are relative to Offset Datum
Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: Horsetail #30H-3116
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 1.11°

Ladder Plot



LEGEND

- Horsetail #30H-1913, Hz, APDV0
- Horsetail #30H-1914, Hz, APDV0
- Horsetail #30H-1916, Hz, APDV0
- Horsetail #30H-1946, Hz, APDV0
- Horsetail #30H-1947, Hz, APDV0
- Horsetail #30H-1948, Hz, APDV0
- Horsetail #30H-3113, Hz, APDV0
- Horsetail #30H-3114, Hz, APDV0
- Horsetail #30H-3115, Hz, APDV0
- Horsetail #30H-3146, Hz, APDV0
- Horsetail #30H-3147, Hz, APDV0
- Horsetail #30H-3148, Hz, APDV0
- Maddy #1-31, Wellbore #1, Wellbore #1 V0



WOG

Anticollision Report

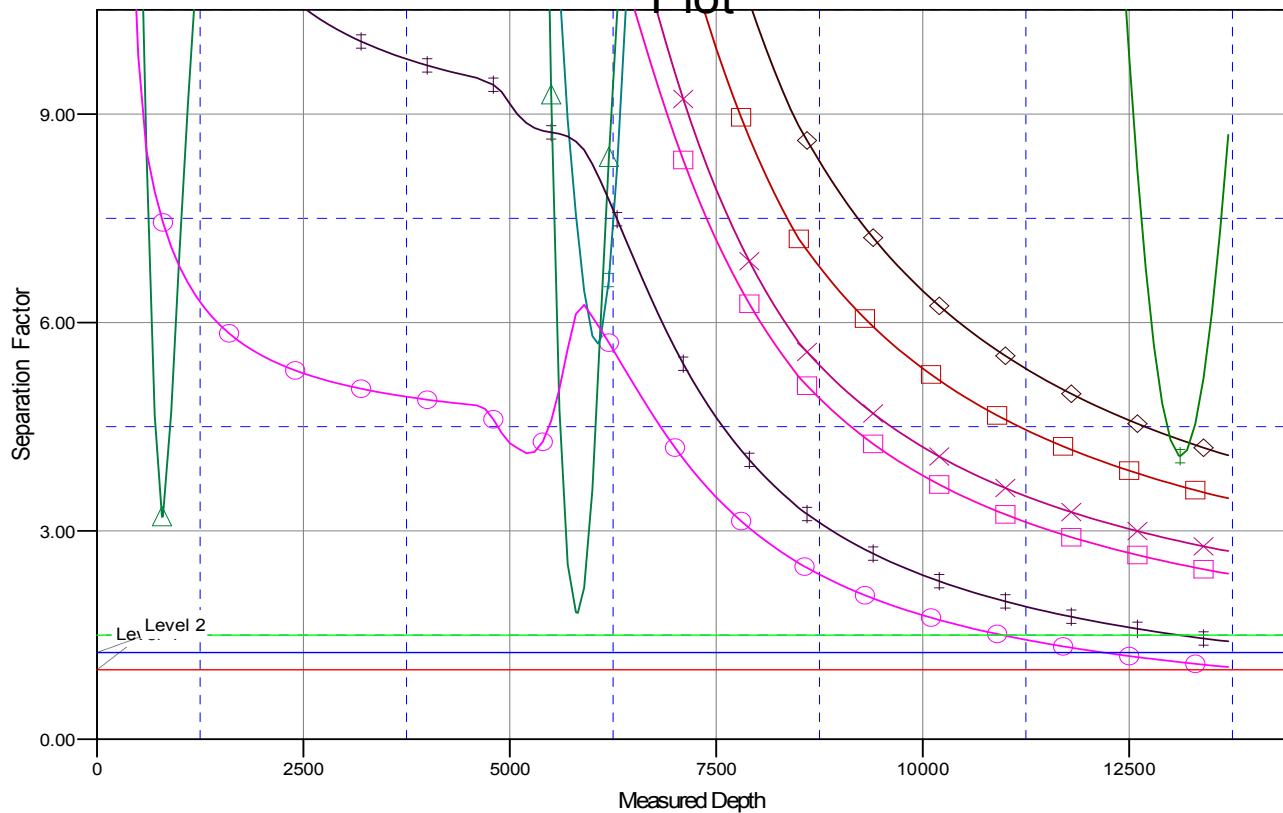
Company: Whiting Petroleum Corp.
Project: Weld County, CO
Reference Site: Sec 30-T10N-R57W
Site Error: 0.00 usft
Reference Well: Horsetail #30H-3116
Well Error: 0.00 usft
Reference Wellbore: Hz
Reference Design: APD

Local Co-ordinate Reference: Well Horsetail #30H-3116
TVD Reference: KBE @ 4745.00usft (Original Well Elev)
MD Reference: KBE @ 4745.00usft (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 @ 4745.00usft (Original Well Ele
Offset Depths are relative to Offset Datum
Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: Horsetail #30H-3116
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 1.11°

Separation Factor Plot



LEGEND

- | | | |
|--------------------------------|--------------------------------|---------------------------------------|
| Horsetail #30H-1913, Hz, APDV0 | Horsetail #30H-1948, Hz, APDV0 | Horsetail #30H-3147, Hz, APDV0 |
| Horsetail #30H-1914, Hz, APDV0 | Horsetail #30H-3113, Hz, APDV0 | Horsetail #30H-3148, Hz, APDV0 |
| Horsetail #30H-1916, Hz, APDV0 | Horsetail #30H-3114, Hz, APDV0 | Maddy#1-31, Wellbore#1, Wellbore#1 V0 |
| Horsetail #30H-1946, Hz, APDV0 | Horsetail #30H-3115, Hz, APDV0 | |
| Horsetail #30H-1947, Hz, APDV0 | Horsetail #30H-3146, Hz, APDV0 | |