



Whiting Petroleum Corp.

Weld County, CO

Sec 30-T10N-R57W

Horsetail #30E-3104

Hz

APD

Anticollision Report

22 October, 2015



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-3104
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-3104	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	10/22/2015		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	13,742.83	APD (Hz)	MWD+IFR1+MS+sag	Fixed:v2:crustal dec & 3-axis correction + sag	

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Sec 30-T10N-R57W						
Horsetail #30E-1901 - Hz - APD	300.00	300.00	186.65	185.03	115.575	CC, ES
Horsetail #30E-1901 - Hz - APD	6,200.00	5,562.04	1,144.24	1,104.65	28.901	SF
Horsetail #30E-1902 - Hz - APD	300.00	300.00	129.10	127.49	79.941	CC, ES
Horsetail #30E-1902 - Hz - APD	6,100.00	5,658.49	914.95	875.47	23.175	SF
Horsetail #30E-1903 - Hz - APD	439.59	442.05	77.07	74.53	30.429	CC
Horsetail #30E-1903 - Hz - APD	500.00	503.23	77.26	74.34	26.447	ES
Horsetail #30E-1903 - Hz - APD	5,676.27	5,957.96	594.62	556.68	15.674	SF
Horsetail #30E-1904 - Hz - APD	753.99	756.53	21.31	16.48	4.418	CC, ES, SF
Horsetail #30E-1934 - Hz - APD	300.00	300.00	157.21	155.59	97.345	CC, ES
Horsetail #30E-1934 - Hz - APD	6,200.00	5,650.00	1,017.15	976.24	24.866	SF
Horsetail #30E-1935 - Hz - APD	300.00	300.00	102.06	100.45	63.199	CC, ES
Horsetail #30E-1935 - Hz - APD	6,200.00	5,669.41	760.55	719.28	18.432	SF
Horsetail #30E-1936 - Hz - APD	632.55	636.81	50.65	46.74	12.949	CC, ES
Horsetail #30E-1936 - Hz - APD	6,087.03	5,726.29	429.33	388.88	10.614	SF
Horsetail #30E-3103 - Hz - APD	300.00	300.00	59.98	58.36	37.140	CC
Horsetail #30E-3103 - Hz - APD	500.00	503.91	60.26	57.19	19.591	ES
Horsetail #30E-3103 - Hz - APD	13,742.83	13,648.56	336.92	97.67	1.408	Level 3, SF
Horsetail #30E-3135 - Hz - APD	300.00	300.00	89.97	88.35	55.709	CC
Horsetail #30E-3135 - Hz - APD	400.00	402.48	90.29	87.97	38.995	ES
Horsetail #30E-3135 - Hz - APD	13,742.83	13,923.73	538.92	311.08	2.365	SF
Horsetail #30E-3136 - Hz - APD	200.00	200.00	29.99	29.05	31.882	CC
Horsetail #30E-3136 - Hz - APD	13,742.83	13,854.58	209.14	7.25	1.036	Level 2, ES, SF
Horsetail #30E-3138 - Hz - APD	610.87	604.55	59.96	56.04	15.328	CC
Horsetail #30E-3138 - Hz - APD	700.00	691.87	59.97	55.36	13.026	ES
Horsetail #30E-3138 - Hz - APD	13,742.83	13,949.06	499.26	262.99	2.113	SF
Horsetail #30F-1941 - Hz - Hz	6,095.22	5,732.99	60.10	16.04	1.364	Level 3, CC
Horsetail #30F-1941 - Hz - Hz	6,100.00	5,729.64	60.20	15.97	1.361	Level 3, ES, SF
Horsetail #30F-1942 - Hz - Hz	5,898.52	5,803.60	114.35	77.08	3.068	CC, ES
Horsetail #30F-1942 - Hz - Hz	5,900.00	5,802.33	114.35	77.08	3.068	SF
Horsetail #30F-3105 - Hz - Hz	11,858.47	11,619.80	300.14	118.20	1.650	CC
Horsetail #30F-3105 - Hz - Hz	13,200.00	12,953.52	325.13	105.95	1.483	Level 3, ES, SF



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Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-3104
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Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-3104	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-74.59	49.61	-179.93	186.65					
100.00	100.00	100.00	100.00	0.13	0.13	-74.59	49.61	-179.93	186.65	186.38	0.27	700.767		
200.00	200.00	200.00	200.00	0.47	0.47	-74.59	49.61	-179.93	186.65	185.71	0.94	198.425		
300.00	300.00	300.00	300.00	0.81	0.81	-74.59	49.61	-179.93	186.65	185.03	1.61	115.575	CC, ES	
400.00	399.98	398.83	398.81	1.13	1.11	-152.32	48.06	-180.66	188.49	186.25	2.24	84.191		
500.00	499.84	497.08	496.93	1.46	1.40	-154.45	43.47	-182.80	194.20	191.33	2.86	67.816		
600.00	599.45	594.21	593.69	1.81	1.72	-157.68	35.93	-186.32	204.28	200.74	3.53	57.817		
700.00	698.70	689.67	688.47	2.16	2.04	-161.64	25.63	-191.12	219.38	215.14	4.24	51.727		
800.00	797.67	783.31	781.02	2.52	2.37	-165.93	12.75	-197.13	238.84	233.87	4.97	48.084		
900.00	896.64	875.35	871.49	2.89	2.74	-170.13	-2.57	-204.29	261.01	255.31	5.69	45.837		
1,000.00	995.61	969.44	963.56	3.27	3.13	-174.13	-20.12	-212.48	285.60	279.20	6.40	44.619		
1,100.00	1,094.58	1,064.45	1,056.52	3.65	3.54	-177.56	-37.92	-220.78	311.40	304.31	7.09	43.903		
1,200.00	1,193.55	1,159.46	1,149.48	4.03	3.95	179.53	-55.71	-229.08	338.12	330.35	7.78	43.482		
1,300.00	1,292.52	1,254.46	1,242.44	4.42	4.37	177.04	-73.50	-237.39	365.55	357.09	8.46	43.203		
1,400.00	1,391.49	1,349.47	1,335.39	4.80	4.80	174.89	-91.29	-245.69	393.54	384.40	9.14	43.043		
1,500.00	1,490.45	1,444.48	1,428.35	5.19	5.22	173.03	-109.08	-253.99	421.98	412.16	9.82	42.956		
1,600.00	1,589.42	1,539.49	1,521.31	5.58	5.65	171.40	-126.88	-262.29	450.79	440.29	10.50	42.917		
1,700.00	1,688.39	1,634.50	1,614.27	5.96	6.08	169.96	-144.67	-270.60	479.90	468.71	11.18	42.907		
1,800.00	1,787.36	1,729.51	1,707.22	6.35	6.51	168.68	-162.46	-278.90	509.25	497.38	11.87	42.918		
1,900.00	1,886.33	1,824.51	1,800.18	6.74	6.94	167.55	-180.25	-287.20	538.81	526.26	12.55	42.942		
2,000.00	1,985.30	1,919.52	1,893.14	7.13	7.38	166.53	-198.04	-295.51	568.55	555.32	13.23	42.974		
2,100.00	2,084.27	2,014.53	1,986.10	7.52	7.81	165.61	-215.83	-303.81	598.43	584.52	13.91	43.011		
2,200.00	2,183.23	2,109.54	2,079.05	7.91	8.25	164.78	-233.63	-312.11	628.45	613.85	14.60	43.051		
2,300.00	2,282.20	2,204.55	2,172.01	8.30	8.68	164.02	-251.42	-320.42	658.57	643.29	15.28	43.093		
2,400.00	2,381.17	2,299.56	2,264.97	8.69	9.12	163.33	-269.21	-328.72	688.79	672.82	15.97	43.134		
2,500.00	2,480.14	2,394.56	2,357.93	9.08	9.55	162.70	-287.00	-337.02	719.09	702.44	16.66	43.176		
2,600.00	2,579.11	2,489.57	2,450.88	9.47	9.99	162.12	-304.79	-345.33	749.47	732.13	17.34	43.216		
2,700.00	2,678.08	2,584.58	2,543.84	9.86	10.43	161.58	-322.59	-353.63	779.91	761.88	18.03	43.256		
2,800.00	2,777.04	2,679.59	2,636.80	10.25	10.86	161.09	-340.38	-361.93	810.41	791.69	18.72	43.294		
2,900.00	2,876.01	2,774.60	2,729.76	10.64	11.30	160.63	-358.17	-370.23	840.96	821.55	19.41	43.331		
3,000.00	2,974.98	2,869.61	2,822.71	11.03	11.74	160.20	-375.96	-378.54	871.56	851.46	20.10	43.366		
3,100.00	3,073.95	2,964.61	2,915.67	11.42	12.18	159.80	-393.75	-386.84	902.20	881.41	20.79	43.400		
3,200.00	3,172.92	3,059.62	3,008.63	11.81	12.61	159.43	-411.55	-395.14	932.87	911.39	21.48	43.432		
3,300.00	3,271.89	3,154.63	3,101.59	12.20	13.05	159.08	-429.34	-403.45	963.58	941.41	22.17	43.463		
3,400.00	3,370.86	3,249.64	3,194.54	12.59	13.49	158.75	-447.13	-411.75	994.32	971.46	22.86	43.493		
3,500.00	3,469.82	3,344.65	3,287.50	12.98	13.93	158.44	-464.92	-420.05	1,025.09	1,001.53	23.55	43.521		
3,600.00	3,568.79	3,439.66	3,380.46	13.37	14.37	158.15	-482.71	-428.36	1,055.88	1,031.63	24.25	43.548		
3,700.00	3,667.76	3,534.66	3,473.41	13.76	14.81	157.88	-500.50	-436.66	1,086.69	1,061.76	24.94	43.574		
3,800.00	3,766.73	3,629.67	3,566.37	14.15	15.24	157.62	-518.30	-444.96	1,117.53	1,091.90	25.63	43.599		
3,900.00	3,865.70	3,724.68	3,659.33	14.54	15.68	157.37	-536.09	-453.26	1,148.39	1,122.06	26.33	43.623		
4,000.00	3,964.67	3,819.69	3,752.29	14.93	16.12	157.14	-553.88	-461.57	1,179.26	1,152.24	27.02	43.645		
4,100.00	4,063.64	3,914.70	3,845.24	15.32	16.56	156.92	-571.67	-469.87	1,210.15	1,182.44	27.71	43.667		
4,200.00	4,162.60	4,009.71	3,938.20	15.72	17.00	156.71	-589.46	-478.17	1,241.06	1,212.65	28.41	43.687		
4,300.00	4,261.57	4,104.71	4,031.16	16.11	17.44	156.51	-607.26	-486.48	1,271.98	1,242.88	29.10	43.707		
4,400.00	4,360.54	4,199.72	4,124.12	16.50	17.88	156.32	-625.05	-494.78	1,302.92	1,273.12	29.80	43.726		
4,500.00	4,459.51	4,294.73	4,217.07	16.89	18.32	156.14	-642.84	-503.08	1,333.86	1,303.37	30.49	43.744		
4,600.00	4,558.48	4,452.95	4,372.63	17.23	18.85	156.10	-668.97	-515.28	1,361.71	1,330.25	31.46	43.282		
4,700.00	4,658.17	4,622.46	4,540.76	17.51	19.28	156.11	-688.29	-524.30	1,381.55	1,349.26	32.29	42.786		
4,800.00	4,757.98	6,213.83	5,538.00	17.76	20.44	-168.27	116.82	-543.37	1,372.44	1,342.02	30.42	45.120		
4,900.00	4,857.94	6,214.39	5,538.00	18.01	20.44	-167.99	117.38	-543.37	1,320.45	1,288.66	31.78	41.548		
5,000.00	4,957.94	6,214.42	5,538.00	18.27	20.44	-90.94	117.41	-543.38	1,271.95	1,238.82	33.12	38.400		
5,100.00	5,057.94	6,214.42	5,538.00	18.55	20.44	-90.94	117.41	-543.38	1,229.57	1,195.15	34.42	35.724		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-3104
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-3104	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	HZ	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design											Sec 30-T10N-R57W - Horsetail #30E-1901 - Hz - APD		Offset Site Error:		0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:		0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
5,200.00	5,157.70	6,209.32	5,538.00	18.81	20.42	91.75	112.31	-543.29	1,194.07	1,158.50	35.58	33.562			
5,300.00	5,254.78	6,185.98	5,538.00	19.06	20.36	93.78	88.98	-542.91	1,166.42	1,129.93	36.48	31.971			
5,400.00	5,345.62	6,144.56	5,538.00	19.30	20.27	94.05	47.55	-542.23	1,147.08	1,109.97	37.11	30.909			
5,500.00	5,426.89	6,086.56	5,538.00	19.52	20.16	92.98	-10.43	-541.28	1,135.33	1,097.85	37.48	30.290			
5,600.00	5,495.61	6,014.13	5,538.00	19.75	20.10	91.12	-82.85	-540.09	1,129.48	1,091.78	37.70	29.956			
5,700.00	5,549.24	5,929.93	5,538.00	19.99	20.09	89.06	-167.05	-538.70	1,127.36	1,089.47	37.90	29.749			
5,772.28	5,577.49	5,867.43	5,535.59	20.19	20.13	87.75	-229.46	-537.68	1,127.00	1,088.92	38.08	29.596			
5,800.00	5,585.83	5,844.29	5,532.86	20.28	20.15	87.26	-252.43	-537.30	1,127.05	1,088.90	38.15	29.543			
5,900.00	5,604.02	5,763.60	5,515.43	20.62	20.23	85.55	-331.12	-536.01	1,127.97	1,089.51	38.47	29.323			
6,000.00	5,606.00	5,687.35	5,487.98	21.03	20.33	84.00	-402.18	-534.84	1,130.09	1,091.26	38.83	29.100			
6,100.00	5,606.00	5,619.90	5,455.28	21.54	20.41	82.35	-461.11	-533.87	1,135.11	1,095.89	39.22	28.940			
6,200.00	5,606.00	5,562.04	5,421.36	22.13	20.48	80.65	-507.95	-533.10	1,144.24	1,104.65	39.59	28.901 SF			
6,300.00	5,606.00	5,512.99	5,388.69	22.81	20.53	79.03	-544.49	-532.50	1,158.36	1,118.44	39.92	29.014			
6,400.00	5,606.00	5,471.59	5,358.54	23.56	20.57	77.55	-572.85	-532.04	1,178.07	1,137.86	40.21	29.296			
6,500.00	5,606.00	5,436.58	5,331.35	24.38	20.59	76.22	-594.89	-531.67	1,203.70	1,163.25	40.46	29.752			
6,600.00	5,606.00	5,400.00	5,301.43	25.26	20.61	74.78	-615.91	-531.33	1,235.37	1,194.74	40.63	30.408			
6,700.00	5,606.00	5,381.44	5,285.70	26.19	20.62	74.03	-625.77	-531.17	1,272.83	1,232.01	40.82	31.182			
6,800.00	5,606.00	5,350.00	5,258.29	27.18	20.62	72.74	-641.16	-530.91	1,316.04	1,275.15	40.89	32.186			
6,900.00	5,606.00	5,350.00	5,258.29	28.20	20.62	72.74	-641.16	-530.91	1,364.42	1,323.33	41.09	33.207			
7,000.00	5,606.00	5,324.06	5,235.01	29.27	20.62	71.66	-652.59	-530.73	1,417.57	1,376.47	41.09	34.496			
7,100.00	5,606.00	5,300.00	5,212.93	30.37	20.62	70.65	-662.15	-530.57	1,475.31	1,434.23	41.08	35.917			
7,200.00	5,606.00	5,300.00	5,212.93	31.50	20.62	70.65	-662.15	-530.57	1,536.89	1,495.71	41.17	37.328			



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Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-3104	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	-67.40	49.61	-119.19	129.10					
100.00	100.00	100.00	100.00	0.13	0.13	-67.40	49.61	-119.19	129.10	128.83	0.27	484.706		
200.00	200.00	200.00	200.00	0.47	0.47	-67.40	49.61	-119.19	129.10	128.16	0.94	137.247		
300.00	300.00	300.00	300.00	0.81	0.81	-67.40	49.61	-119.19	129.10	127.49	1.61	79.941 CC, ES		
400.00	399.98	400.52	400.50	1.13	1.11	-145.59	47.91	-119.64	130.31	128.07	2.24	58.185		
500.00	499.84	500.49	500.33	1.46	1.41	-149.04	42.83	-120.99	134.29	131.43	2.85	47.039		
600.00	599.45	599.40	598.85	1.81	1.73	-154.25	34.51	-123.21	141.92	138.41	3.51	40.429		
700.00	698.70	696.73	695.47	2.16	2.06	-160.49	23.11	-126.25	154.36	150.16	4.21	36.687		
800.00	797.67	792.34	789.92	2.52	2.40	-167.00	8.83	-130.05	171.32	166.39	4.93	34.718		
900.00	896.64	887.43	883.38	2.89	2.77	-173.11	-8.08	-134.55	191.21	185.54	5.66	33.766		
1,000.00	995.61	983.35	977.57	3.27	3.17	-178.23	-25.60	-139.22	213.10	206.72	6.38	33.403		
1,100.00	1,094.58	1,079.27	1,071.76	3.65	3.57	177.60	-43.11	-143.88	236.35	229.26	7.09	33.345		
1,200.00	1,193.55	1,175.18	1,165.95	4.03	3.98	174.18	-60.62	-148.55	260.60	252.81	7.79	33.465		
1,300.00	1,292.52	1,271.10	1,260.14	4.42	4.39	171.33	-78.14	-153.21	285.59	277.10	8.49	33.653		
1,400.00	1,391.49	1,367.02	1,354.33	4.80	4.80	168.94	-95.65	-157.87	311.15	301.96	9.18	33.887		
1,500.00	1,490.45	1,462.94	1,448.52	5.19	5.22	166.92	-113.17	-162.54	337.14	327.26	9.88	34.135		
1,600.00	1,589.42	1,558.85	1,542.71	5.58	5.63	165.18	-130.68	-167.20	363.47	352.90	10.57	34.385		
1,700.00	1,688.39	1,654.77	1,636.90	5.96	6.05	163.67	-148.20	-171.87	390.07	378.81	11.27	34.627		
1,800.00	1,787.36	1,750.69	1,731.09	6.35	6.47	162.36	-165.71	-176.53	416.90	404.94	11.96	34.858		
1,900.00	1,886.33	1,846.61	1,825.28	6.74	6.90	161.20	-183.23	-181.20	443.91	431.25	12.66	35.076		
2,000.00	1,985.30	1,942.53	1,919.47	7.13	7.32	160.17	-200.74	-185.86	471.06	457.71	13.35	35.280		
2,100.00	2,084.27	2,038.44	2,013.66	7.52	7.74	159.26	-218.25	-190.52	498.34	484.29	14.05	35.472		
2,200.00	2,183.23	2,134.36	2,107.85	7.91	8.16	158.44	-235.77	-195.19	525.73	510.98	14.75	35.650		
2,300.00	2,282.20	2,230.28	2,202.04	8.30	8.59	157.70	-253.28	-199.85	553.21	537.76	15.45	35.816		
2,400.00	2,381.17	2,326.20	2,296.23	8.69	9.01	157.04	-270.80	-204.52	580.76	564.62	16.15	35.971		
2,500.00	2,480.14	2,422.11	2,390.42	9.08	9.43	156.43	-288.31	-209.18	608.38	591.54	16.85	36.116		
2,600.00	2,579.11	2,518.03	2,484.61	9.47	9.86	155.87	-305.83	-213.85	636.06	618.51	17.55	36.252		
2,700.00	2,678.08	2,613.95	2,578.80	9.86	10.28	155.36	-323.34	-218.51	663.79	645.54	18.25	36.378		
2,800.00	2,777.04	2,709.87	2,672.99	10.25	10.71	154.90	-340.86	-223.18	691.56	672.61	18.95	36.496		
2,900.00	2,876.01	2,805.79	2,767.18	10.64	11.13	154.46	-358.37	-227.84	719.38	699.72	19.65	36.607		
3,000.00	2,974.98	2,901.70	2,861.37	11.03	11.56	154.06	-375.88	-232.50	747.22	726.87	20.35	36.711		
3,100.00	3,073.95	2,997.62	2,955.56	11.42	11.99	153.69	-393.40	-237.17	775.10	754.05	21.06	36.809		
3,200.00	3,172.92	3,093.54	3,049.75	11.81	12.41	153.35	-410.91	-241.83	803.01	781.25	21.76	36.902		
3,300.00	3,271.89	3,189.46	3,143.94	12.20	12.84	153.02	-428.43	-246.50	830.94	808.48	22.47	36.988		
3,400.00	3,370.86	3,285.37	3,238.13	12.59	13.26	152.72	-445.94	-251.16	858.90	835.73	23.17	37.070		
3,500.00	3,469.82	3,381.29	3,332.32	12.98	13.69	152.44	-463.46	-255.83	886.88	863.00	23.87	37.148		
3,600.00	3,568.79	3,477.21	3,426.51	13.37	14.12	152.17	-480.97	-260.49	914.87	890.29	24.58	37.221		
3,700.00	3,667.76	3,573.13	3,520.70	13.76	14.54	151.92	-498.49	-265.16	942.88	917.60	25.28	37.290		
3,800.00	3,766.73	3,669.05	3,614.89	14.15	14.97	151.69	-516.00	-269.82	970.91	944.92	25.99	37.356		
3,900.00	3,865.70	3,764.96	3,709.08	14.54	15.39	151.47	-533.51	-274.48	998.95	972.26	26.70	37.419		
4,000.00	3,964.67	3,860.88	3,803.27	14.93	15.82	151.26	-551.03	-279.15	1,027.01	999.60	27.40	37.478		
4,100.00	4,063.64	3,956.80	3,897.46	15.32	16.25	151.06	-568.54	-283.81	1,055.07	1,026.96	28.11	37.535		
4,200.00	4,162.60	4,052.72	3,991.65	15.72	16.67	150.87	-586.06	-288.48	1,083.15	1,054.34	28.82	37.588		
4,300.00	4,261.57	4,148.63	4,085.84	16.11	17.10	150.69	-603.57	-293.14	1,111.24	1,081.72	29.52	37.640		
4,400.00	4,360.54	4,244.55	4,180.02	16.50	17.53	150.52	-621.09	-297.81	1,139.34	1,109.11	30.23	37.689		
4,500.00	4,459.51	4,340.47	4,274.21	16.89	17.95	150.36	-638.60	-302.47	1,167.44	1,136.51	30.94	37.735		
4,600.00	4,558.65	4,450.43	4,382.24	17.23	18.41	150.38	-658.43	-307.75	1,194.37	1,162.69	31.68	37.703		
4,700.00	4,658.17	4,601.80	4,531.89	17.51	18.85	150.35	-680.28	-313.57	1,215.26	1,182.76	32.50	37.393		
4,800.00	4,757.98	4,756.55	4,685.91	17.76	19.22	150.33	-694.70	-317.41	1,228.74	1,195.51	33.24	36.969		
4,900.00	4,857.94	6,288.71	5,606.00	18.01	20.70	-167.20	134.13	-320.88	1,177.40	1,147.74	29.66	39.699		
5,000.00	4,957.94	6,288.74	5,606.00	18.27	20.70	-90.12	134.16	-320.88	1,116.64	1,085.37	31.27	35.714		
5,100.00	5,057.94	6,288.74	5,606.00	18.55	20.70	-90.12	134.16	-320.88	1,061.73	1,028.83	32.90	32.274		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-3104
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-3104	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design												Sec 30-T10N-R57W - Horsetail #30E-1902 - Hz - APD		Offset Site Error:		0.00 usft	
Survey Program: 0-MWD+IFR1+MS+sag														Offset Well Error:		0.00 usft	
Reference		Offset		Semi Major Axis		Distance								Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor					
5,200.00	5,157.70	6,283.64	5,606.00	18.81	20.68	93.82	129.06	-320.87	1,013.83	979.37	34.46	29.422					
5,300.00	5,254.78	6,260.30	5,606.00	19.06	20.61	97.07	105.72	-320.83	974.75	938.97	35.78	27.240					
5,400.00	5,345.62	6,218.87	5,606.00	19.30	20.47	98.05	64.29	-320.74	945.74	908.96	36.78	25.712					
5,500.00	5,426.89	6,160.87	5,606.00	19.52	20.32	97.28	6.29	-320.62	926.55	889.09	37.46	24.733					
5,600.00	5,495.61	6,088.43	5,606.00	19.75	20.17	95.40	-66.15	-320.48	915.61	877.73	37.87	24.176					
5,700.00	5,549.24	6,004.21	5,606.00	19.99	20.07	93.13	-150.37	-320.31	910.53	872.37	38.16	23.859					
5,800.00	5,585.83	5,909.11	5,601.94	20.28	20.05	90.91	-245.30	-320.11	908.72	870.25	38.47	23.621					
5,853.62	5,597.93	5,859.18	5,593.36	20.45	20.07	89.71	-294.46	-320.02	908.48	869.82	38.66	23.500					
5,900.00	5,604.02	5,817.42	5,582.59	20.62	20.09	88.68	-334.80	-319.93	908.65	869.84	38.81	23.412					
6,000.00	5,606.00	5,732.23	5,550.82	21.03	20.15	86.52	-413.75	-319.77	910.26	871.10	39.16	23.242					
6,100.00	5,606.00	5,658.49	5,513.24	21.54	20.22	84.17	-477.12	-319.65	914.95	875.47	39.48	23.175 SF					
6,200.00	5,606.00	5,600.00	5,477.30	22.13	20.27	81.93	-523.23	-319.55	924.42	884.71	39.72	23.276					
6,300.00	5,606.00	5,550.00	5,442.65	22.81	20.31	79.80	-559.24	-319.48	939.96	900.11	39.86	23.584					
6,400.00	5,606.00	5,500.00	5,404.70	23.56	20.34	77.50	-591.77	-319.41	962.36	922.49	39.87	24.136					
6,500.00	5,606.00	5,468.58	5,379.32	24.38	20.35	75.98	-610.29	-319.38	991.94	952.07	39.87	24.880					
6,600.00	5,606.00	5,450.00	5,363.81	25.26	20.36	75.06	-620.51	-319.36	1,028.77	988.90	39.87	25.803					
6,700.00	5,606.00	5,414.63	5,333.31	26.19	20.37	73.28	-638.41	-319.32	1,072.17	1,032.47	39.70	27.007					
6,800.00	5,606.00	5,400.00	5,320.35	27.18	20.37	72.53	-645.20	-319.31	1,121.99	1,082.36	39.63	28.310					
6,900.00	5,606.00	5,375.57	5,298.31	28.20	20.36	71.27	-655.72	-319.28	1,177.40	1,137.95	39.46	29.839					
7,000.00	5,606.00	5,350.00	5,274.73	29.27	20.36	69.95	-665.61	-319.26	1,238.01	1,198.75	39.26	31.536					
7,100.00	5,606.00	5,350.00	5,274.73	30.37	20.36	69.95	-665.61	-319.26	1,302.86	1,263.62	39.25	33.197					
7,200.00	5,606.00	5,350.00	5,274.73	31.50	20.36	69.95	-665.61	-319.26	1,371.95	1,332.73	39.22	34.980					
7,300.00	5,606.00	5,323.64	5,249.94	32.66	20.34	68.58	-674.59	-319.25	1,443.89	1,404.89	39.01	37.015					
7,400.00	5,606.00	5,300.00	5,227.36	33.84	20.33	67.36	-681.56	-319.23	1,519.27	1,480.45	38.82	39.137					



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-3104
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-3104	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	-50.04	49.61	-59.21	77.25					
100.00	100.00	100.00	100.00	0.13	0.13	-50.04	49.61	-59.21	77.25	76.98	0.27	290.019		
200.00	200.00	200.00	200.00	0.47	0.47	-50.04	49.61	-59.21	77.25	76.31	0.94	82.120		
300.00	300.00	300.00	300.00	0.81	0.81	-50.04	49.61	-59.21	77.25	75.63	1.61	47.832		
400.00	399.98	401.83	401.81	1.13	1.11	-129.05	47.81	-59.08	77.11	74.84	2.27	33.944		
439.59	439.53	442.05	441.99	1.26	1.24	-130.97	46.10	-58.96	77.07	74.53	2.53	30.429 CC		
500.00	499.84	503.23	503.06	1.46	1.42	-135.08	42.42	-58.70	77.26	74.34	2.92	26.447 ES		
600.00	599.45	603.76	603.19	1.81	1.74	-144.74	33.56	-58.08	79.36	75.79	3.57	22.229		
700.00	698.70	703.00	701.67	2.16	2.07	-156.75	21.38	-57.22	85.78	81.56	4.22	20.319		
800.00	797.67	800.82	798.27	2.52	2.43	-168.91	6.05	-56.14	97.30	92.39	4.91	19.816		
900.00	896.64	897.68	893.48	2.89	2.81	-179.52	-11.73	-54.89	112.68	107.03	5.64	19.971		
1,000.00	995.61	994.50	988.60	3.27	3.21	172.45	-29.74	-53.62	131.06	124.67	6.39	20.512		
1,100.00	1,094.58	1,091.31	1,083.72	3.65	3.61	166.43	-47.74	-52.35	151.36	144.23	7.13	21.228		
1,200.00	1,193.55	1,188.13	1,178.84	4.03	4.02	161.84	-65.75	-51.08	172.90	165.04	7.86	21.992		
1,300.00	1,292.52	1,284.95	1,273.96	4.42	4.44	158.28	-83.75	-49.82	195.28	186.69	8.59	22.735		
1,400.00	1,391.49	1,381.76	1,369.08	4.80	4.85	155.45	-101.75	-48.55	218.23	208.92	9.31	23.435		
1,500.00	1,490.45	1,478.58	1,464.19	5.19	5.27	153.16	-119.76	-47.28	241.60	231.57	10.03	24.079		
1,600.00	1,589.42	1,575.40	1,559.31	5.58	5.69	151.27	-137.76	-46.01	265.27	254.52	10.75	24.667		
1,700.00	1,688.39	1,672.21	1,654.43	5.96	6.11	149.69	-155.77	-44.74	289.17	277.70	11.47	25.201		
1,800.00	1,787.36	1,769.03	1,749.55	6.35	6.53	148.35	-173.77	-43.48	313.25	301.05	12.20	25.686		
1,900.00	1,886.33	1,865.85	1,844.67	6.74	6.96	147.20	-191.78	-42.21	337.47	324.55	12.92	26.126		
2,000.00	1,985.30	1,962.66	1,939.79	7.13	7.38	146.20	-209.78	-40.94	361.79	348.15	13.64	26.527		
2,100.00	2,084.27	2,059.48	2,034.91	7.52	7.80	145.33	-227.78	-39.67	386.21	371.85	14.36	26.893		
2,200.00	2,183.23	2,156.30	2,130.03	7.91	8.23	144.57	-245.79	-38.40	410.70	395.62	15.08	27.228		
2,300.00	2,282.20	2,253.11	2,225.15	8.30	8.66	143.89	-263.79	-37.13	435.25	419.44	15.81	27.534		
2,400.00	2,381.17	2,349.93	2,320.27	8.69	9.08	143.28	-281.80	-35.87	459.86	443.32	16.53	27.816		
2,500.00	2,480.14	2,446.75	2,415.39	9.08	9.51	142.73	-299.80	-34.60	484.50	467.25	17.26	28.076		
2,600.00	2,579.11	2,543.56	2,510.51	9.47	9.93	142.24	-317.81	-33.33	509.19	491.21	17.98	28.316		
2,700.00	2,678.08	2,640.38	2,605.63	9.86	10.36	141.79	-335.81	-32.06	533.91	515.20	18.71	28.539		
2,800.00	2,777.04	2,737.20	2,700.75	10.25	10.79	141.38	-353.81	-30.79	558.65	539.22	19.43	28.745		
2,900.00	2,876.01	2,834.01	2,795.86	10.64	11.21	141.01	-371.82	-29.53	583.42	563.26	20.16	28.937		
3,000.00	2,974.98	2,930.83	2,890.98	11.03	11.64	140.67	-389.82	-28.26	608.21	587.32	20.89	29.117		
3,100.00	3,073.95	3,027.65	2,986.10	11.42	12.07	140.35	-407.83	-26.99	633.02	611.41	21.62	29.284		
3,200.00	3,172.92	3,124.46	3,081.22	11.81	12.50	140.06	-425.83	-25.72	657.85	635.51	22.34	29.441		
3,300.00	3,271.89	3,221.28	3,176.34	12.20	12.92	139.79	-443.84	-24.45	682.69	659.62	23.07	29.589		
3,400.00	3,370.86	3,318.10	3,271.46	12.59	13.35	139.54	-461.84	-23.18	707.55	683.75	23.80	29.727		
3,500.00	3,469.82	3,414.91	3,366.58	12.98	13.78	139.30	-479.84	-21.92	732.41	707.88	24.53	29.858		
3,600.00	3,568.79	3,511.73	3,461.70	13.37	14.21	139.08	-497.85	-20.65	757.29	732.03	25.26	29.981		
3,700.00	3,667.76	3,608.54	3,556.82	13.76	14.64	138.88	-515.85	-19.38	782.18	756.19	25.99	30.097		
3,800.00	3,766.73	3,705.36	3,651.94	14.15	15.07	138.68	-533.86	-18.11	807.08	780.36	26.72	30.207		
3,900.00	3,865.70	3,802.18	3,747.06	14.54	15.49	138.50	-551.86	-16.84	831.98	804.53	27.45	30.311		
4,000.00	3,964.67	3,898.99	3,842.18	14.93	15.92	138.33	-569.87	-15.58	856.89	828.71	28.18	30.409		
4,100.00	4,063.64	3,995.81	3,937.30	15.32	16.35	138.17	-587.87	-14.31	881.81	852.90	28.91	30.503		
4,200.00	4,162.60	4,092.63	4,032.42	15.72	16.78	138.02	-605.87	-13.04	906.74	877.10	29.64	30.592		
4,300.00	4,261.57	4,189.44	4,127.53	16.11	17.21	137.87	-623.88	-11.77	931.67	901.30	30.37	30.677		
4,400.00	4,360.54	4,286.26	4,222.65	16.50	17.64	137.74	-641.88	-10.50	956.60	925.50	31.10	30.758		
4,500.00	4,459.51	4,395.88	4,330.43	16.89	18.08	137.61	-661.87	-9.10	981.31	949.41	31.90	30.759		
4,600.00	4,558.65	4,492.48	4,426.57	17.23	18.43	137.81	-681.43	-7.72	1,002.33	969.64	32.69	30.662		
4,700.00	4,658.17	4,665.52	4,597.91	17.51	18.77	138.02	-695.02	-6.76	1,017.24	983.88	33.37	30.485		
4,800.00	4,757.98	4,720.97	4,653.00	17.76	20.52	-167.69	135.37	-6.17	979.16	954.40	24.76	39.544		
4,900.00	4,857.94	4,821.57	4,753.00	18.01	20.52	-167.12	135.97	-6.17	903.28	876.65	26.62	33.927		
5,000.00	4,957.94	4,921.60	4,853.00	18.27	20.52	-90.00	136.00	-6.17	830.69	802.04	28.65	28.995		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-3104
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-3104	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,100.00	5,057.94	6,221.60	5,538.00	18.55	20.52	-90.00	136.00	-6.17	764.22	733.37	30.85	24.774		
5,200.00	5,157.70	6,216.50	5,538.00	18.81	20.50	95.10	130.90	-6.17	705.83	672.74	33.09	21.328		
5,300.00	5,254.78	6,193.16	5,538.00	19.06	20.41	98.82	107.56	-6.17	658.62	623.52	35.11	18.760		
5,400.00	5,345.62	6,151.73	5,538.00	19.30	20.27	99.19	66.13	-6.17	624.96	588.32	36.65	17.054		
5,500.00	5,426.89	6,093.73	5,538.00	19.52	20.08	96.99	8.13	-6.17	604.91	567.37	37.54	16.114		
5,600.00	5,495.61	6,021.29	5,538.00	19.75	19.92	93.22	-64.31	-6.17	596.13	558.24	37.89	15.733		
5,676.27	5,538.00	5,957.96	5,538.00	19.93	19.82	90.00	-127.64	-6.17	594.62	556.68	37.94	15.674 SF		
5,700.00	5,549.24	5,937.07	5,538.00	19.99	19.79	89.03	-148.53	-6.17	594.73	556.80	37.93	15.680		
5,800.00	5,585.83	5,850.00	5,535.29	20.28	19.72	85.49	-235.51	-6.17	596.79	558.89	37.90	15.747		
5,900.00	5,604.02	5,766.87	5,520.26	20.62	19.72	82.20	-317.18	-6.17	600.91	563.06	37.85	15.877		
6,000.00	5,606.00	5,688.74	5,494.47	21.03	19.75	79.38	-390.86	-6.17	606.94	569.18	37.77	16.070		
6,100.00	5,606.00	5,619.21	5,462.49	21.54	19.80	76.43	-452.53	-6.17	617.85	580.33	37.52	16.466		
6,200.00	5,606.00	5,559.33	5,428.57	22.13	19.84	73.39	-501.84	-6.17	635.62	598.54	37.08	17.140		
6,300.00	5,606.00	5,500.00	5,389.61	22.81	19.89	70.00	-546.54	-6.17	661.55	625.11	36.44	18.153		
6,400.00	5,606.00	5,465.55	5,364.73	23.56	19.91	67.92	-570.36	-6.17	695.88	659.95	35.93	19.367		
6,500.00	5,606.00	5,429.27	5,336.90	24.38	19.94	65.65	-593.62	-6.17	738.69	703.30	35.39	20.874		
6,600.00	5,606.00	5,400.00	5,313.30	25.26	19.95	63.79	-610.93	-6.17	789.28	754.32	34.96	22.574		
6,700.00	5,606.00	5,372.23	5,290.05	26.19	19.96	62.02	-626.11	-6.17	846.77	812.16	34.61	24.466		
6,800.00	5,606.00	5,350.00	5,270.87	27.18	19.96	60.59	-637.35	-6.17	910.24	875.84	34.39	26.467		
6,900.00	5,606.00	5,330.13	5,253.34	28.20	19.96	59.33	-646.70	-6.17	978.77	944.52	34.25	28.577		
7,000.00	5,606.00	5,300.00	5,226.11	29.27	19.96	57.43	-659.58	-6.17	1,051.78	1,017.77	34.01	30.923		
7,100.00	5,606.00	5,300.00	5,226.11	30.37	19.96	57.43	-659.58	-6.17	1,127.93	1,093.74	34.20	32.984		
7,200.00	5,606.00	5,300.00	5,226.11	31.50	19.96	57.43	-659.58	-6.17	1,207.57	1,173.20	34.37	35.136		
7,300.00	5,606.00	5,273.23	5,201.32	32.66	19.95	55.76	-669.69	-6.17	1,289.16	1,254.91	34.25	37.641		
7,400.00	5,606.00	5,250.00	5,179.42	33.84	19.94	54.34	-677.43	-6.17	1,373.35	1,339.16	34.19	40.169		
7,500.00	5,606.00	5,250.00	5,179.42	35.04	19.94	54.34	-677.43	-6.17	1,458.94	1,424.57	34.37	42.449		
7,600.00	5,606.00	5,250.00	5,179.42	36.27	19.94	54.34	-677.43	-6.17	1,546.26	1,511.73	34.54	44.773		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-3104
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-3104	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	0.89	49.59	0.77	49.60					
100.00	100.00	100.00	100.00	0.13	0.13	0.89	49.59	0.77	49.60	49.33	0.27	186.210		
200.00	200.00	200.00	200.00	0.47	0.47	0.89	49.59	0.77	49.60	48.66	0.94	52.726		
300.00	300.00	300.00	300.00	0.81	0.81	0.89	49.59	0.77	49.60	47.98	1.61	30.711		
400.00	399.98	401.55	401.53	1.13	1.11	-77.33	47.94	1.48	47.57	45.26	2.31	20.636		
500.00	499.84	502.80	502.63	1.46	1.42	-81.70	42.99	3.59	41.64	38.59	3.05	13.664		
600.00	599.45	603.42	602.85	1.81	1.75	-92.31	34.83	7.08	32.53	28.69	3.84	8.462		
700.00	698.70	703.13	701.80	2.16	2.08	-119.15	23.55	11.90	23.26	18.67	4.58	5.073		
753.99	752.15	756.53	754.60	2.35	2.27	-144.38	16.21	15.04	21.31	16.48	4.82	4.418 CC, ES, SF		
800.00	797.67	801.81	799.25	2.52	2.44	-167.51	9.28	18.01	23.15	18.16	4.98	4.644		
900.00	896.64	899.52	895.17	2.89	2.83	158.05	-7.82	25.32	36.17	30.47	5.70	6.341		
1,000.00	995.61	996.98	990.64	3.27	3.24	143.04	-25.82	33.02	55.36	48.84	6.53	8.483		
1,100.00	1,094.58	1,094.43	1,086.11	3.65	3.66	135.93	-43.82	40.72	76.33	69.04	7.29	10.469		
1,200.00	1,193.55	1,191.89	1,181.58	4.03	4.08	131.90	-61.83	48.41	97.94	89.91	8.03	12.195		
1,300.00	1,292.52	1,289.35	1,277.05	4.42	4.51	129.34	-79.83	56.11	119.84	111.07	8.76	13.673		
1,400.00	1,391.49	1,386.80	1,372.51	4.80	4.94	127.56	-97.84	63.81	141.90	132.40	9.50	14.943		
1,500.00	1,490.45	1,484.26	1,467.98	5.19	5.38	126.27	-115.84	71.51	164.05	153.82	10.23	16.039		
1,600.00	1,589.42	1,581.72	1,563.45	5.58	5.81	125.28	-133.85	79.21	186.27	175.30	10.96	16.992		
1,700.00	1,688.39	1,679.18	1,658.92	5.96	6.25	124.51	-151.85	86.91	208.52	196.83	11.70	17.825		
1,800.00	1,787.36	1,776.63	1,754.39	6.35	6.69	123.88	-169.85	94.61	230.81	218.37	12.44	18.559		
1,900.00	1,886.33	1,874.09	1,849.86	6.74	7.13	123.36	-187.86	102.31	253.12	239.94	13.18	19.210		
2,000.00	1,985.30	1,971.55	1,945.33	7.13	7.57	122.93	-205.86	110.01	275.44	261.52	13.92	19.790		
2,100.00	2,084.27	2,069.00	2,040.80	7.52	8.01	122.56	-223.87	117.71	297.78	283.12	14.66	20.311		
2,200.00	2,183.23	2,166.46	2,136.27	7.91	8.45	122.25	-241.87	125.41	320.12	304.72	15.41	20.780		
2,300.00	2,282.20	2,263.92	2,231.74	8.30	8.89	121.97	-259.88	133.11	342.48	326.33	16.15	21.205		
2,400.00	2,381.17	2,361.37	2,327.21	8.69	9.34	121.73	-277.88	140.80	364.84	347.94	16.90	21.591		
2,500.00	2,480.14	2,458.83	2,422.68	9.08	9.78	121.52	-295.88	148.50	387.21	369.56	17.65	21.944		
2,600.00	2,579.11	2,556.29	2,518.15	9.47	10.22	121.33	-313.89	156.20	409.58	391.18	18.39	22.268		
2,700.00	2,678.08	2,653.75	2,613.62	9.86	10.67	121.16	-331.89	163.90	431.95	412.81	19.14	22.565		
2,800.00	2,777.04	2,751.20	2,709.09	10.25	11.11	121.00	-349.90	171.60	454.33	434.44	19.89	22.839		
2,900.00	2,876.01	2,848.66	2,804.56	10.64	11.55	120.86	-367.90	179.30	476.71	456.07	20.64	23.093		
3,000.00	2,974.98	2,946.12	2,900.03	11.03	12.00	120.74	-385.91	187.00	499.09	477.70	21.39	23.329		
3,100.00	3,073.95	3,043.57	2,995.50	11.42	12.44	120.62	-403.91	194.70	521.48	499.33	22.15	23.548		
3,200.00	3,172.92	3,141.03	3,090.97	11.81	12.89	120.51	-421.91	202.40	543.87	520.97	22.90	23.752		
3,300.00	3,271.89	3,238.49	3,186.44	12.20	13.33	120.42	-439.92	210.10	566.26	542.61	23.65	23.943		
3,400.00	3,370.86	3,335.94	3,281.91	12.59	13.77	120.33	-457.92	217.80	588.65	564.24	24.40	24.122		
3,500.00	3,469.82	3,433.40	3,377.38	12.98	14.22	120.24	-475.93	225.50	611.04	585.88	25.16	24.290		
3,600.00	3,568.79	3,530.86	3,472.85	13.37	14.66	120.16	-493.93	233.19	633.43	607.52	25.91	24.448		
3,700.00	3,667.76	3,628.32	3,568.32	13.76	15.11	120.09	-511.93	240.89	655.83	629.16	26.66	24.596		
3,800.00	3,766.73	3,725.77	3,663.78	14.15	15.55	120.02	-529.94	248.59	678.22	650.80	27.42	24.736		
3,900.00	3,865.70	3,823.23	3,759.25	14.54	16.00	119.96	-547.94	256.29	700.62	672.45	28.17	24.869		
4,000.00	3,964.67	3,920.69	3,854.72	14.93	16.44	119.90	-565.95	263.99	723.01	694.09	28.93	24.994		
4,100.00	4,063.64	4,018.14	3,950.19	15.32	16.89	119.84	-583.95	271.69	745.41	715.73	29.68	25.113		
4,200.00	4,162.60	4,115.60	4,045.66	15.72	17.33	119.79	-601.96	279.39	767.81	737.37	30.44	25.226		
4,300.00	4,261.57	4,213.06	4,141.13	16.11	17.78	119.74	-619.96	287.09	790.21	759.02	31.19	25.333		
4,400.00	4,360.54	4,310.51	4,236.60	16.50	18.22	119.69	-637.96	294.79	812.61	780.66	31.95	25.435		
4,500.00	4,459.51	4,414.55	4,338.55	16.89	18.66	119.65	-657.05	302.95	834.92	802.18	32.73	25.506		
4,600.00	4,558.65	4,540.96	4,463.13	17.23	19.01	119.97	-676.69	311.35	854.30	820.78	33.52	25.486		
4,700.00	4,658.17	4,669.20	4,590.35	17.51	19.35	120.24	-691.44	317.66	868.66	834.46	34.20	25.401		
4,800.00	4,757.98	4,798.76	4,719.48	17.76	19.66	120.41	-701.01	321.75	877.88	843.06	34.82	25.211		
4,900.00	4,857.94	6,303.14	5,606.00	18.01	20.80	-167.32	135.97	323.63	793.51	775.88	17.63	45.009		
5,000.00	4,957.94	6,303.17	5,606.00	18.27	20.80	-90.00	136.00	323.63	700.08	681.00	19.08	36.695		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-3104
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-3104	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Sec 30-T10N-R57W - Horsetail #30E-1904 - Hz - APD		Offset Site Error:		0.00 usft	
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:		0.00 usft			
Reference		Offset		Semi Major Axis			Distance							Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor						
5,100.00	5,057.94	6,303.17	5,606.00	18.55	20.80	-90.00	136.00	323.63	608.69	587.74	20.95	29.059						
5,200.00	5,157.70	6,298.07	5,606.00	18.81	20.78	103.29	130.90	323.63	520.68	497.30	23.38	22.273						
5,300.00	5,254.78	6,274.73	5,606.00	19.06	20.71	113.37	107.56	323.63	439.87	413.45	26.42	16.647						
5,400.00	5,345.62	6,233.30	5,606.00	19.30	20.60	116.19	66.13	323.63	371.38	341.38	30.01	12.377						
5,500.00	5,426.89	6,175.29	5,606.00	19.52	20.46	113.93	8.13	323.63	319.70	286.03	33.67	9.495						
5,600.00	5,495.61	6,102.85	5,606.00	19.75	20.34	108.19	-64.31	323.63	286.91	250.34	36.57	7.846						
5,700.00	5,549.24	6,018.64	5,606.00	19.99	20.30	100.81	-148.53	323.63	270.83	232.68	38.15	7.099						
5,800.00	5,585.83	5,923.69	5,602.66	20.28	20.32	93.38	-243.35	323.63	265.36	226.65	38.71	6.854						
5,844.52	5,596.26	5,881.83	5,596.26	20.42	20.35	90.00	-284.71	323.63	264.82	226.09	38.73	6.838						
5,900.00	5,604.02	5,831.38	5,584.16	20.62	20.39	85.84	-333.67	323.63	265.63	227.12	38.51	6.898						
6,000.00	5,606.00	5,745.50	5,552.91	21.03	20.48	78.66	-413.55	323.63	271.34	233.78	37.56	7.224						
6,100.00	5,606.00	5,671.04	5,515.50	21.54	20.56	71.13	-477.86	323.63	286.58	250.91	35.67	8.035						
6,200.00	5,606.00	5,608.66	5,477.37	22.13	20.62	64.09	-527.18	323.63	315.13	281.79	33.34	9.452						
6,300.00	5,606.00	5,550.00	5,436.37	22.81	20.67	57.36	-569.09	323.63	357.72	326.52	31.19	11.467						
6,400.00	5,606.00	5,514.40	5,409.28	23.56	20.69	53.39	-592.19	323.63	412.33	381.90	30.44	13.547						
6,500.00	5,606.00	5,479.03	5,380.87	24.38	20.71	49.63	-613.25	323.63	476.75	446.58	30.17	15.802						
6,600.00	5,606.00	5,450.00	5,356.53	25.26	20.72	46.71	-629.06	323.63	548.52	518.14	30.38	18.055						
6,700.00	5,606.00	5,424.54	5,334.49	26.19	20.73	44.29	-641.79	323.63	625.79	595.02	30.77	20.335						
6,800.00	5,606.00	5,400.00	5,312.68	27.18	20.73	42.08	-653.03	323.63	707.23	676.06	31.18	22.685						
6,900.00	5,606.00	5,385.12	5,299.21	28.20	20.72	40.80	-659.34	323.63	791.80	760.04	31.75	24.936						
7,000.00	5,606.00	5,369.36	5,284.74	29.27	20.72	39.50	-665.60	323.63	878.83	846.61	32.22	27.279						
7,100.00	5,606.00	5,350.00	5,266.72	30.37	20.71	37.97	-672.69	323.63	967.83	935.28	32.54	29.739						
7,200.00	5,606.00	5,350.00	5,266.72	31.50	20.71	37.97	-672.69	323.63	1,058.33	1,025.21	33.12	31.954						
7,300.00	5,606.00	5,332.79	5,250.50	32.66	20.70	36.68	-678.42	323.63	1,150.00	1,116.63	33.37	34.466						
7,400.00	5,606.00	5,323.26	5,241.43	33.84	20.69	35.99	-681.37	323.63	1,242.75	1,209.07	33.68	36.903						
7,500.00	5,606.00	5,300.00	5,219.10	35.04	20.68	34.39	-687.86	323.63	1,336.62	1,302.83	33.79	39.554						
7,600.00	5,606.00	5,300.00	5,219.10	36.27	20.68	34.39	-687.86	323.63	1,430.70	1,396.56	34.14	41.907						
7,700.00	5,606.00	5,300.00	5,219.10	37.51	20.68	34.39	-687.86	323.63	1,525.53	1,491.09	34.44	44.290						



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-3104
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-3104	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-71.61	49.60	-149.18	157.21					
100.00	100.00	100.00	100.00	0.13	0.13	-71.61	49.60	-149.18	157.21	156.94	0.27	590.233		
200.00	200.00	200.00	200.00	0.47	0.47	-71.61	49.60	-149.18	157.21	156.27	0.94	167.127		
300.00	300.00	300.00	300.00	0.81	0.81	-71.61	49.60	-149.18	157.21	155.59	1.61	97.345 CC, ES		
400.00	399.98	399.74	399.72	1.13	1.11	-149.53	47.97	-149.77	158.77	156.53	2.24	70.942		
500.00	499.84	498.92	498.76	1.46	1.41	-152.21	43.12	-151.55	163.71	160.86	2.86	57.312		
600.00	599.45	597.00	596.47	1.81	1.72	-156.28	35.16	-154.47	172.70	169.18	3.52	49.073		
700.00	698.70	693.45	692.22	2.16	2.05	-161.19	24.27	-158.45	186.60	182.38	4.22	44.186		
800.00	797.67	788.12	785.76	2.52	2.39	-166.42	10.65	-163.44	204.89	199.94	4.95	41.387		
900.00	896.64	882.50	878.55	2.89	2.76	-171.46	-5.56	-169.38	225.90	220.23	5.67	39.843		
1,000.00	995.61	978.22	972.55	3.27	3.15	-175.82	-22.50	-175.58	248.67	242.29	6.37	39.008		
1,100.00	1,094.58	1,073.94	1,066.56	3.65	3.55	-179.45	-39.43	-181.78	272.60	265.53	7.07	38.542		
1,200.00	1,193.55	1,169.66	1,160.57	4.03	3.96	-177.49	-56.36	-187.98	297.43	289.67	7.76	38.315		
1,300.00	1,292.52	1,265.39	1,254.58	4.42	4.37	-174.91	-73.29	-194.18	322.94	314.49	8.45	38.198		
1,400.00	1,391.49	1,361.11	1,348.59	4.80	4.78	-172.70	-90.23	-200.38	348.99	339.84	9.14	38.170		
1,500.00	1,490.45	1,456.83	1,442.59	5.19	5.19	-170.79	-107.16	-206.58	375.46	365.62	9.83	38.193		
1,600.00	1,589.42	1,552.55	1,536.60	5.58	5.61	-169.14	-124.09	-212.78	402.26	391.75	10.52	38.245		
1,700.00	1,688.39	1,648.27	1,630.61	5.96	6.03	-167.69	-141.02	-218.98	429.35	418.14	11.21	38.315		
1,800.00	1,787.36	1,743.99	1,724.62	6.35	6.45	-166.41	-157.96	-225.18	456.66	444.77	11.89	38.393		
1,900.00	1,886.33	1,839.72	1,818.63	6.74	6.87	-165.27	-174.89	-231.38	484.17	471.58	12.58	38.476		
2,000.00	1,985.30	1,935.44	1,912.63	7.13	7.29	-164.26	-191.82	-237.58	511.83	498.55	13.27	38.560		
2,100.00	2,084.27	2,031.16	2,006.64	7.52	7.71	-163.35	-208.75	-243.78	539.62	525.65	13.96	38.644		
2,200.00	2,183.23	2,126.88	2,100.65	7.91	8.13	-162.53	-225.69	-249.98	567.53	552.87	14.66	38.725		
2,300.00	2,282.20	2,222.60	2,194.66	8.30	8.55	-161.78	-242.62	-256.18	595.53	580.19	15.35	38.803		
2,400.00	2,381.17	2,318.33	2,288.67	8.69	8.98	-161.10	-259.55	-262.38	623.62	607.58	16.04	38.879		
2,500.00	2,480.14	2,414.05	2,382.67	9.08	9.40	-160.48	-276.49	-268.59	651.79	635.06	16.73	38.950		
2,600.00	2,579.11	2,509.77	2,476.68	9.47	9.82	-159.92	-293.42	-274.79	680.02	662.59	17.43	39.019		
2,700.00	2,678.08	2,605.49	2,570.69	9.86	10.25	-159.39	-310.35	-280.99	708.31	690.18	18.12	39.084		
2,800.00	2,777.04	2,701.21	2,664.70	10.25	10.67	-158.91	-327.28	-287.19	736.64	717.83	18.82	39.146		
2,900.00	2,876.01	2,796.94	2,758.71	10.64	11.09	-158.46	-344.22	-293.39	765.03	745.51	19.51	39.204		
3,000.00	2,974.98	2,892.66	2,852.71	11.03	11.52	-158.04	-361.15	-299.59	793.45	773.24	20.21	39.260		
3,100.00	3,073.95	2,988.38	2,946.72	11.42	11.94	-157.66	-378.08	-305.79	821.91	801.00	20.91	39.313		
3,200.00	3,172.92	3,084.10	3,040.73	11.81	12.37	-157.30	-395.01	-311.99	850.40	828.79	21.60	39.363		
3,300.00	3,271.89	3,179.82	3,134.74	12.20	12.79	-156.96	-411.95	-318.19	878.92	856.61	22.30	39.410		
3,400.00	3,370.86	3,275.55	3,228.75	12.59	13.22	-156.64	-428.88	-324.39	907.46	884.46	23.00	39.456		
3,500.00	3,469.82	3,371.27	3,322.76	12.98	13.64	-156.34	-445.81	-330.59	936.03	912.33	23.70	39.499		
3,600.00	3,568.79	3,466.99	3,416.76	13.37	14.07	-156.06	-462.74	-336.79	964.62	940.23	24.40	39.539		
3,700.00	3,667.76	3,562.71	3,510.77	13.76	14.49	-155.80	-479.68	-342.99	993.24	968.14	25.10	39.578		
3,800.00	3,766.73	3,658.43	3,604.78	14.15	14.92	-155.55	-496.61	-349.19	1,021.87	996.07	25.79	39.615		
3,900.00	3,865.70	3,754.15	3,698.79	14.54	15.34	-155.32	-513.54	-355.39	1,050.51	1,024.02	26.49	39.651		
4,000.00	3,964.67	3,849.88	3,792.80	14.93	15.77	-155.09	-530.47	-361.59	1,079.18	1,051.98	27.19	39.684		
4,100.00	4,063.64	3,945.60	3,886.80	15.32	16.19	-154.88	-547.41	-367.79	1,107.85	1,079.96	27.89	39.716		
4,200.00	4,162.60	4,041.32	3,980.81	15.72	16.62	-154.68	-564.34	-373.99	1,136.54	1,107.95	28.59	39.747		
4,300.00	4,261.57	4,137.04	4,074.82	16.11	17.04	-154.49	-581.27	-380.19	1,165.24	1,135.95	29.30	39.776		
4,400.00	4,360.54	4,232.76	4,168.83	16.50	17.47	-154.31	-598.21	-386.39	1,193.96	1,163.96	30.00	39.804		
4,500.00	4,459.51	4,328.49	4,262.84	16.89	17.89	-154.13	-615.14	-392.60	1,222.68	1,191.98	30.70	39.831		
4,600.00	4,558.65	4,424.50	4,357.13	17.23	18.32	-154.15	-632.12	-398.81	1,250.33	1,218.98	31.35	39.878		
4,700.00	4,658.17	4,521.25	4,452.15	17.51	18.75	-154.12	-649.24	-405.08	1,275.00	1,243.05	31.95	39.904		
4,800.00	4,757.98	4,666.28	4,595.03	17.76	19.23	-153.90	-672.47	-413.59	1,295.28	1,262.50	32.78	39.920		
4,900.00	4,857.94	4,829.06	4,756.66	18.01	19.64	-153.66	-690.52	-420.20	1,307.85	1,274.27	33.57	38.955		
5,000.00	4,957.94	6,412.06	5,735.00	18.27	21.07	-90.53	126.49	-431.90	1,282.58	1,251.86	30.72	41.744		
5,100.00	5,057.94	6,412.06	5,735.00	18.55	21.07	-90.53	126.49	-431.90	1,224.59	1,192.35	32.23	37.990		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-3104
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-3104	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Sec 30-T10N-R57W - Horsetail #30E-1934 - Hz - APD		Offset Site Error:		0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:		0.00 usft		
Reference		Offset		Semi Major Axis			Distance							Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor					
5,200.00	5,157.70	6,406.96	5,735.00	18.81	21.05	93.99	121.40	-431.85	1,172.34	1,138.63	33.71	34.776					
5,300.00	5,254.78	6,383.62	5,735.00	19.06	20.98	98.23	98.06	-431.63	1,127.50	1,092.48	35.03	32.188					
5,400.00	5,345.62	6,342.19	5,735.00	19.30	20.87	100.37	56.63	-431.24	1,091.55	1,055.43	36.12	30.219					
5,500.00	5,426.89	6,284.19	5,735.00	19.52	20.73	100.83	-1.37	-430.70	1,064.75	1,027.79	36.96	28.806					
5,600.00	5,495.61	6,211.75	5,735.00	19.75	20.62	100.18	-73.80	-430.03	1,046.28	1,008.67	37.60	27.823					
5,700.00	5,549.24	6,127.54	5,735.00	19.99	20.56	99.00	-158.01	-429.24	1,034.55	996.42	38.13	27.132					
5,800.00	5,585.83	6,007.52	5,725.88	20.28	20.59	96.99	-277.46	-428.13	1,026.82	988.16	38.65	26.566					
5,900.00	5,604.02	5,892.48	5,692.20	20.62	20.68	94.71	-387.21	-427.11	1,020.49	981.21	39.28	25.982					
6,000.00	5,606.00	5,792.15	5,643.79	21.03	20.78	92.13	-474.90	-426.29	1,016.06	976.17	39.89	25.472					
6,095.33	5,606.00	5,715.28	5,595.82	21.51	20.85	89.42	-534.88	-425.73	1,014.23	973.81	40.43	25.089					
6,100.00	5,606.00	5,711.97	5,593.56	21.54	20.85	89.30	-537.30	-425.71	1,014.24	973.79	40.45	25.076					
6,200.00	5,606.00	5,650.00	5,548.53	22.13	20.90	86.76	-579.82	-425.31	1,017.15	976.24	40.91	24.866 SF					
6,300.00	5,606.00	5,600.00	5,508.72	22.81	20.92	84.52	-610.03	-425.03	1,026.35	985.09	41.26	24.877					
6,400.00	5,606.00	5,563.03	5,477.52	23.56	20.93	82.77	-629.84	-424.85	1,042.72	1,001.20	41.52	25.113					
6,500.00	5,606.00	5,532.47	5,450.72	24.38	20.93	81.29	-644.52	-424.71	1,066.61	1,024.91	41.70	25.579					
6,600.00	5,606.00	5,500.00	5,421.35	25.26	20.93	79.67	-658.36	-424.58	1,098.02	1,056.25	41.77	26.290					
6,700.00	5,606.00	5,487.11	5,409.46	26.19	20.92	79.02	-663.34	-424.54	1,136.46	1,094.61	41.85	27.157					
6,800.00	5,606.00	5,469.93	5,393.43	27.18	20.91	78.15	-669.52	-424.48	1,181.58	1,139.74	41.84	28.240					
6,900.00	5,606.00	5,450.00	5,374.59	28.20	20.90	77.13	-676.03	-424.42	1,232.77	1,191.00	41.76	29.519					
7,000.00	5,606.00	5,450.00	5,374.59	29.27	20.90	77.13	-676.03	-424.42	1,289.35	1,247.58	41.77	30.871					
7,100.00	5,606.00	5,432.09	5,357.46	30.37	20.88	76.21	-681.26	-424.37	1,350.65	1,309.02	41.63	32.446					
7,200.00	5,606.00	5,422.65	5,348.37	31.50	20.87	75.73	-683.77	-424.35	1,416.21	1,374.68	41.52	34.106					
7,300.00	5,606.00	5,400.00	5,326.36	32.66	20.85	74.56	-689.14	-424.30	1,485.67	1,444.35	41.33	35.949					



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-3104
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-3104	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	-60.92	49.60	-89.20	102.06					
100.00	100.00	100.00	100.00	0.13	0.13	-60.92	49.60	-89.20	102.06	101.80	0.27	383.193		
200.00	200.00	200.00	200.00	0.47	0.47	-60.92	49.60	-89.20	102.06	101.12	0.94	108.503		
300.00	300.00	300.00	300.00	0.81	0.81	-60.92	49.60	-89.20	102.06	100.45	1.61	63.199 CC, ES		
400.00	399.98	401.32	401.30	1.13	1.11	-139.48	47.82	-89.39	102.71	100.46	2.25	45.677		
500.00	499.84	502.14	501.97	1.46	1.42	-144.03	42.52	-89.97	105.10	102.23	2.87	36.625		
600.00	599.45	601.97	601.41	1.81	1.74	-151.00	33.80	-90.93	110.46	106.95	3.52	31.408		
700.00	698.70	700.35	699.05	2.16	2.07	-159.39	21.84	-92.24	120.41	116.22	4.20	28.689		
800.00	797.67	797.12	794.63	2.52	2.41	-167.96	6.83	-93.88	135.04	130.13	4.91	27.481		
900.00	896.64	893.77	889.82	2.89	2.79	-175.41	-9.79	-95.70	152.58	146.95	5.64	27.062		
1,000.00	995.61	990.43	985.02	3.27	3.18	178.71	-26.42	-97.53	172.17	165.81	6.36	27.070		
1,100.00	1,094.58	1,087.09	1,080.22	3.65	3.57	174.04	-43.05	-99.35	193.18	186.10	7.08	27.299		
1,200.00	1,193.55	1,183.75	1,175.42	4.03	3.97	170.29	-59.68	-101.17	215.19	207.41	7.79	27.637		
1,300.00	1,292.52	1,280.40	1,270.62	4.42	4.38	167.24	-76.31	-102.99	237.94	229.44	8.50	28.009		
1,400.00	1,391.49	1,377.06	1,365.82	4.80	4.78	164.71	-92.94	-104.81	261.21	252.01	9.20	28.389		
1,500.00	1,490.45	1,473.72	1,461.02	5.19	5.19	162.60	-109.57	-106.63	284.90	274.99	9.91	28.758		
1,600.00	1,589.42	1,570.37	1,556.22	5.58	5.60	160.81	-126.19	-108.45	308.90	298.28	10.61	29.108		
1,700.00	1,688.39	1,667.03	1,651.41	5.96	6.01	159.28	-142.82	-110.27	333.14	321.82	11.32	29.435		
1,800.00	1,787.36	1,763.69	1,746.61	6.35	6.42	157.95	-159.45	-112.10	357.57	345.55	12.02	29.738		
1,900.00	1,886.33	1,860.35	1,841.81	6.74	6.83	156.80	-176.08	-113.92	382.17	369.44	12.73	30.019		
2,000.00	1,985.30	1,957.00	1,937.01	7.13	7.24	155.78	-192.71	-115.74	406.89	393.45	13.44	30.278		
2,100.00	2,084.27	2,053.66	2,032.21	7.52	7.65	154.88	-209.34	-117.56	431.72	417.58	14.15	30.518		
2,200.00	2,183.23	2,150.32	2,127.41	7.91	8.06	154.08	-225.97	-119.38	456.64	441.79	14.86	30.739		
2,300.00	2,282.20	2,246.97	2,222.61	8.30	8.48	153.36	-242.60	-121.20	481.64	466.07	15.56	30.944		
2,400.00	2,381.17	2,343.63	2,317.80	8.69	8.89	152.71	-259.22	-123.02	506.70	490.42	16.28	31.133		
2,500.00	2,480.14	2,440.29	2,413.00	9.08	9.31	152.13	-275.85	-124.84	531.81	514.83	16.99	31.309		
2,600.00	2,579.11	2,536.95	2,508.20	9.47	9.72	151.59	-292.48	-126.67	556.98	539.28	17.70	31.473		
2,700.00	2,678.08	2,633.60	2,603.40	9.86	10.13	151.10	-309.11	-128.49	582.18	563.77	18.41	31.625		
2,800.00	2,777.04	2,730.26	2,698.60	10.25	10.55	150.65	-325.74	-130.31	607.42	588.30	19.12	31.768		
2,900.00	2,876.01	2,826.92	2,793.80	10.64	10.96	150.24	-342.37	-132.13	632.70	612.86	19.83	31.900		
3,000.00	2,974.98	2,923.57	2,889.00	11.03	11.38	149.86	-359.00	-133.95	658.00	637.45	20.55	32.025		
3,100.00	3,073.95	3,020.23	2,984.19	11.42	11.79	149.51	-375.63	-135.77	683.32	662.06	21.26	32.142		
3,200.00	3,172.92	3,116.89	3,079.39	11.81	12.21	149.18	-392.25	-137.59	708.67	686.70	21.97	32.251		
3,300.00	3,271.89	3,213.55	3,174.59	12.20	12.62	148.88	-408.88	-139.41	734.04	711.35	22.69	32.354		
3,400.00	3,370.86	3,310.20	3,269.79	12.59	13.04	148.59	-425.51	-141.24	759.43	736.03	23.40	32.452		
3,500.00	3,469.82	3,406.86	3,364.99	12.98	13.46	148.33	-442.14	-143.06	784.83	760.72	24.12	32.543		
3,600.00	3,568.79	3,503.52	3,460.19	13.37	13.87	148.08	-458.77	-144.88	810.25	785.42	24.83	32.630		
3,700.00	3,667.76	3,600.18	3,555.39	13.76	14.29	147.84	-475.40	-146.70	835.68	810.14	25.55	32.712		
3,800.00	3,766.73	3,696.83	3,650.58	14.15	14.70	147.62	-492.03	-148.52	861.13	834.87	26.26	32.790		
3,900.00	3,865.70	3,793.49	3,745.78	14.54	15.12	147.41	-508.66	-150.34	886.58	859.61	26.98	32.864		
4,000.00	3,964.67	3,890.15	3,840.98	14.93	15.53	147.22	-525.28	-152.16	912.05	884.36	27.69	32.934		
4,100.00	4,063.64	3,986.80	3,936.18	15.32	15.95	147.03	-541.91	-153.98	937.53	909.12	28.41	33.000		
4,200.00	4,162.60	4,083.46	4,031.38	15.72	16.37	146.86	-558.54	-155.81	963.01	933.88	29.13	33.064		
4,300.00	4,261.57	4,180.12	4,126.58	16.11	16.78	146.69	-575.17	-157.63	988.50	958.66	29.84	33.124		
4,400.00	4,360.54	4,276.78	4,221.78	16.50	17.20	146.53	-591.80	-159.45	1,014.00	983.44	30.56	33.182		
4,500.00	4,459.51	4,373.43	4,316.97	16.89	17.62	146.38	-608.43	-161.27	1,039.51	1,008.23	31.28	33.237		
4,600.00	4,558.65	4,470.33	4,412.41	17.23	18.03	146.44	-625.10	-163.09	1,064.01	1,032.07	31.95	33.307		
4,700.00	4,658.17	4,567.80	4,508.41	17.51	18.45	146.40	-641.87	-164.93	1,085.73	1,053.18	32.55	33.354		
4,800.00	4,757.98	4,666.51	4,605.63	17.76	18.88	146.25	-658.85	-166.79	1,104.64	1,071.48	33.16	33.313		
4,900.00	4,857.94	4,809.93	4,747.47	18.01	19.28	145.86	-679.88	-169.09	1,118.70	1,084.77	33.93	32.969		
5,000.00	4,957.94	4,955.43	4,892.26	18.27	19.63	-137.55	-693.97	-170.64	1,126.67	1,092.00	34.67	32.501		
5,100.00	5,057.94	6,497.14	5,820.00	18.55	21.40	-90.00	136.00	-171.45	1,076.19	1,047.41	28.78	37.393		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-3104
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-3104	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design												Sec 30-T10N-R57W - Horsetail #30E-1935 - Hz - APD		Offset Site Error:		0.00 usft	
Survey Program: 0-MWD+IFR1+MS+sag														Offset Well Error:		0.00 usft	
Reference		Offset		Semi Major Axis			Distance										
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning				
5,200.00	5,157.70	6,492.04	5,820.00	18.81	21.38	96.93	130.91	-171.45	1,008.01	977.45	30.57	32.977					
5,300.00	5,254.78	6,468.70	5,820.00	19.06	21.30	103.63	107.56	-171.45	947.06	914.74	32.32	29.306					
5,400.00	5,345.62	6,427.26	5,820.00	19.30	21.16	107.34	66.13	-171.45	895.81	861.89	33.92	26.409					
5,500.00	5,426.89	6,369.26	5,820.00	19.52	20.99	108.75	8.13	-171.45	855.56	820.25	35.30	24.234					
5,600.00	5,495.61	6,296.82	5,820.00	19.75	20.82	108.59	-64.31	-171.45	826.24	789.82	36.42	22.687					
5,700.00	5,549.24	6,212.61	5,820.00	19.99	20.70	107.61	-148.53	-171.45	806.69	769.38	37.31	21.620					
5,800.00	5,585.83	6,071.50	5,808.59	20.28	20.63	104.82	-288.83	-171.45	793.30	755.11	38.19	20.774					
5,900.00	5,604.02	5,930.10	5,760.87	20.62	20.68	101.10	-421.48	-171.45	780.23	740.91	39.31	19.847					
6,000.00	5,606.00	5,815.47	5,697.12	21.03	20.75	96.84	-516.47	-171.45	769.20	728.94	40.26	19.105					
6,100.00	5,606.00	5,730.84	5,637.53	21.54	20.80	92.38	-576.43	-171.45	761.45	720.53	40.92	18.610					
6,161.79	5,606.00	5,690.65	5,606.00	21.90	20.82	90.00	-601.34	-171.45	759.90	718.73	41.17	18.456					
6,200.00	5,606.00	5,669.41	5,588.59	22.13	20.82	88.69	-613.50	-171.45	760.55	719.28	41.26	18.432 SF					
6,300.00	5,606.00	5,623.95	5,549.75	22.81	20.83	85.77	-637.09	-171.45	768.84	727.48	41.36	18.589					
6,400.00	5,606.00	5,589.44	5,518.97	23.56	20.82	83.47	-652.68	-171.45	787.36	746.10	41.27	19.079					
6,500.00	5,606.00	5,562.57	5,494.32	24.38	20.81	81.64	-663.40	-171.45	816.20	775.15	41.05	19.885					
6,600.00	5,606.00	5,550.00	5,482.62	25.26	20.81	80.78	-667.97	-171.45	854.84	814.02	40.81	20.946					
6,700.00	5,606.00	5,523.74	5,457.82	26.19	20.79	78.97	-676.60	-171.45	902.07	861.66	40.41	22.325					
6,800.00	5,606.00	5,500.00	5,435.05	27.18	20.77	77.32	-683.32	-171.45	957.11	917.13	39.98	23.937					
6,900.00	5,606.00	5,500.00	5,435.05	28.20	20.77	77.32	-683.32	-171.45	1,018.49	978.72	39.77	25.609					
7,000.00	5,606.00	5,500.00	5,435.05	29.27	20.77	77.32	-683.32	-171.45	1,085.61	1,046.05	39.56	27.442					
7,100.00	5,606.00	5,478.09	5,413.79	30.37	20.75	75.81	-688.59	-171.45	1,156.95	1,117.75	39.20	29.517					
7,200.00	5,606.00	5,470.39	5,406.27	31.50	20.74	75.27	-690.23	-171.45	1,232.29	1,193.32	38.97	31.618					
7,300.00	5,606.00	5,450.00	5,386.24	32.66	20.71	73.87	-694.04	-171.45	1,311.04	1,272.36	38.68	33.893					
7,400.00	5,606.00	5,450.00	5,386.24	33.84	20.71	73.87	-694.04	-171.45	1,392.10	1,353.52	38.57	36.089					
7,500.00	5,606.00	5,450.00	5,386.24	35.04	20.71	73.87	-694.04	-171.45	1,475.48	1,437.00	38.48	38.340					



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-3104
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-3104	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	-30.50	49.60	-29.22	57.57					
100.00	100.00	100.00	100.00	0.13	0.13	-30.50	49.60	-29.22	57.57	57.30	0.27	216.143		
200.00	200.00	200.00	200.00	0.47	0.47	-30.50	49.60	-29.22	57.57	56.63	0.94	61.202		
300.00	300.00	300.00	300.00	0.81	0.81	-30.50	49.60	-29.22	57.57	55.95	1.61	35.648		
400.00	399.98	401.90	401.88	1.13	1.12	-109.75	47.84	-28.78	56.43	54.13	2.30	24.483		
500.00	499.84	503.43	503.26	1.46	1.42	-117.03	42.60	-27.47	53.57	50.55	3.02	17.763		
600.00	599.45	604.22	603.65	1.81	1.75	-130.37	33.95	-25.31	50.90	47.20	3.70	13.749		
632.55	631.80	636.81	636.03	1.92	1.86	-136.07	30.42	-24.43	50.65	46.74	3.91	12.949	CC, ES	
700.00	698.70	703.91	702.57	2.16	2.08	-149.40	22.02	-22.33	52.08	47.77	4.31	12.078		
800.00	797.67	802.37	799.80	2.52	2.44	-169.35	6.98	-18.57	59.76	54.83	4.93	12.116		
900.00	896.64	899.83	895.64	2.89	2.82	174.66	-10.19	-14.29	73.04	67.39	5.65	12.929		
1,000.00	995.61	997.18	991.35	3.27	3.22	163.98	-27.43	-9.98	90.22	83.81	6.41	14.075		
1,100.00	1,094.58	1,094.53	1,087.07	3.65	3.63	156.82	-44.66	-5.67	109.50	102.33	7.16	15.284		
1,200.00	1,193.55	1,191.88	1,182.79	4.03	4.03	151.83	-61.90	-1.37	129.94	122.04	7.91	16.433		
1,300.00	1,292.52	1,289.24	1,278.50	4.42	4.45	148.20	-79.14	2.94	151.08	142.44	8.64	17.478		
1,400.00	1,391.49	1,386.59	1,374.22	4.80	4.86	145.47	-96.38	7.24	172.66	163.28	9.38	18.412		
1,500.00	1,490.45	1,483.94	1,469.94	5.19	5.28	143.34	-113.62	11.55	194.53	184.42	10.11	19.244		
1,600.00	1,589.42	1,581.29	1,565.66	5.58	5.70	141.65	-130.85	15.86	216.60	205.76	10.84	19.982		
1,700.00	1,688.39	1,678.65	1,661.37	5.96	6.12	140.26	-148.09	20.16	238.82	227.25	11.57	20.640		
1,800.00	1,787.36	1,776.00	1,757.09	6.35	6.54	139.12	-165.33	24.47	261.16	248.85	12.30	21.228		
1,900.00	1,886.33	1,873.35	1,852.81	6.74	6.97	138.15	-182.57	28.77	283.57	270.54	13.04	21.755		
2,000.00	1,985.30	1,970.70	1,948.53	7.13	7.39	137.33	-199.81	33.08	306.05	292.28	13.77	22.229		
2,100.00	2,084.27	2,068.06	2,044.24	7.52	7.81	136.61	-217.04	37.38	328.58	314.08	14.50	22.658		
2,200.00	2,183.23	2,165.41	2,139.96	7.91	8.24	135.99	-234.28	41.69	351.16	335.92	15.24	23.047		
2,300.00	2,282.20	2,262.76	2,235.68	8.30	8.66	135.45	-251.52	46.00	373.77	357.80	15.97	23.401		
2,400.00	2,381.17	2,360.11	2,331.40	8.69	9.09	134.97	-268.76	50.30	396.41	379.70	16.71	23.725		
2,500.00	2,480.14	2,457.46	2,427.11	9.08	9.51	134.53	-286.00	54.61	419.07	401.62	17.45	24.022		
2,600.00	2,579.11	2,554.82	2,522.83	9.47	9.94	134.15	-303.23	58.91	441.75	423.57	18.18	24.296		
2,700.00	2,678.08	2,652.17	2,618.55	9.86	10.36	133.80	-320.47	63.22	464.45	445.53	18.92	24.548		
2,800.00	2,777.04	2,749.52	2,714.26	10.25	10.79	133.48	-337.71	67.53	487.17	467.51	19.66	24.781		
2,900.00	2,876.01	2,846.67	2,809.98	10.64	11.22	133.19	-354.95	71.83	509.89	489.50	20.40	24.998		
3,000.00	2,974.98	2,944.23	2,905.70	11.03	11.64	132.93	-372.19	76.14	532.63	511.49	21.14	25.200		
3,100.00	3,073.95	3,041.58	3,001.42	11.42	12.07	132.69	-389.42	80.44	555.38	533.50	21.88	25.388		
3,200.00	3,172.92	3,138.93	3,097.13	11.81	12.50	132.46	-406.66	84.75	578.14	555.52	22.62	25.564		
3,300.00	3,271.89	3,236.28	3,192.85	12.20	12.92	132.26	-423.90	89.05	600.90	577.54	23.36	25.728		
3,400.00	3,370.86	3,333.64	3,288.57	12.59	13.35	132.07	-441.14	93.36	623.67	599.58	24.10	25.883		
3,500.00	3,469.82	3,430.99	3,384.29	12.98	13.78	131.89	-458.38	97.67	646.45	621.61	24.84	26.028		
3,600.00	3,568.79	3,528.34	3,480.00	13.37	14.20	131.72	-475.61	101.97	669.23	643.65	25.58	26.165		
3,700.00	3,667.76	3,625.69	3,575.72	13.76	14.63	131.57	-492.85	106.28	692.02	665.70	26.32	26.294		
3,800.00	3,766.73	3,723.05	3,671.44	14.15	15.06	131.42	-510.09	110.58	714.81	687.75	27.06	26.415		
3,900.00	3,865.70	3,820.40	3,767.16	14.54	15.49	131.29	-527.33	114.89	737.61	709.81	27.80	26.531		
4,000.00	3,964.67	3,917.75	3,862.87	14.93	15.91	131.16	-544.57	119.20	760.41	731.87	28.54	26.640		
4,100.00	4,063.64	4,015.10	3,958.59	15.32	16.34	131.04	-561.81	123.50	783.21	753.93	29.29	26.744		
4,200.00	4,162.60	4,112.46	4,054.31	15.72	16.77	130.92	-579.04	127.81	806.02	775.99	30.03	26.842		
4,300.00	4,261.57	4,209.81	4,150.03	16.11	17.20	130.82	-596.28	132.11	828.83	798.06	30.77	26.936		
4,400.00	4,360.54	4,307.16	4,245.74	16.50	17.62	130.72	-613.52	136.42	851.64	820.13	31.51	27.025		
4,500.00	4,459.51	4,404.51	4,341.46	16.89	18.05	130.62	-630.76	140.72	874.46	842.20	32.26	27.110		
4,600.00	4,558.65	4,502.03	4,437.34	17.23	18.48	130.75	-648.02	145.04	896.48	863.53	32.95	27.209		
4,700.00	4,658.17	4,613.41	4,546.94	17.51	18.91	130.72	-667.21	149.83	916.00	882.36	33.63	27.235		
4,800.00	4,757.98	4,743.56	4,675.79	17.76	19.25	130.56	-684.96	154.26	930.50	896.18	34.32	27.114		
4,900.00	4,857.94	4,875.31	4,806.93	18.01	19.57	130.35	-697.13	157.30	939.38	904.42	34.96	26.873		
5,000.00	4,957.94	6,420.34	5,735.00	18.27	21.21	-90.00	136.00	159.12	887.78	865.69	22.09	40.192		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-3104
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-3104	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design												Sec 30-T10N-R57W - Horsetail #30E-1936 - 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)						
5,100.00	5,057.94	6,420.34	5,735.00	18.55	21.21	-90.00	136.00	159.12	801.71	777.81	23.90	33.549					
5,200.00	5,157.70	6,415.24	5,735.00	18.81	21.19	100.63	130.90	159.12	719.45	693.42	26.02	27.647					
5,300.00	5,254.78	6,391.90	5,735.00	19.06	21.10	110.03	107.56	159.12	644.16	615.78	28.38	22.699					
5,400.00	5,345.62	6,350.47	5,735.00	19.30	20.98	114.40	66.13	159.12	579.60	548.75	30.85	18.787					
5,500.00	5,426.89	6,292.47	5,735.00	19.52	20.80	115.22	8.13	159.12	528.44	495.24	33.21	15.914					
5,600.00	5,495.61	6,220.03	5,735.00	19.75	20.66	113.72	-64.31	159.12	491.56	456.33	35.23	13.954					
5,700.00	5,549.24	6,135.81	5,735.00	19.99	20.55	111.08	-148.53	159.12	467.79	431.03	36.76	12.724					
5,800.00	5,585.83	6,020.28	5,728.77	20.28	20.51	107.00	-263.74	159.12	453.05	415.01	38.04	11.910					
5,900.00	5,604.02	5,902.47	5,697.65	20.62	20.55	101.84	-377.11	159.12	441.02	401.67	39.35	11.207					
6,000.00	5,606.00	5,799.39	5,650.14	21.03	20.62	95.87	-468.39	159.12	432.56	392.32	40.23	10.751					
6,087.03	5,606.00	5,726.29	5,606.00	21.47	20.68	90.00	-526.58	159.12	429.33	388.88	40.45	10.614 SF					
6,100.00	5,606.00	5,716.69	5,599.61	21.54	20.69	89.15	-533.75	159.12	429.42	389.00	40.42	10.624					
6,200.00	5,606.00	5,650.00	5,551.73	22.13	20.73	82.80	-580.11	159.12	436.81	397.02	39.79	10.977					
6,300.00	5,606.00	5,600.00	5,512.16	22.81	20.75	77.67	-610.65	159.12	457.98	419.37	38.61	11.860					
6,400.00	5,606.00	5,563.13	5,481.20	23.56	20.76	73.79	-630.66	159.12	493.49	456.14	37.35	13.212					
6,500.00	5,606.00	5,531.74	5,453.79	24.38	20.76	70.48	-645.94	159.12	541.94	505.70	36.25	14.951					
6,600.00	5,606.00	5,500.00	5,425.18	25.26	20.75	67.16	-659.68	159.12	601.10	565.77	35.33	17.015					
6,700.00	5,606.00	5,485.27	5,411.63	26.19	20.75	65.64	-665.46	159.12	668.48	633.53	34.95	19.126					
6,800.00	5,606.00	5,467.72	5,395.29	27.18	20.74	63.86	-671.84	159.12	742.31	707.63	34.67	21.408					
6,900.00	5,606.00	5,450.00	5,378.57	28.20	20.73	62.09	-677.72	159.12	821.02	786.51	34.50	23.795					
7,000.00	5,606.00	5,450.00	5,378.57	29.27	20.73	62.09	-677.72	159.12	903.57	868.90	34.67	26.063					
7,100.00	5,606.00	5,429.16	5,358.67	30.37	20.71	60.05	-683.91	159.12	988.75	954.19	34.56	28.610					
7,200.00	5,606.00	5,419.57	5,349.43	31.50	20.70	59.14	-686.49	159.12	1,076.33	1,041.70	34.63	31.080					
7,300.00	5,606.00	5,400.00	5,330.45	32.66	20.69	57.31	-691.22	159.12	1,165.87	1,131.27	34.60	33.698					
7,400.00	5,606.00	5,400.00	5,330.45	33.84	20.69	57.31	-691.22	159.12	1,256.55	1,221.76	34.79	36.118					
7,500.00	5,606.00	5,400.00	5,330.45	35.04	20.69	57.31	-691.22	159.12	1,348.55	1,313.58	34.97	38.567					
7,600.00	5,606.00	5,400.00	5,330.45	36.27	20.69	57.31	-691.22	159.12	1,441.62	1,406.49	35.13	41.037					
7,700.00	5,606.00	5,400.00	5,330.45	37.51	20.69	57.31	-691.22	159.12	1,535.55	1,500.27	35.28	43.523					



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-3104
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-3104	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	0.02	-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	401.96	401.94	1.13	1.14	-166.67	0.74	-58.31	60.05	57.72	2.33	25.821		
500.00	499.84	503.91	503.73	1.46	1.49	-165.75	2.90	-53.32	60.26	57.19	3.08	19.591 ES		
600.00	599.45	604.41	603.92	1.81	1.83	-164.65	6.07	-46.00	61.51	57.77	3.73	16.469		
700.00	698.70	704.31	703.49	2.16	2.16	-164.38	9.28	-38.60	66.01	61.63	4.38	15.081		
800.00	797.67	804.09	802.95	2.52	2.51	-164.63	12.48	-31.21	72.56	67.53	5.03	14.428		
900.00	896.64	903.88	902.41	2.89	2.85	-164.84	15.69	-23.82	79.14	73.46	5.68	13.926		
1,000.00	995.61	1,003.66	1,001.87	3.27	3.20	-165.02	18.89	-16.43	85.72	79.38	6.34	13.517		
1,100.00	1,094.58	1,103.44	1,101.32	3.65	3.55	-165.18	22.09	-9.04	92.30	85.30	7.00	13.177		
1,200.00	1,193.55	1,203.22	1,200.78	4.03	3.90	-165.31	25.29	-1.65	98.88	91.21	7.67	12.890		
1,300.00	1,292.52	1,303.01	1,300.24	4.42	4.25	-165.43	28.50	5.74	105.46	97.13	8.34	12.646		
1,400.00	1,391.49	1,402.79	1,399.69	4.80	4.60	-165.54	31.70	13.13	112.05	103.04	9.01	12.436		
1,500.00	1,490.45	1,502.57	1,499.15	5.19	4.95	-165.63	34.90	20.53	118.63	108.95	9.68	12.253		
1,600.00	1,589.42	1,602.36	1,598.61	5.58	5.30	-165.71	38.10	27.92	125.21	114.86	10.35	12.093		
1,700.00	1,688.39	1,702.14	1,698.07	5.96	5.65	-165.78	41.31	35.31	131.80	120.77	11.03	11.951		
1,800.00	1,787.36	1,801.92	1,797.52	6.35	6.00	-165.85	44.51	42.70	138.38	126.68	11.70	11.825		
1,900.00	1,886.33	1,901.70	1,896.98	6.74	6.35	-165.91	47.71	50.09	144.96	132.58	12.38	11.712		
2,000.00	1,985.30	2,001.49	1,996.44	7.13	6.70	-165.97	50.92	57.48	151.55	138.49	13.05	11.610		
2,100.00	2,084.27	2,101.27	2,095.90	7.52	7.05	-166.02	54.12	64.87	158.13	144.40	13.73	11.518		
2,200.00	2,183.23	2,201.05	2,195.35	7.91	7.40	-166.07	57.32	72.26	164.71	150.31	14.41	11.434		
2,300.00	2,282.20	2,300.84	2,294.81	8.30	7.76	-166.11	60.52	79.65	171.30	156.21	15.08	11.357		
2,400.00	2,381.17	2,400.62	2,394.27	8.69	8.11	-166.15	63.73	87.04	177.88	162.12	15.76	11.287		
2,500.00	2,480.14	2,500.40	2,493.73	9.08	8.46	-166.19	66.93	94.43	184.46	168.03	16.44	11.223		
2,600.00	2,579.11	2,600.19	2,593.18	9.47	8.81	-166.22	70.13	101.82	191.05	173.93	17.11	11.163		
2,700.00	2,678.08	2,699.97	2,692.64	9.86	9.16	-166.25	73.34	109.21	197.63	179.84	17.79	11.108		
2,800.00	2,777.04	2,799.75	2,792.10	10.25	9.51	-166.28	76.54	116.61	204.22	185.75	18.47	11.056		
2,900.00	2,876.01	2,899.53	2,891.55	10.64	9.87	-166.31	79.74	124.00	210.80	191.65	19.15	11.009		
3,000.00	2,974.98	2,999.32	2,991.01	11.03	10.22	-166.34	82.94	131.39	217.39	197.56	19.83	10.964		
3,100.00	3,073.95	3,099.10	3,090.47	11.42	10.57	-166.36	86.15	138.78	223.97	203.46	20.51	10.923		
3,200.00	3,172.92	3,198.88	3,189.93	11.81	10.92	-166.39	89.35	146.17	230.55	209.37	21.18	10.883		
3,300.00	3,271.89	3,298.67	3,289.38	12.20	11.27	-166.41	92.55	153.56	237.14	215.28	21.86	10.847		
3,400.00	3,370.86	3,398.45	3,388.84	12.59	11.63	-166.43	95.75	160.95	243.72	221.18	22.54	10.812		
3,500.00	3,469.82	3,498.23	3,488.30	12.98	11.98	-166.45	98.96	168.34	250.31	227.09	23.22	10.780		
3,600.00	3,568.79	3,598.01	3,587.76	13.37	12.33	-166.47	102.16	175.73	256.89	232.99	23.90	10.749		
3,700.00	3,667.76	3,697.80	3,687.21	13.76	12.68	-166.49	105.36	183.12	263.48	238.90	24.58	10.720		
3,800.00	3,766.73	3,797.58	3,786.67	14.15	13.03	-166.51	108.57	190.51	270.06	244.80	25.26	10.692		
3,900.00	3,865.70	3,897.36	3,886.13	14.54	13.38	-166.52	111.77	197.90	276.65	250.71	25.94	10.666		
4,000.00	3,964.67	3,997.15	3,985.58	14.93	13.74	-166.54	114.97	205.30	283.23	256.62	26.62	10.642		
4,100.00	4,063.64	4,096.93	4,085.04	15.32	14.09	-166.55	118.17	212.69	289.82	262.52	27.29	10.618		
4,200.00	4,162.60	4,196.71	4,184.50	15.72	14.44	-166.57	121.38	220.08	296.40	268.43	27.97	10.595		
4,300.00	4,261.57	4,296.50	4,283.96	16.11	14.79	-166.58	124.58	227.47	302.99	274.33	28.65	10.574		
4,400.00	4,360.54	4,396.28	4,383.41	16.50	15.15	-166.59	127.78	234.86	309.57	280.24	29.33	10.554		
4,500.00	4,459.51	4,496.06	4,482.87	16.89	15.50	-166.61	130.98	242.25	316.15	286.14	30.01	10.534		
4,600.00	4,558.65	4,595.91	4,582.40	17.23	15.85	-166.59	134.19	249.64	321.52	290.86	30.66	10.487		
4,700.00	4,658.17	4,696.82	4,673.10	17.51	16.13	-166.53	136.58	255.15	324.89	293.72	31.17	10.423		
4,800.00	4,757.98	4,777.34	4,763.57	17.76	16.37	-166.56	137.82	258.01	327.75	296.13	31.62	10.367		
4,900.00	4,857.94	4,871.72	4,857.94	18.01	16.62	-166.63	138.02	258.47	329.86	297.77	32.09	10.279		
5,000.00	4,957.94	4,971.72	4,957.94	18.27	16.92	-89.65	138.02	258.47	329.98	297.30	32.69	10.096		
5,100.00	5,057.94	5,071.79	5,057.97	18.55	17.21	-89.93	136.40	258.47	329.98	296.69	33.28	9.914		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-3104
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-3104	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	HZ	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,105.03	5,062.97	5,076.81	5,062.97	18.57	17.23	90.00	135.98	258.47	329.98	296.67	33.31	9.906		
5,200.00	5,157.70	5,170.01	5,154.58	18.81	17.47	87.97	119.52	258.47	330.19	296.42	33.77	9.779		
5,300.00	5,254.78	5,265.93	5,244.25	19.06	17.72	85.85	85.84	258.47	330.86	296.70	34.16	9.687		
5,400.00	5,345.62	5,359.89	5,324.66	19.30	17.96	83.89	37.48	258.47	331.88	297.41	34.47	9.628		
5,500.00	5,426.89	5,452.19	5,393.94	19.52	18.19	82.17	-23.32	258.47	333.11	298.37	34.74	9.589		
5,600.00	5,495.61	5,543.12	5,450.67	19.75	18.42	80.73	-94.24	258.47	334.37	299.37	35.00	9.554		
5,700.00	5,549.24	5,632.99	5,493.79	19.99	18.66	79.61	-172.96	258.47	335.50	300.20	35.30	9.504		
5,800.00	5,585.83	5,722.10	5,522.58	20.28	18.95	78.83	-257.17	258.47	336.35	300.66	35.69	9.423		
5,900.00	5,604.02	5,810.74	5,536.58	20.62	19.28	78.42	-344.59	258.47	336.84	300.61	36.23	9.298		
6,000.00	5,606.00	5,905.73	5,538.00	21.03	19.71	78.36	-439.55	258.47	336.91	299.87	37.05	9.094		
6,100.00	5,606.00	6,005.73	5,538.00	21.54	20.25	78.36	-539.55	258.47	336.91	298.75	38.16	8.828		
6,200.00	5,606.00	6,105.73	5,538.00	22.13	20.88	78.36	-639.55	258.47	336.91	297.46	39.46	8.539		
6,300.00	5,606.00	6,205.73	5,538.00	22.81	21.60	78.36	-739.55	258.47	336.91	296.00	40.92	8.234		
6,400.00	5,606.00	6,305.73	5,538.00	23.56	22.39	78.36	-839.55	258.47	336.91	294.39	42.52	7.923		
6,500.00	5,606.00	6,405.73	5,538.00	24.38	23.25	78.36	-939.55	258.47	336.91	292.66	44.26	7.613		
6,600.00	5,606.00	6,505.73	5,538.00	25.26	24.17	78.36	-1,039.55	258.47	336.91	290.80	46.11	7.307		
6,700.00	5,606.00	6,605.73	5,538.00	26.19	25.14	78.36	-1,139.55	258.47	336.91	288.85	48.06	7.010		
6,800.00	5,606.00	6,705.73	5,538.00	27.18	26.16	78.36	-1,239.55	258.47	336.91	286.81	50.11	6.724		
6,900.00	5,606.00	6,805.73	5,538.00	28.20	27.22	78.36	-1,339.55	258.47	336.91	284.68	52.23	6.450		
7,000.00	5,606.00	6,905.73	5,538.00	29.27	28.32	78.36	-1,439.55	258.47	336.91	282.49	54.43	6.190		
7,100.00	5,606.00	7,005.73	5,538.00	30.37	29.45	78.36	-1,539.55	258.47	336.91	280.23	56.69	5.944		
7,200.00	5,606.00	7,105.73	5,538.00	31.50	30.61	78.36	-1,639.55	258.47	336.91	277.92	59.00	5.711		
7,300.00	5,606.00	7,205.73	5,538.00	32.66	31.79	78.36	-1,739.55	258.47	336.91	275.55	61.36	5.491		
7,400.00	5,606.00	7,305.73	5,538.00	33.84	33.00	78.36	-1,839.55	258.47	336.91	273.15	63.77	5.284		
7,500.00	5,606.00	7,405.73	5,538.00	35.04	34.23	78.36	-1,939.55	258.47	336.92	270.71	66.21	5.089		
7,600.00	5,606.00	7,505.73	5,538.00	36.27	35.48	78.36	-2,039.55	258.47	336.92	268.23	68.69	4.905		
7,700.00	5,606.00	7,605.73	5,538.00	37.51	36.75	78.36	-2,139.55	258.47	336.92	265.72	71.20	4.732		
7,800.00	5,606.00	7,705.73	5,538.00	38.77	38.03	78.36	-2,239.55	258.47	336.92	263.18	73.73	4.569		
7,900.00	5,606.00	7,805.73	5,538.00	40.04	39.32	78.36	-2,339.55	258.47	336.92	260.62	76.30	4.416		
8,000.00	5,606.00	7,905.73	5,538.00	41.33	40.63	78.36	-2,439.55	258.47	336.92	258.03	78.88	4.271		
8,100.00	5,606.00	8,005.73	5,538.00	42.63	41.94	78.36	-2,539.55	258.47	336.92	255.43	81.49	4.135		
8,200.00	5,606.00	8,105.73	5,538.00	43.94	43.27	78.36	-2,639.55	258.47	336.92	252.80	84.11	4.006		
8,300.00	5,606.00	8,205.73	5,538.00	45.26	44.60	78.36	-2,739.55	258.47	336.92	250.16	86.75	3.884		
8,400.00	5,606.00	8,305.73	5,538.00	46.59	45.95	78.36	-2,839.55	258.47	336.92	247.51	89.41	3.768		
8,500.00	5,606.00	8,405.73	5,538.00	47.92	47.30	78.36	-2,939.55	258.47	336.92	244.84	92.08	3.659		
8,600.00	5,606.00	8,505.73	5,538.00	49.27	48.66	78.36	-3,039.55	258.47	336.92	242.15	94.76	3.555		
8,700.00	5,606.00	8,605.73	5,538.00	50.62	50.02	78.36	-3,139.55	258.47	336.92	239.46	97.46	3.457		
8,800.00	5,606.00	8,705.73	5,538.00	51.98	51.40	78.36	-3,239.55	258.46	336.92	236.75	100.16	3.364		
8,900.00	5,606.00	8,805.73	5,538.00	53.34	52.77	78.36	-3,339.55	258.46	336.92	234.04	102.88	3.275		
9,000.00	5,606.00	8,905.73	5,538.00	54.71	54.15	78.36	-3,439.55	258.46	336.92	231.31	105.60	3.190		
9,100.00	5,606.00	9,005.73	5,538.00	56.09	55.54	78.36	-3,539.55	258.46	336.92	228.58	108.34	3.110		
9,200.00	5,606.00	9,105.73	5,538.00	57.47	56.93	78.36	-3,639.55	258.46	336.92	225.84	111.08	3.033		
9,300.00	5,606.00	9,205.73	5,538.00	58.85	58.32	78.36	-3,739.55	258.46	336.92	223.09	113.83	2.960		
9,400.00	5,606.00	9,305.73	5,538.00	60.24	59.72	78.36	-3,839.55	258.46	336.92	220.33	116.58	2.890		
9,500.00	5,606.00	9,405.73	5,538.00	61.63	61.12	78.36	-3,939.55	258.46	336.92	217.57	119.35	2.823		
9,600.00	5,606.00	9,505.73	5,538.00	63.03	62.53	78.36	-4,039.55	258.46	336.92	214.80	122.11	2.759		
9,700.00	5,606.00	9,605.73	5,538.00	64.43	63.94	78.36	-4,139.55	258.46	336.92	212.03	124.89	2.698		
9,800.00	5,606.00	9,705.73	5,538.00	65.83	65.35	78.36	-4,239.55	258.46	336.92	209.25	127.67	2.639		
9,900.00	5,606.00	9,805.73	5,538.00	67.24	66.76	78.36	-4,339.55	258.46	336.92	206.47	130.45	2.583		
10,000.00	5,606.00	9,905.73	5,538.00	68.64	68.18	78.36	-4,439.55	258.46	336.92	203.68	133.24	2.529		
10,100.00	5,606.00	10,005.73	5,538.00	70.06	69.59	78.36	-4,539.55	258.46	336.92	200.89	136.03	2.477		
10,200.00	5,606.00	10,105.73	5,538.00	71.47	71.01	78.36	-4,639.55	258.46	336.92	198.09	138.83	2.427		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-3104
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-3104	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design												Sec 30-T10N-R57W - Horsetail #30E-3103 - 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)						
10,300.00	5,606.00	10,205.73	5,538.00	72.88	72.44	78.36	-4,739.55	258.46	336.92	195.29	141.63	2.379					
10,400.00	5,606.00	10,305.73	5,538.00	74.30	73.86	78.36	-4,839.55	258.46	336.92	192.49	144.43	2.333					
10,500.00	5,606.00	10,405.73	5,538.00	75.72	75.29	78.36	-4,939.55	258.46	336.92	189.68	147.24	2.288					
10,600.00	5,606.00	10,505.73	5,538.00	77.14	76.71	78.36	-5,039.55	258.46	336.92	186.87	150.05	2.245					
10,700.00	5,606.00	10,605.73	5,538.00	78.57	78.14	78.36	-5,139.55	258.46	336.92	184.06	152.86	2.204					
10,800.00	5,606.00	10,705.73	5,538.00	79.99	79.57	78.36	-5,239.55	258.46	336.92	181.25	155.67	2.164					
10,900.00	5,606.00	10,805.73	5,538.00	81.42	81.01	78.36	-5,339.55	258.46	336.92	178.43	158.49	2.126					
11,000.00	5,606.00	10,905.73	5,538.00	82.85	82.44	78.36	-5,439.55	258.46	336.92	175.61	161.31	2.089					
11,100.00	5,606.00	11,005.73	5,538.00	84.28	83.88	78.36	-5,539.55	258.46	336.92	172.78	164.14	2.053					
11,200.00	5,606.00	11,105.73	5,538.00	85.71	85.31	78.36	-5,639.55	258.46	336.92	169.96	166.96	2.018					
11,300.00	5,606.00	11,205.73	5,538.00	87.14	86.75	78.36	-5,739.55	258.46	336.92	167.13	169.79	1.984					
11,400.00	5,606.00	11,305.73	5,538.00	88.58	88.19	78.36	-5,839.55	258.46	336.92	164.30	172.62	1.952					
11,500.00	5,606.00	11,405.73	5,538.00	90.01	89.63	78.36	-5,939.55	258.46	336.92	161.47	175.45	1.920					
11,600.00	5,606.00	11,505.73	5,538.00	91.45	91.07	78.36	-6,039.55	258.46	336.92	158.64	178.29	1.890					
11,700.00	5,606.00	11,605.73	5,538.00	92.89	92.51	78.36	-6,139.55	258.46	336.92	155.80	181.12	1.860					
11,800.00	5,606.00	11,705.73	5,538.00	94.33	93.95	78.36	-6,239.55	258.46	336.92	152.96	183.96	1.832					
11,900.00	5,606.00	11,805.73	5,538.00	95.77	95.40	78.36	-6,339.55	258.46	336.92	150.13	186.80	1.804					
12,000.00	5,606.00	11,905.73	5,538.00	97.21	96.84	78.36	-6,439.55	258.46	336.92	147.29	189.64	1.777					
12,100.00	5,606.00	12,005.73	5,538.00	98.65	98.29	78.36	-6,539.55	258.46	336.92	144.44	192.48	1.750					
12,200.00	5,606.00	12,105.73	5,538.00	100.09	99.73	78.36	-6,639.55	258.46	336.92	141.60	195.32	1.725					
12,300.00	5,606.00	12,205.73	5,538.00	101.53	101.18	78.36	-6,739.55	258.46	336.92	138.76	198.17	1.700					
12,400.00	5,606.00	12,305.73	5,538.00	102.98	102.63	78.36	-6,839.55	258.46	336.92	135.91	201.01	1.676					
12,500.00	5,606.00	12,405.73	5,538.00	104.42	104.07	78.36	-6,939.55	258.46	336.92	133.06	203.86	1.653					
12,600.00	5,606.00	12,505.73	5,538.00	105.87	105.52	78.36	-7,039.55	258.46	336.92	130.22	206.71	1.630					
12,700.00	5,606.00	12,605.73	5,538.00	107.31	106.97	78.36	-7,139.55	258.46	336.92	127.37	209.56	1.608					
12,800.00	5,606.00	12,705.73	5,538.00	108.76	108.42	78.36	-7,239.55	258.46	336.92	124.52	212.41	1.586					
12,900.00	5,606.00	12,805.73	5,538.00	110.21	109.87	78.36	-7,339.55	258.46	336.92	121.67	215.26	1.565					
13,000.00	5,606.00	12,905.73	5,538.00	111.66	111.32	78.36	-7,439.55	258.46	336.92	118.81	218.11	1.545					
13,100.00	5,606.00	13,005.73	5,538.00	113.11	112.78	78.36	-7,539.55	258.46	336.92	115.96	220.96	1.525					
13,200.00	5,606.00	13,105.73	5,538.00	114.56	114.23	78.36	-7,639.55	258.46	336.92	113.11	223.82	1.505					
13,300.00	5,606.00	13,205.73	5,538.00	116.01	115.68	78.36	-7,739.55	258.46	336.92	110.25	226.67	1.486	Level 3				
13,400.00	5,606.00	13,305.73	5,538.00	117.46	117.13	78.36	-7,839.55	258.46	336.92	107.40	229.53	1.468	Level 3				
13,500.00	5,606.00	13,405.73	5,538.00	118.91	118.59	78.36	-7,939.55	258.46	336.92	104.54	232.39	1.450	Level 3				
13,600.00	5,606.00	13,505.73	5,538.00	120.36	120.04	78.36	-8,039.55	258.46	336.92	101.68	235.24	1.432	Level 3				
13,700.00	5,606.00	13,605.73	5,538.00	121.81	121.49	78.36	-8,139.55	258.45	336.92	98.83	238.09	1.415	Level 3				
13,742.83	5,606.00	13,648.56	5,538.00	122.43	122.05	78.36	-8,182.38	258.45	336.92	97.67	239.26	1.408	Level 3, SF				



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-3104
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-3104	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-89.99	0.02	-89.97	89.97					
100.00	100.00	100.00	100.00	0.13	0.13	-89.99	0.02	-89.97	89.97	89.70	0.27	337.782		
200.00	200.00	200.00	200.00	0.47	0.47	-89.99	0.02	-89.97	89.97	89.03	0.94	95.645		
300.00	300.00	300.00	300.00	0.81	0.81	-89.99	0.02	-89.97	89.97	88.35	1.61	55.709 CC		
400.00	399.98	402.48	402.46	1.13	1.15	-166.49	1.18	-88.55	90.29	87.97	2.32	38.995 ES		
500.00	499.84	503.24	503.11	1.46	1.49	-165.44	4.06	-85.02	91.91	88.94	2.98	30.876		
600.00	599.45	603.11	602.87	1.81	1.82	-164.89	7.03	-81.39	96.80	93.17	3.63	26.655		
700.00	698.70	702.76	702.41	2.16	2.15	-164.89	10.00	-77.76	105.05	100.75	4.30	24.437		
800.00	797.67	802.23	801.77	2.52	2.49	-165.19	12.96	-74.14	115.36	110.39	4.97	23.234		
900.00	896.64	901.69	901.12	2.89	2.82	-165.46	15.92	-70.52	125.69	120.07	5.63	22.344		
1,000.00	995.61	1,001.15	1,000.48	3.27	3.16	-165.68	18.88	-66.89	136.03	129.74	6.29	21.630		
1,100.00	1,094.58	1,100.62	1,099.83	3.65	3.50	-165.87	21.84	-63.27	146.36	139.41	6.95	21.045		
1,200.00	1,193.55	1,200.08	1,199.18	4.03	3.84	-166.04	24.80	-59.65	156.70	149.08	7.62	20.557		
1,300.00	1,292.52	1,299.54	1,298.54	4.42	4.17	-166.19	27.77	-56.03	167.04	158.75	8.29	20.144		
1,400.00	1,391.49	1,399.01	1,397.89	4.80	4.51	-166.32	30.73	-52.41	177.38	168.42	8.96	19.790		
1,500.00	1,490.45	1,498.47	1,497.24	5.19	4.85	-166.43	33.69	-48.79	187.72	178.09	9.63	19.485		
1,600.00	1,589.42	1,597.93	1,596.60	5.58	5.19	-166.53	36.65	-45.17	198.06	187.76	10.31	19.217		
1,700.00	1,688.39	1,697.40	1,695.95	5.96	5.53	-166.63	39.61	-41.55	208.40	197.43	10.98	18.982		
1,800.00	1,787.36	1,796.86	1,795.30	6.35	5.87	-166.71	42.57	-37.93	218.75	207.09	11.65	18.773		
1,900.00	1,886.33	1,896.32	1,894.66	6.74	6.21	-166.79	45.53	-34.31	229.09	216.76	12.33	18.586		
2,000.00	1,985.30	1,995.79	1,994.01	7.13	6.54	-166.86	48.49	-30.68	239.43	226.43	13.00	18.418		
2,100.00	2,084.27	2,095.25	2,093.36	7.52	6.88	-166.92	51.45	-27.06	249.78	236.10	13.67	18.267		
2,200.00	2,183.23	2,194.71	2,192.71	7.91	7.22	-166.98	54.41	-23.44	260.12	245.77	14.35	18.129		
2,300.00	2,282.20	2,294.18	2,292.07	8.30	7.56	-167.03	57.37	-19.82	270.47	255.44	15.02	18.004		
2,400.00	2,381.17	2,393.64	2,391.42	8.69	7.90	-167.08	60.33	-16.20	280.81	265.11	15.70	17.889		
2,500.00	2,480.14	2,493.10	2,490.77	9.08	8.24	-167.13	63.30	-12.58	291.15	274.78	16.37	17.783		
2,600.00	2,579.11	2,592.56	2,590.13	9.47	8.58	-167.17	66.26	-8.96	301.50	284.45	17.05	17.686		
2,700.00	2,678.08	2,692.03	2,689.48	9.86	8.92	-167.21	69.22	-5.34	311.84	294.12	17.72	17.596		
2,800.00	2,777.04	2,791.49	2,788.83	10.25	9.25	-167.25	72.18	-1.72	322.19	303.79	18.40	17.512		
2,900.00	2,876.01	2,890.95	2,888.19	10.64	9.59	-167.29	75.14	1.90	332.53	313.46	19.07	17.434		
3,000.00	2,974.98	2,990.42	2,987.54	11.03	9.93	-167.32	78.10	5.53	342.88	323.13	19.75	17.362		
3,100.00	3,073.95	3,089.88	3,086.89	11.42	10.27	-167.35	81.06	9.15	353.23	332.80	20.42	17.294		
3,200.00	3,172.92	3,189.34	3,186.25	11.81	10.61	-167.38	84.02	12.77	363.57	342.47	21.10	17.231		
3,300.00	3,271.89	3,288.81	3,285.60	12.20	10.95	-167.41	86.98	16.39	373.92	352.14	21.78	17.171		
3,400.00	3,370.86	3,388.27	3,384.95	12.59	11.29	-167.44	89.94	20.01	384.26	361.81	22.45	17.115		
3,500.00	3,469.82	3,487.73	3,484.31	12.98	11.63	-167.46	92.90	23.63	394.61	371.48	23.13	17.062		
3,600.00	3,568.79	3,587.20	3,583.66	13.37	11.97	-167.49	95.86	27.25	404.95	381.15	23.80	17.013		
3,700.00	3,667.76	3,686.66	3,683.01	13.76	12.31	-167.51	98.83	30.87	415.30	390.82	24.48	16.965		
3,800.00	3,766.73	3,786.12	3,782.37	14.15	12.64	-167.53	101.79	34.49	425.65	400.49	25.16	16.921		
3,900.00	3,865.70	3,885.59	3,881.72	14.54	12.98	-167.55	104.75	38.11	435.99	410.16	25.83	16.879		
4,000.00	3,964.67	3,985.05	3,981.07	14.93	13.32	-167.57	107.71	41.74	446.34	419.83	26.51	16.838		
4,100.00	4,063.64	4,084.51	4,080.43	15.32	13.66	-167.59	110.67	45.36	456.68	429.50	27.18	16.800		
4,200.00	4,162.60	4,183.98	4,179.78	15.72	14.00	-167.61	113.63	48.98	467.03	439.17	27.86	16.764		
4,300.00	4,261.57	4,283.44	4,279.13	16.11	14.34	-167.63	116.59	52.60	477.38	448.84	28.54	16.729		
4,400.00	4,360.54	4,382.90	4,378.49	16.50	14.68	-167.64	119.55	56.22	487.72	458.51	29.21	16.696		
4,500.00	4,459.51	4,482.37	4,477.84	16.89	15.02	-167.66	122.51	59.84	498.07	468.18	29.89	16.665		
4,600.00	4,558.65	4,581.94	4,577.31	17.23	15.36	-167.67	125.48	63.47	507.20	476.66	30.53	16.612		
4,700.00	4,658.17	4,681.77	4,677.02	17.51	15.70	-167.60	128.45	67.10	512.96	481.83	31.13	16.476		
4,800.00	4,757.98	4,781.72	4,776.86	17.76	16.04	-167.43	131.42	70.74	515.33	483.59	31.74	16.238		
4,900.00	4,857.94	4,881.68	4,876.72	18.01	16.38	-167.17	134.40	74.38	514.29	481.96	32.34	15.904		
5,000.00	4,957.94	4,980.10	4,975.02	18.27	16.71	-89.85	137.32	77.95	510.79	477.84	32.95	15.502		
5,100.00	5,057.94	5,067.99	5,062.88	18.55	16.95	-89.68	138.87	79.85	508.64	475.19	33.45	15.206		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-3104
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-3104	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,140.85	5,098.76	5,104.12	5,099.00	18.66	17.04	90.47	139.02	80.02	508.44	474.80	33.64	15.114		
5,200.00	5,157.70	5,162.81	5,157.70	18.81	17.21	90.91	139.02	80.02	508.49	474.51	33.98	14.962		
5,300.00	5,254.78	5,259.89	5,254.78	19.06	17.51	93.35	139.02	80.02	509.40	474.84	34.56	14.741		
5,400.00	5,345.62	5,358.23	5,353.02	19.30	17.81	97.22	136.21	80.03	513.28	478.15	35.13	14.609		
5,500.00	5,426.89	5,469.50	5,461.62	19.52	18.11	101.34	112.98	80.07	520.25	484.59	35.65	14.593		
5,600.00	5,495.61	5,593.48	5,573.71	19.75	18.43	105.24	60.70	80.15	529.24	493.29	35.95	14.720		
5,700.00	5,549.24	5,732.33	5,680.60	19.99	18.77	108.71	-27.27	80.30	538.68	502.72	35.96	14.980		
5,800.00	5,585.83	5,886.36	5,767.39	20.28	19.14	111.36	-153.84	80.51	546.48	510.57	35.91	15.217		
5,900.00	5,604.02	6,051.99	5,815.24	20.62	19.64	112.75	-311.69	80.77	550.57	514.13	36.45	15.106		
6,000.00	5,606.00	6,180.91	5,820.00	21.03	20.16	112.87	-440.39	80.98	550.74	513.23	37.51	14.681		
6,100.00	5,606.00	6,280.91	5,820.00	21.54	20.68	112.87	-540.39	81.15	550.59	512.03	38.56	14.277		
6,200.00	5,606.00	6,380.91	5,820.00	22.13	21.28	112.88	-640.39	81.32	550.44	510.66	39.78	13.839		
6,300.00	5,606.00	6,480.91	5,820.00	22.81	21.97	112.89	-740.39	81.48	550.28	509.15	41.13	13.378		
6,400.00	5,606.00	6,580.91	5,820.00	23.56	22.74	112.89	-840.39	81.65	550.13	507.50	42.63	12.906		
6,500.00	5,606.00	6,680.91	5,820.00	24.38	23.58	112.90	-940.39	81.81	549.98	505.74	44.24	12.432		
6,600.00	5,606.00	6,780.91	5,820.00	25.26	24.47	112.91	-1,040.39	81.98	549.82	503.87	45.96	11.963		
6,700.00	5,606.00	6,880.91	5,820.00	26.19	25.42	112.91	-1,140.39	82.15	549.67	501.90	47.78	11.505		
6,800.00	5,606.00	6,980.91	5,820.00	27.18	26.42	112.92	-1,240.39	82.31	549.52	499.84	49.68	11.062		
6,900.00	5,606.00	7,080.91	5,820.00	28.20	27.46	112.93	-1,340.39	82.48	549.37	497.71	51.65	10.636		
7,000.00	5,606.00	7,180.91	5,820.00	29.27	28.54	112.93	-1,440.39	82.65	549.21	495.52	53.70	10.228		
7,100.00	5,606.00	7,280.91	5,820.00	30.37	29.66	112.94	-1,540.39	82.81	549.06	493.26	55.80	9.839		
7,200.00	5,606.00	7,380.91	5,820.00	31.50	30.80	112.95	-1,640.39	82.98	548.91	490.95	57.96	9.471		
7,300.00	5,606.00	7,480.91	5,820.00	32.66	31.97	112.95	-1,740.39	83.14	548.75	488.59	60.16	9.121		
7,400.00	5,606.00	7,580.91	5,820.00	33.84	33.16	112.96	-1,840.39	83.31	548.60	486.19	62.41	8.790		
7,500.00	5,606.00	7,680.91	5,820.00	35.04	34.38	112.97	-1,940.39	83.48	548.45	483.75	64.70	8.477		
7,600.00	5,606.00	7,780.91	5,820.00	36.27	35.62	112.97	-2,040.39	83.64	548.30	481.28	67.02	8.181		
7,700.00	5,606.00	7,880.91	5,820.00	37.51	36.87	112.98	-2,140.39	83.81	548.14	478.77	69.37	7.902		
7,800.00	5,606.00	7,980.91	5,820.00	38.77	38.14	112.99	-2,240.39	83.97	547.99	476.24	71.75	7.638		
7,900.00	5,606.00	8,080.91	5,820.00	40.04	39.42	112.99	-2,340.39	84.14	547.84	473.69	74.15	7.388		
8,000.00	5,606.00	8,180.91	5,820.00	41.33	40.72	113.00	-2,440.39	84.31	547.68	471.11	76.58	7.152		
8,100.00	5,606.00	8,280.91	5,820.00	42.63	42.03	113.01	-2,540.39	84.47	547.53	468.51	79.02	6.929		
8,200.00	5,606.00	8,380.91	5,820.00	43.94	43.34	113.01	-2,640.39	84.64	547.38	465.89	81.49	6.717		
8,300.00	5,606.00	8,480.91	5,820.00	45.26	44.67	113.02	-2,740.39	84.80	547.23	463.25	83.97	6.517		
8,400.00	5,606.00	8,580.91	5,820.00	46.59	46.01	113.03	-2,840.39	84.97	547.07	460.60	86.47	6.327		
8,500.00	5,606.00	8,680.91	5,820.00	47.92	47.35	113.03	-2,940.39	85.14	546.92	457.94	88.98	6.147		
8,600.00	5,606.00	8,780.91	5,820.00	49.27	48.70	113.04	-3,040.39	85.30	546.77	455.26	91.50	5.975		
8,700.00	5,606.00	8,880.91	5,820.00	50.62	50.06	113.05	-3,140.39	85.47	546.61	452.57	94.04	5.813		
8,800.00	5,606.00	8,980.91	5,820.00	51.98	51.43	113.05	-3,240.39	85.63	546.46	449.87	96.59	5.658		
8,900.00	5,606.00	9,080.91	5,820.00	53.34	52.80	113.06	-3,340.39	85.80	546.31	447.16	99.14	5.510		
9,000.00	5,606.00	9,180.91	5,820.00	54.71	54.17	113.07	-3,440.39	85.97	546.16	444.44	101.71	5.370		
9,100.00	5,606.00	9,280.91	5,820.00	56.09	55.56	113.08	-3,540.39	86.13	546.00	441.72	104.29	5.236		
9,200.00	5,606.00	9,380.91	5,820.00	57.47	56.94	113.08	-3,640.39	86.30	545.85	438.98	106.87	5.108		
9,300.00	5,606.00	9,480.91	5,820.00	58.85	58.33	113.09	-3,740.39	86.46	545.70	436.24	109.46	4.985		
9,400.00	5,606.00	9,580.91	5,820.00	60.24	59.72	113.10	-3,840.38	86.63	545.54	433.49	112.06	4.868		
9,500.00	5,606.00	9,680.91	5,820.00	61.63	61.12	113.10	-3,940.38	86.80	545.39	430.73	114.66	4.757		
9,600.00	5,606.00	9,780.91	5,820.00	63.03	62.52	113.11	-4,040.38	86.96	545.24	427.97	117.27	4.649		
9,700.00	5,606.00	9,880.91	5,820.00	64.43	63.93	113.12	-4,140.38	87.13	545.09	425.20	119.89	4.547		
9,800.00	5,606.00	9,980.91	5,820.00	65.83	65.33	113.12	-4,240.38	87.29	544.93	422.43	122.51	4.448		
9,900.00	5,606.00	10,080.91	5,820.00	67.24	66.74	113.13	-4,340.38	87.46	544.78	419.65	125.13	4.354		
10,000.00	5,606.00	10,180.91	5,820.00	68.64	68.16	113.14	-4,440.38	87.63	544.63	416.87	127.76	4.263		
10,100.00	5,606.00	10,280.91	5,820.00	70.06	69.57	113.14	-4,540.38	87.79	544.48	414.08	130.40	4.176		
10,200.00	5,606.00	10,380.91	5,820.00	71.47	70.99	113.15	-4,640.38	87.96	544.32	411.29	133.03	4.092		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-3104
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-3104	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:		0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag												Offset Well Error:		0.00 usft
Reference		Offset		Semi Major Axis		Distance							Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
10,300.00	5,606.00	10,480.91	5,820.00	72.88	72.41	113.16	-4,740.38	88.12	544.17	408.49	135.67	4.011		
10,400.00	5,606.00	10,580.91	5,820.00	74.30	73.83	113.16	-4,840.38	88.29	544.02	405.70	138.32	3.933		
10,500.00	5,606.00	10,680.91	5,820.00	75.72	75.25	113.17	-4,940.38	88.46	543.86	402.90	140.97	3.858		
10,600.00	5,606.00	10,780.91	5,820.00	77.14	76.68	113.18	-5,040.38	88.62	543.71	400.09	143.62	3.786		
10,700.00	5,606.00	10,880.91	5,820.00	78.57	78.11	113.19	-5,140.38	88.79	543.56	397.29	146.27	3.716		
10,800.00	5,606.00	10,980.91	5,820.00	79.99	79.53	113.19	-5,240.38	88.95	543.41	394.48	148.93	3.649		
10,900.00	5,606.00	11,080.90	5,820.00	81.42	80.96	113.20	-5,340.38	89.12	543.25	391.66	151.59	3.584		
11,000.00	5,606.00	11,180.90	5,820.00	82.85	82.40	113.21	-5,440.38	89.29	543.10	388.85	154.25	3.521		
11,100.00	5,606.00	11,280.90	5,820.00	84.28	83.83	113.21	-5,540.38	89.45	542.95	386.03	156.92	3.460		
11,200.00	5,606.00	11,380.90	5,820.00	85.71	85.26	113.22	-5,640.38	89.62	542.80	383.21	159.58	3.401		
11,300.00	5,606.00	11,480.90	5,820.00	87.14	86.70	113.23	-5,740.38	89.78	542.64	380.39	162.25	3.344		
11,400.00	5,606.00	11,580.90	5,820.00	88.58	88.14	113.23	-5,840.38	89.95	542.49	377.57	164.92	3.289		
11,500.00	5,606.00	11,680.90	5,820.00	90.01	89.57	113.24	-5,940.38	90.12	542.34	374.75	167.59	3.236		
11,600.00	5,606.00	11,780.90	5,820.00	91.45	91.01	113.25	-6,040.38	90.28	542.19	371.92	170.27	3.184		
11,700.00	5,606.00	11,880.90	5,820.00	92.89	92.45	113.25	-6,140.38	90.45	542.03	369.09	172.94	3.134		
11,800.00	5,606.00	11,980.90	5,820.00	94.33	93.89	113.26	-6,240.38	90.61	541.88	366.26	175.62	3.086		
11,900.00	5,606.00	12,080.90	5,820.00	95.77	95.34	113.27	-6,340.38	90.78	541.73	363.43	178.30	3.038		
12,000.00	5,606.00	12,180.90	5,820.00	97.21	96.78	113.27	-6,440.38	90.95	541.57	360.60	180.98	2.993		
12,100.00	5,606.00	12,280.90	5,820.00	98.65	98.22	113.28	-6,540.38	91.11	541.42	357.76	183.66	2.948		
12,200.00	5,606.00	12,380.90	5,820.00	100.09	99.67	113.29	-6,640.38	91.28	541.27	354.93	186.34	2.905		
12,300.00	5,606.00	12,480.90	5,820.00	101.53	101.11	113.30	-6,740.38	91.44	541.12	352.09	189.02	2.863		
12,400.00	5,606.00	12,580.90	5,820.00	102.98	102.56	113.30	-6,840.38	91.61	540.96	349.26	191.71	2.822		
12,500.00	5,606.00	12,680.90	5,820.00	104.42	104.01	113.31	-6,940.38	91.78	540.81	346.42	194.39	2.782		
12,600.00	5,606.00	12,780.90	5,820.00	105.87	105.45	113.32	-7,040.38	91.94	540.66	343.58	197.08	2.743		
12,700.00	5,606.00	12,880.90	5,820.00	107.31	106.90	113.32	-7,140.38	92.11	540.51	340.74	199.77	2.706		
12,800.00	5,606.00	12,980.90	5,820.00	108.76	108.35	113.33	-7,240.38	92.27	540.35	337.90	202.46	2.669		
12,900.00	5,606.00	13,080.90	5,820.00	110.21	109.80	113.34	-7,340.38	92.44	540.20	335.06	205.15	2.633		
13,000.00	5,606.00	13,180.90	5,820.00	111.66	111.25	113.34	-7,440.37	92.61	540.05	332.21	207.84	2.598		
13,100.00	5,606.00	13,280.90	5,820.00	113.11	112.70	113.35	-7,540.37	92.77	539.90	329.37	210.53	2.565		
13,200.00	5,606.00	13,380.90	5,820.00	114.56	114.15	113.36	-7,640.37	92.94	539.74	326.53	213.22	2.531		
13,300.00	5,606.00	13,480.90	5,820.00	116.01	115.61	113.37	-7,740.37	93.10	539.59	323.68	215.91	2.499		
13,400.00	5,606.00	13,580.90	5,820.00	117.46	117.06	113.37	-7,840.37	93.27	539.44	320.84	218.60	2.468		
13,500.00	5,606.00	13,680.90	5,820.00	118.91	118.51	113.38	-7,940.37	93.44	539.29	317.99	221.30	2.437		
13,600.00	5,606.00	13,780.90	5,820.00	120.36	119.96	113.39	-8,040.37	93.60	539.14	315.14	223.99	2.407		
13,700.00	5,606.00	13,880.90	5,820.00	121.81	121.42	113.39	-8,140.37	93.77	538.98	312.30	226.69	2.378		
13,742.83	5,606.00	13,923.73	5,820.00	122.43	122.04	113.40	-8,183.20	93.84	538.92	311.08	227.84	2.365 SF		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-3104
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-3104	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 CC		
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		
400.00	399.98	401.01	400.99	1.13	1.14	-166.75	0.52	-28.28	30.00	27.68	2.32	12.906		
500.00	499.84	502.02	501.86	1.46	1.47	-166.10	2.05	-23.17	30.04	26.96	3.08	9.758		
600.00	599.45	603.03	602.46	1.81	1.82	-165.02	4.60	-14.65	30.11	26.26	3.86	7.811		
700.00	698.70	703.05	701.91	2.16	2.17	-164.53	7.67	-4.41	31.77	27.29	4.48	7.098		
800.00	797.67	802.98	801.27	2.52	2.51	-165.04	10.74	5.82	35.48	30.37	5.11	6.942		
900.00	896.64	902.91	900.63	2.89	2.87	-165.47	13.80	16.05	39.22	33.47	5.75	6.815		
1,000.00	995.61	1,002.84	999.98	3.27	3.23	-165.82	16.87	26.28	42.96	36.56	6.41	6.707		
1,100.00	1,094.58	1,102.77	1,099.34	3.65	3.59	-166.11	19.94	36.52	46.71	39.64	7.06	6.613		
1,200.00	1,193.55	1,202.70	1,198.70	4.03	3.95	-166.36	23.00	46.75	50.45	42.72	7.72	6.531		
1,300.00	1,292.52	1,302.63	1,298.05	4.42	4.32	-166.58	26.07	56.98	54.19	45.80	8.39	6.460		
1,400.00	1,391.49	1,402.56	1,397.41	4.80	4.68	-166.77	29.14	67.21	57.94	48.88	9.06	6.398		
1,500.00	1,490.45	1,502.49	1,496.77	5.19	5.04	-166.93	32.20	77.44	61.68	51.96	9.73	6.343		
1,600.00	1,589.42	1,602.42	1,596.13	5.58	5.41	-167.08	35.27	87.68	65.43	55.03	10.40	6.294		
1,700.00	1,688.39	1,702.35	1,695.48	5.96	5.77	-167.21	38.33	97.91	69.17	58.11	11.07	6.250		
1,800.00	1,787.36	1,802.28	1,794.84	6.35	6.14	-167.33	41.40	108.14	72.92	61.18	11.74	6.210		
1,900.00	1,886.33	1,902.21	1,894.20	6.74	6.50	-167.43	44.47	118.37	76.67	64.25	12.42	6.175		
2,000.00	1,985.30	2,002.13	1,993.55	7.13	6.87	-167.53	47.53	128.60	80.42	67.32	13.09	6.143		
2,100.00	2,084.27	2,102.06	2,092.91	7.52	7.23	-167.62	50.60	138.84	84.16	70.40	13.77	6.113		
2,200.00	2,183.23	2,201.99	2,192.27	7.91	7.60	-167.70	53.67	149.07	87.91	73.47	14.44	6.086		
2,300.00	2,282.20	2,301.92	2,291.63	8.30	7.96	-167.77	56.73	159.30	91.66	76.54	15.12	6.062		
2,400.00	2,381.17	2,401.85	2,390.98	8.69	8.33	-167.84	59.80	169.53	95.40	79.61	15.80	6.039		
2,500.00	2,480.14	2,501.78	2,490.34	9.08	8.69	-167.90	62.86	179.76	99.15	82.68	16.48	6.018		
2,600.00	2,579.11	2,601.71	2,589.70	9.47	9.06	-167.96	65.93	189.99	102.90	85.75	17.15	5.999		
2,700.00	2,678.08	2,701.64	2,689.05	9.86	9.42	-168.01	69.00	200.23	106.65	88.82	17.83	5.981		
2,800.00	2,777.04	2,801.57	2,788.41	10.25	9.79	-168.06	72.06	210.46	110.40	91.89	18.51	5.964		
2,900.00	2,876.01	2,901.50	2,887.77	10.64	10.16	-168.11	75.13	220.69	114.15	94.95	19.19	5.948		
3,000.00	2,974.98	3,001.43	2,987.13	11.03	10.52	-168.15	78.20	230.92	117.89	98.02	19.87	5.933		
3,100.00	3,073.95	3,101.36	3,086.48	11.42	10.89	-168.19	81.26	241.15	121.64	101.09	20.55	5.920		
3,200.00	3,172.92	3,201.29	3,185.84	11.81	11.25	-168.23	84.33	251.39	125.39	104.16	21.23	5.907		
3,300.00	3,271.89	3,301.22	3,285.20	12.20	11.62	-168.27	87.39	261.62	129.14	107.23	21.91	5.895		
3,400.00	3,370.86	3,401.15	3,384.55	12.59	11.99	-168.30	90.46	271.85	132.89	110.30	22.59	5.883		
3,500.00	3,469.82	3,501.08	3,483.91	12.98	12.35	-168.34	93.53	282.08	136.64	113.37	23.27	5.872		
3,600.00	3,568.79	3,601.01	3,583.27	13.37	12.72	-168.37	96.59	292.31	140.38	116.44	23.95	5.862		
3,700.00	3,667.76	3,700.94	3,682.63	13.76	13.08	-168.40	99.66	302.55	144.13	119.50	24.63	5.852		
3,800.00	3,766.73	3,800.87	3,781.98	14.15	13.45	-168.42	102.73	312.78	147.88	122.57	25.31	5.843		
3,900.00	3,865.70	3,900.80	3,881.34	14.54	13.82	-168.45	105.79	323.01	151.63	125.64	25.99	5.834		
4,000.00	3,964.67	4,000.73	3,980.70	14.93	14.18	-168.47	108.86	333.24	155.38	128.71	26.67	5.826		
4,100.00	4,063.64	4,100.66	4,080.06	15.32	14.55	-168.50	111.92	343.47	159.13	131.78	27.35	5.818		
4,200.00	4,162.60	4,200.59	4,179.41	15.72	14.92	-168.52	114.99	353.71	162.88	134.84	28.03	5.810		
4,300.00	4,261.57	4,300.52	4,278.77	16.11	15.28	-168.54	118.06	363.94	166.63	137.91	28.71	5.803		
4,400.00	4,360.54	4,400.45	4,378.13	16.50	15.65	-168.56	121.12	374.17	170.37	140.98	29.39	5.796		
4,500.00	4,459.51	4,500.38	4,477.48	16.89	16.01	-168.58	124.19	384.40	174.12	144.05	30.07	5.790		
4,600.00	4,558.65	4,600.34	4,576.87	17.23	16.38	-168.53	127.26	394.64	176.64	145.92	30.72	5.750		
4,700.00	4,658.17	4,700.33	4,676.29	17.51	16.75	-168.24	130.32	404.88	175.79	144.46	31.33	5.611		
4,800.00	4,757.98	4,796.49	4,771.98	17.76	17.07	-167.79	133.07	414.03	172.26	140.37	31.89	5.402		
4,900.00	4,857.94	4,891.01	4,866.27	18.01	17.32	-167.35	134.91	420.19	168.35	135.99	32.36	5.203		
5,000.00	4,957.94	4,985.67	4,960.87	18.27	17.56	-90.05	135.87	423.37	165.11	132.29	32.82	5.031		
5,075.86	5,033.79	5,058.60	5,033.79	18.48	17.75	-90.00	136.01	423.84	164.61	131.41	33.19	4.959		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-3104
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-3104	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,100.00	5,057.94	5,082.74	5,057.94	18.55	17.81	-90.00	136.01	423.84	164.61	131.27	33.34	4.937		
5,101.88	5,059.81	5,084.62	5,059.81	18.56	17.82	90.00	136.01	423.84	164.61	131.26	33.35	4.936		
5,200.00	5,157.70	5,182.50	5,157.70	18.81	18.11	91.76	136.01	423.84	164.69	130.74	33.95	4.851		
5,300.00	5,254.78	5,281.84	5,256.99	19.06	18.39	98.95	134.23	423.84	166.77	132.10	34.67	4.810		
5,400.00	5,345.62	5,386.71	5,359.93	19.30	18.66	106.77	115.15	423.84	172.35	136.94	35.40	4.868		
5,500.00	5,426.89	5,497.40	5,462.10	19.52	18.94	113.67	73.14	423.84	180.45	144.79	35.66	5.060		
5,600.00	5,495.61	5,614.25	5,557.78	19.75	19.22	119.35	6.49	423.84	189.67	154.54	35.13	5.399		
5,700.00	5,549.24	5,737.14	5,639.75	19.99	19.52	123.66	-84.69	423.84	198.40	164.46	33.94	5.846		
5,800.00	5,585.83	5,865.23	5,700.03	20.28	19.87	126.53	-197.34	423.84	205.14	172.36	32.78	6.258		
5,900.00	5,604.02	5,996.84	5,731.51	20.62	20.31	127.93	-324.77	423.84	208.73	176.07	32.66	6.390		
6,000.00	5,606.00	6,111.75	5,735.00	21.03	20.79	128.08	-439.55	423.84	209.13	175.50	33.64	6.217		
6,100.00	5,606.00	6,211.75	5,735.00	21.54	21.31	128.08	-539.55	423.84	209.13	174.52	34.61	6.042		
6,200.00	5,606.00	6,311.75	5,735.00	22.13	21.91	128.08	-639.55	423.84	209.13	173.41	35.72	5.854		
6,300.00	5,606.00	6,411.75	5,735.00	22.81	22.60	128.08	-739.55	423.84	209.13	172.18	36.96	5.659		
6,400.00	5,606.00	6,511.75	5,735.00	23.56	23.36	128.08	-839.55	423.84	209.13	170.83	38.31	5.459		
6,500.00	5,606.00	6,611.75	5,735.00	24.38	24.19	128.08	-939.55	423.84	209.13	169.38	39.76	5.261		
6,600.00	5,606.00	6,711.75	5,735.00	25.26	25.07	128.08	-1,039.55	423.84	209.13	167.84	41.29	5.064		
6,700.00	5,606.00	6,811.75	5,735.00	26.19	26.02	128.08	-1,139.55	423.84	209.13	166.22	42.91	4.873		
6,800.00	5,606.00	6,911.75	5,735.00	27.18	27.00	128.08	-1,239.55	423.84	209.13	164.53	44.61	4.688		
6,900.00	5,606.00	7,011.75	5,735.00	28.20	28.04	128.08	-1,339.55	423.84	209.13	162.77	46.36	4.511		
7,000.00	5,606.00	7,111.75	5,735.00	29.27	29.11	128.08	-1,439.55	423.84	209.13	160.96	48.18	4.341		
7,100.00	5,606.00	7,211.75	5,735.00	30.37	30.21	128.08	-1,539.55	423.84	209.13	159.10	50.04	4.179		
7,200.00	5,606.00	7,311.75	5,735.00	31.50	31.34	128.08	-1,639.55	423.84	209.13	157.19	51.95	4.026		
7,300.00	5,606.00	7,411.75	5,735.00	32.66	32.51	128.08	-1,739.55	423.84	209.13	155.24	53.90	3.880		
7,400.00	5,606.00	7,511.75	5,735.00	33.84	33.69	128.08	-1,839.55	423.84	209.13	153.25	55.88	3.742		
7,500.00	5,606.00	7,611.75	5,735.00	35.04	34.90	128.08	-1,939.55	423.84	209.13	151.23	57.90	3.612		
7,600.00	5,606.00	7,711.75	5,735.00	36.27	36.13	128.08	-2,039.55	423.84	209.13	149.19	59.95	3.489		
7,700.00	5,606.00	7,811.75	5,735.00	37.51	37.37	128.08	-2,139.55	423.84	209.13	147.11	62.02	3.372		
7,800.00	5,606.00	7,911.75	5,735.00	38.77	38.63	128.08	-2,239.55	423.84	209.13	145.01	64.12	3.262		
7,900.00	5,606.00	8,011.75	5,735.00	40.04	39.91	128.08	-2,339.55	423.84	209.13	142.90	66.24	3.157		
8,000.00	5,606.00	8,111.75	5,735.00	41.33	41.20	128.08	-2,439.55	423.84	209.13	140.76	68.38	3.059		
8,100.00	5,606.00	8,211.75	5,735.00	42.63	42.50	128.08	-2,539.55	423.84	209.13	138.60	70.53	2.965		
8,200.00	5,606.00	8,311.75	5,735.00	43.94	43.81	128.08	-2,639.55	423.84	209.13	136.43	72.71	2.876		
8,300.00	5,606.00	8,411.75	5,735.00	45.26	45.13	128.08	-2,739.55	423.84	209.13	134.24	74.89	2.792		
8,400.00	5,606.00	8,511.75	5,735.00	46.59	46.46	128.08	-2,839.55	423.84	209.13	132.04	77.10	2.713		
8,500.00	5,606.00	8,611.75	5,735.00	47.92	47.80	128.08	-2,939.55	423.84	209.13	129.83	79.31	2.637		
8,600.00	5,606.00	8,711.75	5,735.00	49.27	49.15	128.08	-3,039.55	423.84	209.13	127.60	81.53	2.565		
8,700.00	5,606.00	8,811.75	5,735.00	50.62	50.50	128.08	-3,139.55	423.84	209.13	125.37	83.77	2.497		
8,800.00	5,606.00	8,911.75	5,735.00	51.98	51.86	128.08	-3,239.55	423.84	209.13	123.12	86.01	2.431		
8,900.00	5,606.00	9,011.75	5,735.00	53.34	53.23	128.08	-3,339.55	423.84	209.13	120.87	88.27	2.369		
9,000.00	5,606.00	9,111.75	5,735.00	54.71	54.60	128.08	-3,439.55	423.84	209.13	118.61	90.53	2.310		
9,100.00	5,606.00	9,211.75	5,735.00	56.09	55.98	128.08	-3,539.55	423.84	209.13	116.34	92.80	2.254		
9,200.00	5,606.00	9,311.75	5,735.00	57.47	57.36	128.08	-3,639.55	423.84	209.13	114.06	95.08	2.200		
9,300.00	5,606.00	9,411.75	5,735.00	58.85	58.74	128.08	-3,739.55	423.84	209.14	111.78	97.36	2.148		
9,400.00	5,606.00	9,511.75	5,735.00	60.24	60.13	128.08	-3,839.55	423.84	209.14	109.49	99.65	2.099		
9,500.00	5,606.00	9,611.75	5,735.00	61.63	61.53	128.08	-3,939.55	423.84	209.14	107.19	101.94	2.051		
9,600.00	5,606.00	9,711.75	5,735.00	63.03	62.92	128.08	-4,039.55	423.84	209.14	104.89	104.24	2.006		
9,700.00	5,606.00	9,811.75	5,735.00	64.43	64.32	128.08	-4,139.55	423.84	209.14	102.59	106.55	1.963		
9,800.00	5,606.00	9,911.75	5,735.00	65.83	65.73	128.08	-4,239.55	423.84	209.14	100.28	108.86	1.921		
9,900.00	5,606.00	10,011.75	5,735.00	67.24	67.14	128.08	-4,339.55	423.84	209.14	97.96	111.17	1.881		
10,000.00	5,606.00	10,111.75	5,735.00	68.64	68.54	128.08	-4,439.55	423.84	209.14	95.64	113.49	1.843		
10,100.00	5,606.00	10,211.75	5,735.00	70.06	69.96	128.08	-4,539.55	423.84	209.14	93.32	115.82	1.806		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-3104
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-3104	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design												Sec 30-T10N-R57W - Horsetail #30E-3136 - 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	10,311.75	5,735.00	71.47	71.37	128.08	-4,639.55	423.84	209.14	90.99	118.14	1.770			
10,300.00	5,606.00	10,411.75	5,735.00	72.88	72.79	128.08	-4,739.55	423.84	209.14	88.66	120.47	1.736			
10,400.00	5,606.00	10,511.75	5,735.00	74.30	74.21	128.08	-4,839.55	423.84	209.14	86.33	122.80	1.703			
10,500.00	5,606.00	10,611.75	5,735.00	75.72	75.63	128.08	-4,939.55	423.84	209.14	83.99	125.14	1.671			
10,600.00	5,606.00	10,711.75	5,735.00	77.14	77.05	128.08	-5,039.55	423.84	209.14	81.66	127.48	1.641			
10,700.00	5,606.00	10,811.75	5,735.00	78.57	78.47	128.08	-5,139.55	423.84	209.14	79.31	129.82	1.611			
10,800.00	5,606.00	10,911.75	5,735.00	79.99	79.90	128.08	-5,239.55	423.84	209.14	76.97	132.17	1.582			
10,900.00	5,606.00	11,011.75	5,735.00	81.42	81.33	128.08	-5,339.55	423.84	209.14	74.62	134.51	1.555			
11,000.00	5,606.00	11,111.75	5,735.00	82.85	82.76	128.08	-5,439.55	423.84	209.14	72.27	136.86	1.528			
11,100.00	5,606.00	11,211.75	5,735.00	84.28	84.19	128.08	-5,539.55	423.84	209.14	69.92	139.21	1.502			
11,200.00	5,606.00	11,311.75	5,735.00	85.71	85.62	128.08	-5,639.55	423.84	209.14	67.57	141.57	1.477	Level 3		
11,300.00	5,606.00	11,411.75	5,735.00	87.14	87.05	128.08	-5,739.55	423.84	209.14	65.21	143.92	1.453	Level 3		
11,400.00	5,606.00	11,511.75	5,735.00	88.58	88.49	128.08	-5,839.55	423.84	209.14	62.86	146.28	1.430	Level 3		
11,500.00	5,606.00	11,611.75	5,735.00	90.01	89.92	128.08	-5,939.55	423.84	209.14	60.50	148.64	1.407	Level 3		
11,600.00	5,606.00	11,711.75	5,735.00	91.45	91.36	128.08	-6,039.55	423.84	209.14	58.14	151.00	1.385	Level 3		
11,700.00	5,606.00	11,811.75	5,735.00	92.89	92.80	128.08	-6,139.55	423.84	209.14	55.77	153.36	1.364	Level 3		
11,800.00	5,606.00	11,911.75	5,735.00	94.33	94.24	128.08	-6,239.55	423.84	209.14	53.41	155.73	1.343	Level 3		
11,900.00	5,606.00	12,011.75	5,735.00	95.77	95.68	128.08	-6,339.55	423.84	209.14	51.04	158.09	1.323	Level 3		
12,000.00	5,606.00	12,111.75	5,735.00	97.21	97.12	128.08	-6,439.55	423.84	209.14	48.68	160.46	1.303	Level 3		
12,100.00	5,606.00	12,211.75	5,735.00	98.65	98.56	128.08	-6,539.55	423.84	209.14	46.31	162.83	1.284	Level 3		
12,200.00	5,606.00	12,311.75	5,735.00	100.09	100.00	128.08	-6,639.55	423.84	209.14	43.94	165.20	1.266	Level 3		
12,300.00	5,606.00	12,411.75	5,735.00	101.53	101.45	128.08	-6,739.55	423.84	209.14	41.57	167.57	1.248	Level 2		
12,400.00	5,606.00	12,511.75	5,735.00	102.98	102.89	128.08	-6,839.55	423.84	209.14	39.20	169.94	1.231	Level 2		
12,500.00	5,606.00	12,611.75	5,735.00	104.42	104.34	128.08	-6,939.55	423.84	209.14	36.82	172.31	1.214	Level 2		
12,600.00	5,606.00	12,711.75	5,735.00	105.87	105.78	128.08	-7,039.55	423.84	209.14	34.45	174.69	1.197	Level 2		
12,700.00	5,606.00	12,811.75	5,735.00	107.31	107.23	128.08	-7,139.55	423.84	209.14	32.07	177.06	1.181	Level 2		
12,800.00	5,606.00	12,911.75	5,735.00	108.76	108.68	128.08	-7,239.55	423.84	209.14	29.70	179.44	1.165	Level 2		
12,900.00	5,606.00	13,011.75	5,735.00	110.21	110.13	128.08	-7,339.55	423.84	209.14	27.32	181.82	1.150	Level 2		
13,000.00	5,606.00	13,111.75	5,735.00	111.66	111.58	128.08	-7,439.55	423.84	209.14	24.94	184.19	1.135	Level 2		
13,100.00	5,606.00	13,211.75	5,735.00	113.11	113.02	128.08	-7,539.55	423.84	209.14	22.56	186.57	1.121	Level 2		
13,200.00	5,606.00	13,311.75	5,735.00	114.56	114.47	128.08	-7,639.55	423.84	209.14	20.18	188.95	1.107	Level 2		
13,300.00	5,606.00	13,411.75	5,735.00	116.01	115.92	128.08	-7,739.55	423.84	209.14	17.80	191.34	1.093	Level 2		
13,400.00	5,606.00	13,511.75	5,735.00	117.46	117.38	128.08	-7,839.55	423.84	209.14	15.42	193.72	1.080	Level 2		
13,500.00	5,606.00	13,611.75	5,735.00	118.91	118.83	128.08	-7,939.55	423.84	209.14	13.04	196.10	1.066	Level 2		
13,600.00	5,606.00	13,711.75	5,735.00	120.36	120.28	128.08	-8,039.55	423.84	209.14	10.65	198.48	1.054	Level 2		
13,700.00	5,606.00	13,811.75	5,735.00	121.81	121.73	128.08	-8,139.55	423.84	209.14	8.27	200.87	1.041	Level 2		
13,742.83	5,606.00	13,854.58	5,735.00	122.43	122.35	128.08	-8,182.38	423.84	209.14	7.25	201.89	1.036	Level 2, 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 #30E-3104
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-3104	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	89.99	0.01	59.98	59.98					
100.00	100.00	100.00	100.00	0.13	0.13	89.99	0.01	59.98	59.98	59.71	0.27	225.188		
200.00	200.00	200.00	200.00	0.47	0.47	89.99	0.01	59.98	59.98	59.04	0.94	63.763		
300.00	300.00	300.00	300.00	0.81	0.81	89.99	0.01	59.98	59.98	58.36	1.61	37.140		
400.00	399.98	397.97	397.95	1.13	1.12	13.17	0.22	61.64	59.97	57.66	2.31	25.928		
500.00	499.84	495.93	495.78	1.46	1.45	13.66	0.87	66.62	59.96	56.91	3.06	19.615		
600.00	599.45	593.90	593.38	1.81	1.78	14.47	1.94	74.92	59.96	56.13	3.83	15.667		
610.87	610.26	604.55	603.98	1.85	1.82	14.58	2.08	76.02	59.96	56.04	3.91	15.328 CC		
700.00	698.70	691.87	690.65	2.16	2.12	15.61	3.43	86.52	59.97	55.36	4.60	13.026 ES		
800.00	797.67	789.82	787.44	2.52	2.49	16.70	5.36	101.41	61.31	55.93	5.38	11.400		
900.00	896.64	887.58	883.47	2.89	2.87	17.14	7.70	119.53	66.00	59.85	6.15	10.730		
1,000.00	995.61	984.94	978.43	3.27	3.28	16.99	10.44	140.80	74.02	67.10	6.92	10.701		
1,100.00	1,094.58	1,083.12	1,073.52	3.65	3.72	16.48	13.57	165.03	84.90	77.31	7.59	11.189		
1,200.00	1,193.55	1,182.48	1,169.66	4.03	4.17	16.04	16.79	189.92	96.17	87.98	8.19	11.741		
1,300.00	1,292.52	1,281.84	1,265.80	4.42	4.64	15.70	20.00	214.81	107.45	98.64	8.80	12.205		
1,400.00	1,391.49	1,381.20	1,361.94	4.80	5.11	15.41	23.21	239.70	118.73	109.30	9.43	12.588		
1,500.00	1,490.45	1,480.56	1,458.08	5.19	5.59	15.18	26.43	264.59	130.01	119.94	10.07	12.914		
1,600.00	1,589.42	1,579.92	1,554.22	5.58	6.07	14.99	29.64	289.48	141.29	130.58	10.71	13.193		
1,700.00	1,688.39	1,679.28	1,650.36	5.96	6.55	14.82	32.86	314.37	152.58	141.22	11.36	13.432		
1,800.00	1,787.36	1,778.64	1,746.49	6.35	7.03	14.68	36.07	339.26	163.86	151.85	12.01	13.641		
1,900.00	1,886.33	1,878.00	1,842.63	6.74	7.52	14.55	39.28	364.15	175.15	162.48	12.67	13.823		
2,000.00	1,985.30	1,977.36	1,938.77	7.13	8.01	14.44	42.50	389.03	186.43	173.10	13.33	13.983		
2,100.00	2,084.27	2,076.72	2,034.91	7.52	8.49	14.34	45.71	413.92	197.72	183.72	14.00	14.125		
2,200.00	2,183.23	2,176.08	2,131.05	7.91	8.98	14.26	48.93	438.81	209.01	194.34	14.67	14.252		
2,300.00	2,282.20	2,275.44	2,227.19	8.30	9.47	14.18	52.14	463.70	220.30	204.96	15.34	14.365		
2,400.00	2,381.17	2,374.80	2,323.33	8.69	9.96	14.11	55.35	488.59	231.59	215.58	16.01	14.467		
2,500.00	2,480.14	2,474.16	2,419.47	9.08	10.45	14.04	58.57	513.48	242.88	226.19	16.68	14.559		
2,600.00	2,579.11	2,573.53	2,515.60	9.47	10.94	13.99	61.78	538.37	254.16	236.81	17.36	14.642		
2,700.00	2,678.08	2,672.89	2,611.74	9.86	11.44	13.93	65.00	563.26	265.45	247.42	18.04	14.719		
2,800.00	2,777.04	2,772.25	2,707.88	10.25	11.93	13.88	68.21	588.15	276.74	258.03	18.71	14.788		
2,900.00	2,876.01	2,871.61	2,804.02	10.64	12.42	13.84	71.42	613.04	288.03	268.64	19.39	14.852		
3,000.00	2,974.98	2,970.97	2,900.16	11.03	12.91	13.80	74.64	637.93	299.32	279.25	20.07	14.911		
3,100.00	3,073.95	3,070.33	2,996.30	11.42	13.40	13.76	77.85	662.82	310.61	289.86	20.76	14.965		
3,200.00	3,172.92	3,169.69	3,092.44	11.81	13.90	13.72	81.07	687.71	321.91	300.47	21.44	15.015		
3,300.00	3,271.89	3,269.05	3,188.58	12.20	14.39	13.69	84.28	712.60	333.20	311.07	22.12	15.062		
3,400.00	3,370.86	3,368.41	3,284.71	12.59	14.88	13.66	87.49	737.49	344.49	321.68	22.81	15.105		
3,500.00	3,469.82	3,467.77	3,380.85	12.98	15.38	13.63	90.71	762.38	355.78	332.29	23.49	15.145		
3,600.00	3,568.79	3,567.13	3,476.99	13.37	15.87	13.60	93.92	787.27	367.07	342.89	24.18	15.183		
3,700.00	3,667.76	3,666.49	3,573.13	13.76	16.37	13.58	97.14	812.16	378.36	353.50	24.86	15.218		
3,800.00	3,766.73	3,765.85	3,669.27	14.15	16.86	13.55	100.35	837.05	389.65	364.10	25.55	15.251		
3,900.00	3,865.70	3,865.21	3,765.41	14.54	17.35	13.53	103.56	861.94	400.94	374.71	26.24	15.283		
4,000.00	3,964.67	3,964.57	3,861.55	14.93	17.85	13.51	106.78	886.83	412.23	385.31	26.92	15.312		
4,100.00	4,063.64	4,063.93	3,957.69	15.32	18.34	13.49	109.99	911.72	423.52	395.91	27.61	15.339		
4,200.00	4,162.60	4,163.29	4,053.83	15.72	18.84	13.47	113.21	936.60	434.81	406.52	28.30	15.365		
4,300.00	4,261.57	4,262.65	4,149.96	16.11	19.33	13.45	116.42	961.49	446.11	417.12	28.99	15.390		
4,400.00	4,360.54	4,362.01	4,246.10	16.50	19.82	13.43	119.63	986.38	457.40	427.72	29.68	15.413		
4,500.00	4,459.51	4,471.72	4,352.43	16.89	20.32	13.42	123.09	1,013.18	468.10	437.68	30.42	15.388		
4,600.00	4,558.65	4,590.83	4,468.86	17.23	20.75	13.48	126.31	1,038.06	476.35	445.24	31.12	15.309		
4,700.00	4,658.17	4,710.40	4,586.68	17.51	21.12	13.50	128.91	1,058.19	483.84	452.14	31.71	15.260		
4,800.00	4,757.98	4,830.39	4,705.67	17.76	21.46	13.49	130.88	1,073.47	490.59	458.35	32.24	15.218		
4,900.00	4,857.94	4,950.76	4,825.58	18.01	21.77	13.44	132.22	1,083.83	496.57	463.86	32.71	15.182		
5,000.00	4,957.94	5,071.50	4,946.19	18.27	22.05	90.35	132.91	1,089.18	500.88	467.74	33.14	15.113		

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 #30E-3104
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-3104	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	HZ	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,100.00	5,057.94	5,183.25	5,057.94	18.55	22.29	90.34	133.01	1,089.98	501.54	467.91	33.63	14.913		
5,165.37	5,123.22	5,248.54	5,123.22	18.72	22.44	-90.00	133.01	1,089.98	501.53	467.53	34.00	14.752		
5,200.00	5,157.70	5,283.02	5,157.70	18.81	22.53	-90.24	133.01	1,089.98	501.53	467.34	34.19	14.669		
5,300.00	5,254.78	5,382.19	5,254.78	19.06	22.75	-92.63	131.25	1,089.97	502.09	467.42	34.67	14.482		
5,400.00	5,345.62	5,486.65	5,345.62	19.30	22.96	-95.34	112.32	1,089.93	503.79	468.73	35.06	14.368		
5,500.00	5,426.89	5,596.89	5,426.89	19.52	23.18	-97.91	70.63	1,089.83	506.43	471.06	35.37	14.317		
5,600.00	5,495.61	5,713.29	5,495.61	19.75	23.39	-100.23	4.46	1,089.68	509.60	474.03	35.57	14.328		
5,700.00	5,549.24	5,835.75	5,549.24	19.99	23.62	-102.16	-86.14	1,089.47	512.75	477.09	35.66	14.379		
5,800.00	5,585.83	5,963.50	5,585.83	20.28	23.87	-103.57	-198.25	1,089.21	515.25	479.51	35.74	14.417		
5,900.00	5,604.02	6,094.93	5,604.02	20.62	24.19	-104.34	-325.37	1,088.92	516.58	480.60	35.98	14.357		
6,000.00	5,606.00	6,210.42	5,606.00	21.03	24.56	-104.46	-440.71	1,088.65	516.57	479.88	36.69	14.078		
6,100.00	5,606.00	6,310.42	5,606.00	21.54	24.96	-104.47	-540.71	1,088.42	516.34	478.57	37.77	13.669		
6,200.00	5,606.00	6,410.42	5,606.00	22.13	25.43	-104.47	-640.71	1,088.19	516.12	477.08	39.04	13.222		
6,300.00	5,606.00	6,510.42	5,606.00	22.81	25.99	-104.48	-740.71	1,087.96	515.90	475.44	40.46	12.751		
6,400.00	5,606.00	6,610.42	5,606.00	23.56	26.61	-104.49	-840.71	1,087.72	515.67	473.64	42.03	12.269		
6,500.00	5,606.00	6,710.42	5,606.00	24.38	27.31	-104.49	-940.71	1,087.49	515.45	471.72	43.73	11.786		
6,600.00	5,606.00	6,810.42	5,606.00	25.26	28.07	-104.50	-1,040.71	1,087.26	515.22	469.67	45.55	11.311		
6,700.00	5,606.00	6,910.42	5,606.00	26.19	28.89	-104.51	-1,140.71	1,087.03	515.00	467.53	47.47	10.849		
6,800.00	5,606.00	7,010.42	5,606.00	27.18	29.77	-104.51	-1,240.70	1,086.80	514.78	465.30	49.48	10.403		
6,900.00	5,606.00	7,110.42	5,606.00	28.20	30.69	-104.52	-1,340.70	1,086.57	514.55	462.98	51.57	9.977		
7,000.00	5,606.00	7,210.42	5,606.00	29.27	31.66	-104.53	-1,440.70	1,086.34	514.33	460.59	53.73	9.572		
7,100.00	5,606.00	7,310.42	5,606.00	30.37	32.67	-104.53	-1,540.70	1,086.10	514.10	458.15	55.96	9.187		
7,200.00	5,606.00	7,410.42	5,606.00	31.50	33.71	-104.54	-1,640.70	1,085.87	513.88	455.64	58.24	8.824		
7,300.00	5,606.00	7,510.42	5,606.00	32.66	34.79	-104.55	-1,740.70	1,085.64	513.66	453.09	60.57	8.481		
7,400.00	5,606.00	7,610.42	5,606.00	33.84	35.89	-104.55	-1,840.70	1,085.41	513.43	450.50	62.94	8.158		
7,500.00	5,606.00	7,710.42	5,606.00	35.04	37.02	-104.56	-1,940.70	1,085.18	513.21	447.86	65.35	7.854		
7,600.00	5,606.00	7,810.42	5,606.00	36.27	38.18	-104.56	-2,040.70	1,084.95	512.98	445.19	67.79	7.567		
7,700.00	5,606.00	7,910.42	5,606.00	37.51	39.36	-104.57	-2,140.70	1,084.72	512.76	442.49	70.27	7.297		
7,800.00	5,606.00	8,010.42	5,606.00	38.77	40.55	-104.58	-2,240.70	1,084.48	512.54	439.76	72.77	7.043		
7,900.00	5,606.00	8,110.42	5,606.00	40.04	41.77	-104.58	-2,340.70	1,084.25	512.31	437.01	75.30	6.803		
8,000.00	5,606.00	8,210.42	5,606.00	41.33	43.00	-104.59	-2,440.70	1,084.02	512.09	434.23	77.85	6.578		
8,100.00	5,606.00	8,310.42	5,606.00	42.63	44.25	-104.60	-2,540.70	1,083.79	511.86	431.44	80.43	6.364		
8,200.00	5,606.00	8,410.42	5,606.00	43.94	45.51	-104.60	-2,640.70	1,083.56	511.64	428.62	83.02	6.163		
8,300.00	5,606.00	8,510.42	5,606.00	45.26	46.78	-104.61	-2,740.70	1,083.33	511.42	425.79	85.62	5.973		
8,400.00	5,606.00	8,610.42	5,606.00	46.59	48.07	-104.62	-2,840.70	1,083.10	511.19	422.95	88.25	5.793		
8,500.00	5,606.00	8,710.42	5,606.00	47.92	49.36	-104.62	-2,940.70	1,082.86	510.97	420.09	90.88	5.622		
8,600.00	5,606.00	8,810.42	5,606.00	49.27	50.67	-104.63	-3,040.70	1,082.63	510.75	417.21	93.53	5.461		
8,700.00	5,606.00	8,910.42	5,606.00	50.62	51.98	-104.64	-3,140.69	1,082.40	510.52	414.33	96.19	5.307		
8,800.00	5,606.00	9,010.42	5,606.00	51.98	53.31	-104.64	-3,240.69	1,082.17	510.30	411.43	98.87	5.161		
8,900.00	5,606.00	9,110.42	5,606.00	53.34	54.64	-104.65	-3,340.69	1,081.94	510.07	408.53	101.55	5.023		
9,000.00	5,606.00	9,210.42	5,606.00	54.71	55.97	-104.66	-3,440.69	1,081.71	509.85	405.61	104.24	4.891		
9,100.00	5,606.00	9,310.42	5,606.00	56.09	57.32	-104.66	-3,540.69	1,081.48	509.63	402.69	106.94	4.766		
9,200.00	5,606.00	9,410.42	5,606.00	57.47	58.67	-104.67	-3,640.69	1,081.24	509.40	399.76	109.65	4.646		
9,300.00	5,606.00	9,510.41	5,606.00	58.85	60.02	-104.68	-3,740.69	1,081.01	509.18	396.82	112.36	4.532		
9,400.00	5,606.00	9,610.41	5,606.00	60.24	61.39	-104.68	-3,840.69	1,080.78	508.95	393.87	115.08	4.423		
9,500.00	5,606.00	9,710.41	5,606.00	61.63	62.75	-104.69	-3,940.69	1,080.55	508.73	390.92	117.81	4.318		
9,600.00	5,606.00	9,810.41	5,606.00	63.03	64.12	-104.70	-4,040.69	1,080.32	508.51	387.97	120.54	4.219		
9,700.00	5,606.00	9,910.41	5,606.00	64.43	65.50	-104.70	-4,140.69	1,080.09	508.28	385.00	123.28	4.123		
9,800.00	5,606.00	10,010.41	5,606.00	65.83	66.88	-104.71	-4,240.69	1,079.86	508.06	382.04	126.02	4.032		
9,900.00	5,606.00	10,110.41	5,606.00	67.24	68.26	-104.72	-4,340.69	1,079.62	507.84	379.07	128.77	3.944		
10,000.00	5,606.00	10,210.41	5,606.00	68.64	69.65	-104.72	-4,440.69	1,079.39	507.61	376.09	131.52	3.860		
10,100.00	5,606.00	10,310.41	5,606.00	70.06	71.04	-104.73	-4,540.69	1,079.16	507.39	373.11	134.28	3.779		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-3104
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-3104	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	10,410.41	5,735.00	71.47	72.43	-104.74	-4,640.69	1,078.93	507.16	370.13	137.04	3.701		
10,300.00	5,606.00	10,510.41	5,735.00	72.88	73.83	-104.74	-4,740.69	1,078.70	506.94	367.14	139.80	3.626		
10,400.00	5,606.00	10,610.41	5,735.00	74.30	75.23	-104.75	-4,840.69	1,078.47	506.72	364.15	142.57	3.554		
10,500.00	5,606.00	10,710.41	5,735.00	75.72	76.63	-104.76	-4,940.69	1,078.24	506.49	361.15	145.34	3.485		
10,600.00	5,606.00	10,810.41	5,735.00	77.14	78.04	-104.76	-5,040.68	1,078.00	506.27	358.16	148.11	3.418		
10,700.00	5,606.00	10,910.41	5,735.00	78.57	79.44	-104.77	-5,140.68	1,077.77	506.05	355.16	150.89	3.354		
10,800.00	5,606.00	11,010.41	5,735.00	79.99	80.85	-104.78	-5,240.68	1,077.54	505.82	352.15	153.67	3.292		
10,900.00	5,606.00	11,110.41	5,735.00	81.42	82.27	-104.78	-5,340.68	1,077.31	505.60	349.15	156.45	3.232		
11,000.00	5,606.00	11,210.41	5,735.00	82.85	83.68	-104.79	-5,440.68	1,077.08	505.37	346.14	159.23	3.174		
11,100.00	5,606.00	11,310.41	5,735.00	84.28	85.10	-104.80	-5,540.68	1,076.85	505.15	343.13	162.02	3.118		
11,200.00	5,606.00	11,410.41	5,735.00	85.71	86.51	-104.80	-5,640.68	1,076.62	504.93	340.12	164.81	3.064		
11,300.00	5,606.00	11,510.41	5,735.00	87.14	87.93	-104.81	-5,740.68	1,076.38	504.70	337.11	167.60	3.011		
11,400.00	5,606.00	11,610.41	5,735.00	88.58	89.35	-104.82	-5,840.68	1,076.15	504.48	334.09	170.39	2.961		
11,500.00	5,606.00	11,710.41	5,735.00	90.01	90.78	-104.82	-5,940.68	1,075.92	504.26	331.07	173.18	2.912		
11,600.00	5,606.00	11,810.41	5,735.00	91.45	92.20	-104.83	-6,040.68	1,075.69	504.03	328.05	175.98	2.864		
11,700.00	5,606.00	11,910.41	5,735.00	92.89	93.63	-104.84	-6,140.68	1,075.46	503.81	325.03	178.78	2.818		
11,800.00	5,606.00	12,010.41	5,735.00	94.33	95.05	-104.84	-6,240.68	1,075.23	503.58	322.01	181.58	2.773		
11,900.00	5,606.00	12,110.41	5,735.00	95.77	96.48	-104.85	-6,340.68	1,075.00	503.36	318.99	184.38	2.730		
12,000.00	5,606.00	12,210.41	5,735.00	97.21	97.91	-104.86	-6,440.68	1,074.76	503.14	315.96	187.18	2.688		
12,100.00	5,606.00	12,310.41	5,735.00	98.65	99.34	-104.86	-6,540.68	1,074.53	502.91	312.93	189.98	2.647		
12,200.00	5,606.00	12,410.41	5,735.00	100.09	100.77	-104.87	-6,640.68	1,074.30	502.69	309.91	192.78	2.608		
12,300.00	5,606.00	12,510.41	5,735.00	101.53	102.21	-104.88	-6,740.68	1,074.07	502.47	306.88	195.59	2.569		
12,400.00	5,606.00	12,610.41	5,735.00	102.98	103.64	-104.88	-6,840.68	1,073.84	502.24	303.85	198.40	2.532		
12,500.00	5,606.00	12,710.41	5,735.00	104.42	105.08	-104.89	-6,940.67	1,073.61	502.02	300.82	201.20	2.495		
12,600.00	5,606.00	12,810.41	5,735.00	105.87	106.51	-104.90	-7,040.67	1,073.38	501.80	297.78	204.01	2.460		
12,700.00	5,606.00	12,910.41	5,735.00	107.31	107.95	-104.90	-7,140.67	1,073.14	501.57	294.75	206.82	2.425		
12,800.00	5,606.00	13,010.41	5,735.00	108.76	109.39	-104.91	-7,240.67	1,072.91	501.35	291.72	209.63	2.392		
12,900.00	5,606.00	13,110.41	5,735.00	110.21	110.83	-104.92	-7,340.67	1,072.68	501.12	288.68	212.44	2.359		
13,000.00	5,606.00	13,210.41	5,735.00	111.66	112.27	-104.92	-7,440.67	1,072.45	500.90	285.65	215.25	2.327		
13,100.00	5,606.00	13,310.40	5,735.00	113.11	113.71	-104.93	-7,540.67	1,072.22	500.68	282.61	218.07	2.296		
13,200.00	5,606.00	13,410.40	5,735.00	114.56	115.15	-104.94	-7,640.67	1,071.99	500.45	279.57	220.88	2.266		
13,300.00	5,606.00	13,510.40	5,735.00	116.01	116.59	-104.94	-7,740.67	1,071.76	500.23	276.54	223.70	2.236		
13,400.00	5,606.00	13,610.40	5,735.00	117.46	118.03	-104.95	-7,840.67	1,071.52	500.01	273.50	226.51	2.207		
13,500.00	5,606.00	13,710.40	5,735.00	118.91	119.48	-104.96	-7,940.67	1,071.29	499.78	270.46	229.33	2.179		
13,600.00	5,606.00	13,810.40	5,735.00	120.36	120.92	-104.96	-8,040.67	1,071.06	499.56	267.42	232.14	2.152		
13,700.00	5,606.00	13,910.40	5,735.00	121.81	122.37	-104.97	-8,140.67	1,070.83	499.34	264.38	234.96	2.125		
13,740.91	5,606.00	13,949.06	5,735.00	122.40	122.92	-104.97	-8,179.33	1,070.74	499.25	263.08	236.17	2.114		
13,742.83	5,606.00	13,949.06	5,735.00	122.43	122.92	-104.97	-8,179.33	1,070.74	499.26	262.99	236.27	2.113 SF		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-3104
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-3104	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 138-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	87.87	42.44	1,140.20	1,141.40					
100.00	100.00	74.69	74.69	0.13	0.12	87.87	42.39	1,140.04	1,140.84	1,140.59	0.25	4,552.761		
200.00	200.00	181.74	181.73	0.47	0.36	87.88	42.15	1,139.23	1,140.08	1,139.24	0.83	1,369.075		
300.00	300.00	286.43	286.41	0.81	0.70	87.89	41.88	1,137.87	1,138.77	1,137.25	1.52	750.322		
400.00	399.98	394.18	394.15	1.13	1.06	10.94	41.83	1,135.98	1,135.31	1,133.10	2.21	514.501		
500.00	499.84	506.78	506.71	1.46	1.44	11.04	41.41	1,132.94	1,127.46	1,124.52	2.94	383.815		
600.00	599.45	632.31	632.09	1.81	1.89	11.29	39.51	1,127.23	1,114.31	1,110.55	3.76	296.174		
700.00	698.70	751.13	750.61	2.16	2.33	11.69	35.88	1,119.64	1,095.98	1,091.42	4.56	240.388		
800.00	797.67	868.83	867.74	2.52	2.81	12.20	29.93	1,109.80	1,073.61	1,068.26	5.35	200.768		
900.00	896.64	990.04	987.85	2.89	3.36	12.97	19.76	1,097.22	1,049.26	1,043.09	6.17	170.056		
1,000.00	995.61	1,113.48	1,109.36	3.27	4.02	14.09	4.50	1,081.77	1,023.02	1,015.95	7.07	144.694		
1,100.00	1,094.58	1,218.89	1,212.13	3.65	4.66	15.35	-12.69	1,065.92	994.53	986.62	7.90	125.816		
1,200.00	1,193.55	1,309.46	1,300.18	4.03	5.24	16.59	-28.94	1,052.24	966.46	957.78	8.68	111.402		
1,300.00	1,292.52	1,411.70	1,399.22	4.42	5.95	18.17	-48.93	1,036.63	938.81	929.20	9.61	97.655		
1,400.00	1,391.49	1,499.51	1,483.94	4.80	6.57	19.69	-67.34	1,022.70	911.32	900.84	10.48	86.980		
1,500.00	1,490.45	1,585.17	1,566.79	5.19	7.08	21.23	-84.97	1,009.92	885.40	874.11	11.29	78.406		
1,600.00	1,589.42	1,678.80	1,657.63	5.58	7.63	22.92	-103.18	996.38	860.58	848.42	12.16	70.755		
1,700.00	1,688.39	1,768.29	1,744.52	5.96	8.20	24.59	-120.26	983.54	836.60	823.52	13.08	63.967		
1,800.00	1,787.36	1,856.75	1,830.24	6.35	8.80	26.41	-138.32	971.24	814.12	800.07	14.05	57.946		
1,900.00	1,886.33	1,948.39	1,919.10	6.74	9.40	28.38	-157.05	958.89	793.03	777.98	15.05	52.685		
2,000.00	1,985.30	2,037.01	2,005.05	7.13	9.99	30.37	-175.18	947.18	773.26	757.20	16.06	48.150		
2,100.00	2,084.27	2,138.41	2,103.39	7.52	10.69	32.76	-196.09	934.03	754.94	737.76	17.18	43.934		
2,200.00	2,183.23	2,247.60	2,209.22	7.91	11.44	35.44	-217.55	917.93	735.95	717.58	18.36	40.074		
2,300.00	2,282.20	2,337.62	2,296.55	8.30	12.06	37.71	-234.47	904.07	717.41	697.98	19.43	36.925		
2,400.00	2,381.17	2,446.41	2,402.00	8.69	12.83	40.61	-254.68	886.55	699.57	678.93	20.64	33.900		
2,500.00	2,480.14	2,539.93	2,492.33	9.08	13.55	43.31	-272.37	870.06	682.11	660.30	21.82	31.268		
2,600.00	2,579.11	2,632.49	2,581.68	9.47	14.26	46.11	-289.98	853.45	666.16	643.17	23.00	28.965		
2,700.00	2,678.08	2,715.00	2,661.50	9.86	14.86	48.66	-305.81	839.86	653.23	629.15	24.08	27.123		
2,800.00	2,777.04	2,802.29	2,746.13	10.25	15.47	51.37	-322.67	826.70	643.31	618.16	25.15	25.577		
2,900.00	2,876.01	2,895.68	2,836.73	10.64	16.12	54.32	-340.56	812.77	635.35	609.11	26.23	24.218		
3,000.00	2,974.98	2,989.55	2,927.90	11.03	16.76	57.31	-358.17	799.07	629.28	602.00	27.29	23.063		
3,100.00	3,073.95	3,082.00	3,017.64	11.42	17.41	60.32	-375.70	785.39	625.20	596.88	28.32	22.080		
3,200.00	3,172.92	3,174.22	3,107.11	11.81	18.08	63.35	-393.42	771.77	623.34	594.03	29.31	21.270		
3,279.72	3,251.82	3,254.40	3,185.04	12.12	18.62	65.95	-408.26	760.17	623.04	592.95	30.09	20.705		
3,300.00	3,271.89	3,266.00	3,196.33	12.20	18.70	66.32	-410.35	758.47	623.12	592.90	30.22	20.620		
3,400.00	3,370.86	3,359.00	3,286.51	12.59	19.37	69.39	-428.53	744.87	625.68	594.57	31.11	20.112		
3,500.00	3,469.82	3,443.82	3,368.48	12.98	20.00	72.22	-446.47	732.42	631.54	599.65	31.90	19.800		
3,600.00	3,568.79	3,533.27	3,454.79	13.37	20.69	75.19	-465.74	719.03	639.75	607.08	32.67	19.581		
3,700.00	3,667.76	3,629.01	3,547.01	13.76	21.44	78.34	-486.70	704.15	650.14	616.68	33.46	19.433		
3,800.00	3,766.73	3,734.15	3,648.67	14.15	22.22	81.62	-508.19	688.11	661.34	627.09	34.25	19.309		
3,900.00	3,865.70	3,823.32	3,735.21	14.54	22.84	84.22	-525.59	675.44	673.81	638.98	34.83	19.347		
4,000.00	3,964.67	3,923.85	3,832.98	14.93	23.53	86.96	-544.76	662.08	687.71	652.24	35.47	19.387		
4,100.00	4,063.64	4,026.34	3,932.60	15.32	24.24	89.76	-563.37	646.83	701.90	665.79	36.11	19.439		
4,200.00	4,162.60	4,120.79	4,024.35	15.72	24.91	92.30	-579.93	631.69	716.83	680.18	36.65	19.558		
4,300.00	4,261.57	4,208.84	4,109.72	16.11	25.54	94.62	-595.96	617.25	733.81	696.69	37.11	19.772		
4,400.00	4,360.54	4,300.89	4,198.99	16.50	26.20	96.93	-612.68	602.32	752.16	714.57	37.59	20.011		
4,500.00	4,459.51	4,383.32	4,278.97	16.89	26.78	98.81	-628.69	590.41	772.98	735.03	37.95	20.369		
4,600.00	4,558.65	4,502.25	4,394.77	17.23	27.58	101.54	-650.53	574.41	793.64	755.03	38.62	20.552		
4,700.00	4,658.17	4,630.35	4,520.49	17.51	28.35	103.87	-669.50	558.84	810.87	771.59	39.28	20.645		
4,800.00	4,757.98	4,744.51	4,633.26	17.76	28.93	105.39	-683.05	547.52	824.72	784.90	39.81	20.715		
4,900.00	4,857.94	4,863.12	4,751.07	18.01	29.43	106.28	-694.67	540.21	835.54	795.17	40.37	20.697		
5,000.00	4,957.94	6,450.70	5,755.22	18.27	24.98	-91.43	134.43	525.50	830.08	815.13	14.94	55.543		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-3104
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-3104	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 138-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,100.00	5,057.94	6,450.73	5,755.22	18.55	24.98	-91.40	134.46	525.50	730.40	715.39	15.01	48.660		
5,200.00	5,157.70	6,444.41	5,755.21	18.81	24.95	143.50	128.14	525.64	631.06	616.04	15.02	42.017		
5,300.00	5,254.78	6,417.77	5,755.06	19.06	24.81	159.58	101.51	526.21	534.36	519.57	14.78	36.152		
5,400.00	5,345.62	6,372.52	5,754.39	19.30	24.65	163.75	56.27	526.92	443.56	429.20	14.36	30.886		
5,500.00	5,426.89	6,318.30	5,753.22	19.52	24.55	165.09	2.06	527.34	361.97	347.94	14.03	25.804		
5,600.00	5,495.61	6,251.49	5,752.65	19.75	24.59	164.88	-64.75	527.30	293.87	279.95	13.92	21.108		
5,700.00	5,549.24	6,140.77	5,748.17	19.99	25.03	162.11	-175.29	526.42	239.07	225.41	13.66	17.506		
5,800.00	5,585.83	6,017.20	5,721.18	20.28	25.91	156.56	-295.68	525.84	185.29	167.99	17.30	10.709		
5,900.00	5,604.02	5,906.95	5,678.17	20.62	26.87	148.46	-396.99	527.59	133.90	110.21	23.69	5.652		
6,000.00	5,606.00	5,809.34	5,624.15	21.03	27.78	128.55	-478.15	527.52	86.94	54.39	32.55	2.671		
6,095.22	5,606.00	5,732.99	5,573.01	21.51	28.46	87.53	-534.77	528.41	60.10	16.04	44.06	1.364 Level 3, CC		
6,100.00	5,606.00	5,729.64	5,570.62	21.54	28.49	85.25	-537.12	528.51	60.20	15.97	44.23	1.361 Level 3, ES, SF		
6,200.00	5,606.00	5,668.90	5,525.24	22.13	28.97	49.09	-577.40	530.33	98.88	58.97	39.91	2.477		
6,300.00	5,606.00	5,621.96	5,487.14	22.81	29.33	33.35	-604.80	530.22	171.39	132.37	39.02	4.392		
6,400.00	5,606.00	5,580.16	5,451.70	23.56	29.62	25.47	-626.94	529.42	253.06	213.81	39.25	6.447		
6,500.00	5,606.00	5,544.49	5,420.57	24.38	29.86	21.01	-644.34	528.91	338.72	298.97	39.75	8.521		
6,600.00	5,606.00	5,514.00	5,393.28	25.26	30.04	18.12	-657.94	528.79	427.11	386.84	40.27	10.607		
6,700.00	5,606.00	5,491.80	5,373.03	26.19	30.14	16.36	-667.02	528.99	517.55	476.68	40.87	12.663		
6,800.00	5,606.00	5,472.00	5,354.69	27.18	30.24	14.95	-674.49	529.45	609.57	568.24	41.33	14.748		
6,900.00	5,606.00	5,456.06	5,339.76	28.20	30.29	13.94	-680.04	529.92	702.86	661.12	41.74	16.839		
7,000.00	5,606.00	5,442.52	5,326.95	29.27	30.34	13.17	-684.40	530.29	797.16	755.07	42.08	18.942		
7,100.00	5,606.00	5,426.00	5,311.18	30.37	30.40	12.32	-689.30	530.71	892.29	850.00	42.29	21.098		
7,200.00	5,606.00	5,426.00	5,311.18	31.50	30.40	12.32	-689.30	530.71	988.05	945.35	42.70	23.139		
7,300.00	5,606.00	5,409.40	5,295.19	32.66	30.43	11.56	-693.78	531.08	1,084.23	1,041.42	42.81	25.326		
7,400.00	5,606.00	5,400.12	5,286.21	33.84	30.45	11.18	-696.11	531.26	1,180.88	1,137.89	42.99	27.468		
7,500.00	5,606.00	5,380.00	5,266.64	35.04	30.50	10.43	-700.73	531.56	1,278.03	1,235.00	43.03	29.699		
7,600.00	5,606.00	5,380.00	5,266.64	36.27	30.50	10.43	-700.73	531.56	1,375.18	1,331.92	43.26	31.786		
7,700.00	5,606.00	5,380.00	5,266.64	37.51	30.50	10.43	-700.73	531.56	1,472.72	1,429.25	43.46	33.886		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-3104
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-3104	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 138-MWD+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	87.92	42.45	1,170.42	1,171.59					
100.00	100.00	75.22	75.22	0.13	0.12	87.92	42.51	1,170.24	1,171.03	1,170.77	0.25	4,643.927		
200.00	200.00	181.87	181.87	0.47	0.36	87.90	42.85	1,169.38	1,170.23	1,169.40	0.83	1,408.174		
300.00	300.00	280.69	280.68	0.81	0.67	87.87	43.52	1,168.25	1,169.11	1,167.64	1.48	792.420		
400.00	399.98	377.39	377.37	1.13	0.96	10.88	44.00	1,167.51	1,166.65	1,164.56	2.09	557.706		
500.00	499.84	477.33	477.31	1.46	1.28	10.91	44.78	1,166.82	1,160.85	1,158.11	2.74	423.422		
600.00	599.45	580.01	579.98	1.81	1.60	10.99	45.50	1,165.99	1,151.52	1,148.11	3.41	337.904		
700.00	698.70	688.57	688.53	2.16	1.93	11.20	44.89	1,164.57	1,138.24	1,134.15	4.09	278.229		
800.00	797.67	798.84	798.74	2.52	2.28	11.50	42.30	1,162.14	1,121.97	1,117.18	4.78	234.528		
900.00	896.64	914.26	913.95	2.89	2.66	11.97	36.63	1,158.26	1,104.49	1,099.00	5.50	200.995		
1,000.00	995.61	1,039.55	1,038.68	3.27	3.09	12.68	27.04	1,151.58	1,085.11	1,078.85	6.27	173.106		
1,100.00	1,094.58	1,189.28	1,186.73	3.65	3.63	13.91	9.41	1,138.02	1,062.19	1,055.00	7.19	147.636		
1,200.00	1,193.55	1,313.40	1,308.44	4.03	4.12	15.20	-8.60	1,121.68	1,035.46	1,027.46	8.00	129.378		
1,300.00	1,292.52	1,426.00	1,417.96	4.42	4.59	16.63	-27.94	1,104.15	1,006.84	998.08	8.77	114.846		
1,400.00	1,391.49	1,510.27	1,499.59	4.80	4.93	17.85	-43.78	1,090.55	978.29	968.92	9.37	104.461		
1,500.00	1,490.45	1,587.18	1,574.23	5.19	5.22	19.03	-58.61	1,079.36	951.80	941.85	9.94	95.723		
1,600.00	1,589.42	1,669.17	1,653.56	5.58	5.56	20.45	-76.34	1,068.73	927.58	917.00	10.58	87.639		
1,700.00	1,688.39	1,761.07	1,741.91	5.96	5.95	22.27	-98.66	1,056.78	904.47	893.17	11.31	79.995		
1,800.00	1,787.36	1,849.90	1,827.48	6.35	6.30	24.08	-119.77	1,045.69	882.79	870.78	12.00	73.558		
1,900.00	1,886.33	1,948.46	1,922.60	6.74	6.70	26.13	-142.52	1,033.56	862.21	849.45	12.76	67.589		
2,000.00	1,985.30	2,045.17	2,015.66	7.13	7.12	28.28	-165.47	1,020.67	841.92	828.38	13.54	62.178		
2,100.00	2,084.27	2,137.29	2,104.33	7.52	7.52	30.42	-187.18	1,008.33	822.76	808.44	14.32	57.448		
2,200.00	2,183.23	2,227.13	2,190.60	7.91	7.94	32.64	-209.15	996.23	805.11	789.99	15.12	53.231		
2,300.00	2,282.20	2,312.04	2,272.18	8.30	8.32	34.81	-230.00	985.28	789.47	773.56	15.91	49.624		
2,400.00	2,381.17	2,396.53	2,353.65	8.69	8.69	36.96	-250.21	975.63	776.37	759.69	16.68	46.541		
2,500.00	2,480.14	2,487.01	2,440.94	9.08	9.09	39.31	-272.01	966.06	765.58	748.09	17.49	43.765		
2,600.00	2,579.11	2,578.04	2,528.33	9.47	9.52	41.84	-295.33	955.77	756.47	738.14	18.34	41.252		
2,700.00	2,678.08	2,683.92	2,629.77	9.86	10.02	44.89	-322.98	943.30	749.10	729.85	19.25	38.907		
2,800.00	2,777.04	2,818.62	2,759.11	10.25	10.63	48.83	-354.39	922.76	739.40	719.15	20.25	36.517		
2,900.00	2,876.01	2,902.25	2,839.68	10.64	11.00	51.27	-372.17	909.09	729.72	708.68	21.04	34.687		
3,000.00	2,974.98	2,990.00	2,924.64	11.03	11.38	53.75	-390.12	896.57	722.91	701.09	21.82	33.128		
3,100.00	3,073.95	3,069.70	3,002.12	11.42	11.72	55.92	-406.10	886.89	719.02	696.47	22.55	31.882		
3,200.00	3,172.92	3,171.54	3,101.12	11.81	12.16	58.71	-426.74	874.90	717.20	693.83	23.38	30.682		
3,272.21	3,244.38	3,235.90	3,163.50	12.09	12.45	60.54	-440.14	866.46	716.58	692.64	23.93	29.940		
3,300.00	3,271.89	3,260.39	3,187.17	12.20	12.56	61.26	-445.46	863.11	716.67	692.53	24.14	29.682		
3,400.00	3,370.86	3,348.65	3,272.23	12.59	12.99	63.91	-465.45	850.64	718.62	693.71	24.91	28.846		
3,500.00	3,469.82	3,438.42	3,358.48	12.98	13.43	66.64	-486.65	837.55	723.04	697.37	25.68	28.161		
3,600.00	3,568.79	3,523.22	3,439.71	13.37	13.86	69.24	-507.45	824.94	730.06	703.68	26.39	27.669		
3,700.00	3,667.76	3,614.81	3,527.24	13.76	14.31	72.04	-530.70	811.23	739.77	712.67	27.10	27.298		
3,800.00	3,766.73	3,746.96	3,654.68	14.15	14.88	75.76	-559.80	792.19	748.85	720.83	28.02	26.725		
3,900.00	3,865.70	3,842.13	3,747.76	14.54	15.27	78.04	-576.39	781.28	756.75	728.06	28.69	26.380		
4,000.00	3,964.67	3,926.67	3,830.50	14.93	15.62	79.96	-591.52	772.80	766.80	737.52	29.28	26.186		
4,100.00	4,063.64	4,021.34	3,923.03	15.32	16.02	82.09	-609.04	763.14	778.53	748.59	29.94	26.005		
4,200.00	4,162.60	4,120.82	4,019.92	15.72	16.45	84.40	-628.08	751.12	791.48	760.86	30.61	25.854		
4,300.00	4,261.57	4,244.98	4,141.20	16.11	16.96	87.22	-648.95	734.68	803.20	771.79	31.41	25.571		
4,400.00	4,360.54	4,372.77	4,266.97	16.50	17.43	89.86	-665.21	719.00	812.52	780.35	32.17	25.256		
4,500.00	4,459.51	4,494.42	4,387.69	16.89	17.82	91.97	-675.29	708.12	819.17	786.31	32.86	24.929		
4,600.00	4,558.65	4,616.66	4,509.59	17.23	18.18	93.69	-681.17	701.28	823.67	790.19	33.47	24.606		
4,700.00	4,658.17	4,732.85	4,625.70	17.51	18.48	94.77	-683.04	697.61	825.49	791.49	34.00	24.280		
4,800.00	4,757.98	4,838.32	4,731.12	17.76	18.75	95.46	-683.29	694.34	825.84	791.33	34.51	23.932		
4,900.00	4,857.94	4,948.58	4,841.45	18.01	18.96	95.86	-683.39	694.34	825.84	791.33	34.51	23.932		
5,000.00	4,957.94	5,048.62	4,941.45	18.27	19.22	96.09	-683.44	694.34	825.84	791.33	34.51	23.932		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-3104
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-3104	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 138-MWD+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
5,100.00	5,057.94	6,286.44	5,618.45	18.55	18.56	89.87	136.25	698.04	600.99	589.97	11.02	54.520	
5,200.00	5,157.70	6,281.44	5,618.43	18.81	18.55	-122.12	131.26	698.15	503.23	491.53	11.70	43.006	
5,300.00	5,254.78	6,257.33	5,618.31	19.06	18.51	-139.28	107.14	698.62	409.05	396.33	12.72	32.162	
5,400.00	5,345.62	6,218.70	5,618.12	19.30	18.47	-144.21	68.52	699.18	322.51	308.04	14.47	22.287	
5,500.00	5,426.89	6,168.29	5,618.92	19.52	18.47	-143.91	18.13	700.35	249.19	231.63	17.56	14.193	
5,600.00	5,495.61	6,091.32	5,621.55	19.75	18.59	-137.99	-58.76	702.51	193.61	171.69	21.91	8.835	
5,700.00	5,549.24	5,988.90	5,618.50	19.99	18.78	-125.83	-161.03	703.57	152.77	125.23	27.54	5.547	
5,800.00	5,585.83	5,894.58	5,600.07	20.28	18.99	-108.95	-253.47	703.75	124.22	90.11	34.11	3.642	
5,898.52	5,603.89	5,803.60	5,568.44	20.61	19.18	-87.46	-338.59	702.69	114.35	77.08	37.27	3.068 CC, ES	
5,900.00	5,604.02	5,802.33	5,567.87	20.62	19.18	-87.13	-339.72	702.66	114.35	77.08	37.27	3.068 SF	
6,000.00	5,606.00	5,720.93	5,525.65	21.03	19.34	-65.94	-409.22	700.30	126.19	91.12	35.07	3.598	
6,100.00	5,606.00	5,656.48	5,485.07	21.54	19.45	-50.53	-459.18	698.37	163.52	131.46	32.06	5.101	
6,200.00	5,606.00	5,598.35	5,443.87	22.13	19.54	-39.63	-500.17	697.52	220.63	189.82	30.81	7.161	
6,300.00	5,606.00	5,549.00	5,406.92	22.81	19.60	-32.75	-532.85	696.96	288.02	256.99	31.03	9.283	
6,400.00	5,606.00	5,504.00	5,371.35	23.56	19.65	-27.88	-560.39	696.52	362.39	330.85	31.54	11.491	
6,500.00	5,606.00	5,475.75	5,347.86	24.38	19.67	-25.35	-576.09	696.34	442.27	409.58	32.70	13.527	
6,600.00	5,606.00	5,459.00	5,333.50	25.26	19.68	-24.01	-584.71	696.28	526.42	492.54	33.88	15.539	
6,700.00	5,606.00	5,417.00	5,296.37	26.19	19.69	-21.05	-604.30	695.94	613.21	579.30	33.91	18.085	
6,800.00	5,606.00	5,400.17	5,281.16	27.18	19.69	-20.01	-611.49	695.66	701.89	667.30	34.58	20.295	
6,900.00	5,606.00	5,372.00	5,255.49	28.20	19.69	-18.41	-623.09	695.00	791.92	757.09	34.83	22.737	
7,000.00	5,606.00	5,351.19	5,236.36	29.27	19.69	-17.34	-631.26	694.39	882.97	847.81	35.16	25.112	
7,100.00	5,606.00	5,329.00	5,215.79	30.37	19.69	-16.30	-639.55	693.70	974.95	939.56	35.40	27.542	
7,200.00	5,606.00	5,311.66	5,199.61	31.50	19.69	-15.56	-645.75	693.14	1,067.70	1,032.03	35.66	29.938	
7,300.00	5,606.00	5,287.00	5,176.44	32.66	19.69	-14.59	-654.16	692.35	1,161.11	1,125.33	35.78	32.452	
7,400.00	5,606.00	5,287.00	5,176.44	33.84	19.69	-14.59	-654.16	692.35	1,255.10	1,218.91	36.19	34.685	
7,500.00	5,606.00	5,287.00	5,176.44	35.04	19.69	-14.59	-654.16	692.35	1,349.94	1,313.42	36.52	36.962	
7,600.00	5,606.00	5,263.86	5,154.47	36.27	19.67	-13.79	-661.37	691.80	1,444.79	1,408.21	36.57	39.502	
7,700.00	5,606.00	5,240.00	5,131.49	37.51	19.66	-13.08	-667.81	691.62	1,540.74	1,504.13	36.62	42.076	



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-3104
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-3104	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Sec 30-T10N-R57W - Horsetail #30F-3105 - Hz - Hz		Offset Site Error: 0.00 usft	
Survey Program: 141-MWD+IFR1+MS+sag													Offset Well Error: 0.00 usft			
Reference		Offset		Semi Major Axis		Distance								Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor				
0.00	0.00	0.00	0.00	0.00	0.00	90.32	-7.13	1,260.39	1,260.78							
100.00	100.00	73.98	73.98	0.13	0.12	90.33	-7.34	1,260.26	1,260.29	1,260.05	0.25	5,089.269				
200.00	200.00	175.09	175.08	0.47	0.33	90.37	-8.20	1,259.73	1,259.77	1,258.98	0.79	1,600.024				
300.00	300.00	270.45	270.44	0.81	0.61	90.39	-8.49	1,259.57	1,259.60	1,258.18	1.42	889.085				
400.00	399.98	370.68	370.68	1.13	0.93	13.44	-8.77	1,259.48	1,257.82	1,255.76	2.05	612.355				
500.00	499.84	477.72	477.72	1.46	1.26	13.53	-8.96	1,259.22	1,252.49	1,249.77	2.72	460.251				
600.00	599.45	573.90	573.89	1.81	1.56	13.67	-8.98	1,258.52	1,243.30	1,239.94	3.36	369.924				
700.00	698.70	664.75	664.74	2.16	1.84	13.85	-8.94	1,258.50	1,231.43	1,227.44	3.99	308.850				
800.00	797.67	761.49	761.48	2.52	2.15	14.02	-9.25	1,258.93	1,217.99	1,213.36	4.63	263.102				
900.00	896.64	857.96	857.95	2.89	2.45	14.20	-9.60	1,259.46	1,204.64	1,199.38	5.26	228.973				
1,000.00	995.61	969.54	969.53	3.27	2.80	14.37	-9.24	1,259.79	1,191.05	1,185.11	5.94	200.578				
1,100.00	1,094.58	1,105.10	1,105.05	3.65	3.23	14.59	-8.74	1,257.12	1,175.19	1,168.49	6.70	175.329				
1,200.00	1,193.55	1,270.90	1,270.52	4.03	3.76	14.82	-7.05	1,247.32	1,155.76	1,148.15	7.61	151.914				
1,300.00	1,292.52	1,400.19	1,398.87	4.42	4.19	14.87	-2.84	1,232.35	1,130.13	1,121.76	8.36	135.104				
1,400.00	1,391.49	1,496.60	1,494.57	4.80	4.50	14.96	-0.68	1,220.84	1,104.49	1,095.51	8.98	123.016				
1,500.00	1,490.45	1,595.53	1,592.75	5.19	4.83	15.12	0.41	1,208.78	1,078.63	1,069.03	9.61	112.252				
1,600.00	1,589.42	1,693.15	1,689.62	5.58	5.16	15.36	0.24	1,196.72	1,052.68	1,042.45	10.24	102.820				
1,700.00	1,688.39	1,801.07	1,796.66	5.96	5.53	15.63	0.25	1,182.99	1,026.40	1,015.51	10.90	94.196				
1,800.00	1,787.36	1,910.82	1,905.22	6.35	5.91	15.80	2.18	1,167.02	998.21	986.65	11.56	86.368				
1,900.00	1,886.33	2,003.50	1,996.90	6.74	6.23	15.97	3.61	1,153.49	970.05	957.88	12.17	79.711				
2,000.00	1,985.30	2,096.23	2,088.66	7.13	6.55	16.18	4.55	1,140.16	942.14	929.35	12.78	73.694				
2,100.00	2,084.27	2,186.78	2,178.32	7.52	6.87	16.31	6.77	1,127.64	914.70	901.30	13.40	68.285				
2,200.00	2,183.23	2,277.19	2,267.91	7.91	7.18	16.46	8.93	1,115.74	887.91	873.90	14.01	63.380				
2,300.00	2,282.20	2,367.17	2,357.16	8.30	7.49	16.62	10.87	1,104.47	861.76	847.13	14.63	58.910				
2,400.00	2,381.17	2,465.81	2,455.08	8.69	7.83	16.86	12.11	1,092.61	836.17	820.90	15.27	54.769				
2,500.00	2,480.14	2,574.94	2,563.24	9.08	8.21	17.13	13.87	1,078.26	809.47	793.55	15.92	50.851				
2,600.00	2,579.11	2,670.81	2,658.14	9.47	8.55	17.35	16.02	1,064.77	781.85	765.30	16.55	47.237				
2,700.00	2,678.08	2,766.23	2,752.62	9.86	8.90	17.62	17.54	1,051.57	754.51	737.32	17.19	43.895				
2,800.00	2,777.04	2,862.32	2,847.78	10.25	9.24	17.93	18.97	1,038.27	727.20	709.37	17.82	40.797				
2,900.00	2,876.01	2,954.43	2,939.02	10.64	9.56	18.26	20.07	1,025.74	700.15	681.69	18.46	37.928				
3,000.00	2,974.98	3,051.10	3,034.83	11.03	9.91	18.71	20.39	1,012.83	673.45	654.35	19.10	35.253				
3,100.00	3,073.95	3,147.20	3,130.06	11.42	10.25	19.21	20.61	999.93	646.73	626.98	19.74	32.755				
3,200.00	3,172.92	3,241.00	3,223.05	11.81	10.58	19.65	21.69	987.71	620.35	599.96	20.38	30.437				
3,300.00	3,271.89	3,337.03	3,318.29	12.20	10.91	20.11	23.06	975.45	594.23	573.20	21.02	28.264				
3,400.00	3,370.86	3,435.59	3,416.00	12.59	11.26	20.56	25.08	962.68	567.89	546.22	21.66	26.213				
3,500.00	3,469.82	3,534.04	3,513.54	12.98	11.61	20.99	27.80	949.63	541.21	518.91	22.30	24.267				
3,600.00	3,568.79	3,627.69	3,606.28	13.37	11.95	21.44	30.39	936.92	514.26	491.30	22.96	22.402				
3,700.00	3,667.76	3,702.00	3,680.10	13.76	12.21	21.88	31.80	928.54	489.77	466.12	23.65	20.706				
3,800.00	3,766.73	3,794.00	3,771.76	14.15	12.51	22.56	32.50	920.61	468.00	443.68	24.32	19.246				
3,900.00	3,865.70	3,876.04	3,853.64	14.54	12.77	23.30	32.03	915.67	449.00	424.01	24.99	17.970				
4,000.00	3,964.67	3,970.18	3,947.72	14.93	13.06	24.16	31.55	912.30	432.46	406.81	25.65	16.862				
4,100.00	4,063.64	4,053.64	4,031.16	15.32	13.31	24.81	31.99	911.15	417.98	391.69	26.29	15.901				
4,200.00	4,162.60	4,148.63	4,126.14	15.72	13.58	25.62	31.76	912.34	406.25	379.30	26.94	15.077				
4,300.00	4,261.57	4,252.68	4,230.19	16.11	13.89	26.55	31.60	913.34	394.32	366.69	27.63	14.272				
4,400.00	4,360.54	4,352.95	4,330.46	16.50	14.18	27.51	31.69	913.45	381.62	353.31	28.31	13.482				
4,500.00	4,459.51	4,453.98	4,431.49	16.89	14.49	28.60	31.53	913.07	368.63	339.63	28.99	12.715				
4,600.00	4,558.65	4,554.72	4,532.22	17.23	14.79	29.61	31.25	911.81	356.05	326.40	29.65	12.008				
4,700.00	4,658.17	4,650.86	4,628.36	17.51	15.08	30.39	30.76	911.20	347.21	316.95	30.26	11.475				
4,800.00	4,757.98	4,750.57	4,728.06	17.76	15.38	30.96	30.26	910.79	341.65	310.80	30.86	11.073				
4,900.00	4,857.94	4,849.27	4,826.76	18.01	15.68	31.28	29.56	910.64	339.43	307.99	31.44	10.796				
4,955.64	4,913.58	4,904.48	4,881.97	18.15	15.84	31.39	29.10	910.65	339.26	307.49	31.77	10.678				
5,000.00	4,957.94	4,948.37	4,925.85	18.27	15.97	108.48	28.31	910.59	339.67	307.63	32.04	10.601				

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-3104
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-3104	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 141-MWD+IFR1+MS+sag												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							
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
5,100.00	5,057.94	5,034.21	5,011.47	18.55	16.23	109.36	22.91	910.23	341.46	308.82	32.63	10.464	
5,200.00	5,157.70	5,114.64	5,089.58	18.81	16.48	-67.89	4.22	910.18	347.82	314.70	33.12	10.501	
5,300.00	5,254.78	5,198.07	5,166.06	19.06	16.75	-65.13	-28.76	907.51	351.83	318.40	33.43	10.524	
5,400.00	5,345.62	5,273.80	5,231.23	19.30	16.98	-63.61	-67.23	905.81	354.34	320.93	33.41	10.606	
5,500.00	5,426.89	5,357.00	5,297.98	19.52	17.23	-63.35	-116.83	905.19	354.46	320.97	33.49	10.584	
5,600.00	5,495.61	5,432.04	5,354.12	19.75	17.48	-64.59	-166.56	905.23	350.92	317.44	33.48	10.482	
5,700.00	5,549.24	5,506.27	5,401.16	19.99	17.74	-66.41	-223.84	906.84	347.70	314.01	33.69	10.321	
5,800.00	5,585.83	5,602.32	5,454.06	20.28	18.10	-70.26	-303.95	908.04	341.06	306.23	34.83	9.793	
5,900.00	5,604.02	5,695.92	5,496.88	20.62	18.55	-75.72	-387.10	905.07	329.23	293.00	36.22	9.089	
6,000.00	5,606.00	5,781.20	5,528.27	21.03	19.05	-81.43	-466.30	902.43	318.65	280.95	37.70	8.451	
6,100.00	5,606.00	5,861.21	5,551.17	21.54	19.56	-85.54	-542.91	901.30	313.83	274.73	39.09	8.028	
6,196.53	5,606.00	5,955.80	5,566.67	22.11	20.22	-88.37	-636.08	901.85	313.52	273.07	40.46	7.749	
6,200.00	5,606.00	5,959.25	5,566.90	22.13	20.24	-88.41	-639.52	901.85	313.52	273.02	40.51	7.740	
6,200.00	5,606.00	5,959.25	5,566.90	22.13	20.24	-88.41	-639.52	901.85	313.52	273.02	40.51	7.740	
6,300.00	5,606.00	6,056.64	5,567.81	22.81	20.94	-88.58	-736.88	902.10	313.76	271.80	41.96	7.478	
6,400.00	5,606.00	6,153.05	5,568.12	23.56	21.62	-88.64	-833.28	903.63	315.33	271.86	43.47	7.254	
6,500.00	5,606.00	6,256.57	5,567.83	24.38	22.43	-88.60	-936.78	905.44	317.10	271.95	45.15	7.023	
6,600.00	5,606.00	6,358.78	5,568.54	25.26	23.22	-88.73	-1,038.98	905.80	317.43	270.56	46.87	6.773	
6,700.00	5,606.00	6,457.72	5,570.57	26.19	24.05	-89.09	-1,137.89	906.15	317.75	269.05	48.70	6.525	
6,800.00	5,606.00	6,558.41	5,568.78	27.18	25.05	-88.77	-1,238.56	906.45	318.08	267.33	50.75	6.268	
6,900.00	5,606.00	6,651.45	5,567.21	28.20	25.93	-88.50	-1,331.57	907.97	319.73	266.98	52.75	6.061	
7,000.00	5,606.00	6,760.16	5,566.51	29.27	26.93	-88.37	-1,440.26	908.86	320.55	265.73	54.82	5.848	
7,100.00	5,606.00	6,860.59	5,566.71	30.37	27.87	-88.41	-1,540.69	908.50	320.17	263.28	56.90	5.627	
7,186.97	5,606.00	6,946.46	5,569.61	31.35	28.70	-88.93	-1,626.52	908.39	320.00	261.24	58.76	5.446	
7,200.00	5,606.00	6,959.29	5,570.10	31.50	28.83	-89.02	-1,639.33	908.40	320.00	260.95	59.05	5.419	
7,300.00	5,606.00	7,060.12	5,573.19	32.66	29.94	-89.57	-1,740.11	908.55	320.11	258.76	61.35	5.217	
7,396.72	5,606.00	7,156.28	5,573.39	33.80	31.06	-89.60	-1,836.27	908.33	319.89	256.22	63.67	5.024	
7,400.00	5,606.00	7,159.50	5,573.33	33.84	31.10	-89.59	-1,839.49	908.33	319.89	256.14	63.75	5.018	
7,500.00	5,606.00	7,255.51	5,572.65	35.04	32.17	-89.47	-1,935.48	908.88	320.47	254.37	66.10	4.848	
7,600.00	5,606.00	7,354.92	5,574.03	36.27	33.28	-89.72	-2,034.87	910.33	321.92	253.45	68.47	4.702	
7,700.00	5,606.00	7,446.00	5,573.94	37.51	34.35	-89.71	-2,125.91	913.10	324.94	254.07	70.87	4.585	
7,800.00	5,606.00	7,553.24	5,574.64	38.77	35.54	-89.83	-2,233.06	917.18	328.79	255.46	73.33	4.484	
7,900.00	5,606.00	7,665.12	5,575.43	40.04	36.80	-89.97	-2,344.93	916.25	327.85	252.06	75.79	4.326	
8,000.00	5,606.00	7,764.53	5,576.84	41.33	37.95	-90.22	-2,444.31	914.88	326.46	248.21	78.26	4.172	
8,100.00	5,606.00	7,866.06	5,577.71	42.63	39.20	-90.37	-2,545.83	913.16	324.78	243.96	80.82	4.019	
8,165.26	5,606.00	7,925.05	5,577.83	43.48	39.94	-90.39	-2,604.81	912.40	323.96	241.47	82.49	3.927	
8,200.00	5,606.00	7,955.11	5,577.89	43.94	40.31	-90.41	-2,634.87	912.62	324.21	240.85	83.36	3.889	
8,300.00	5,606.00	8,060.00	5,578.03	45.26	41.58	-90.43	-2,739.75	913.99	325.55	239.61	85.94	3.788	
8,400.00	5,606.00	8,160.00	5,577.03	46.59	42.83	-90.25	-2,839.74	913.90	325.46	236.91	88.55	3.675	
8,500.00	5,606.00	8,260.54	5,573.67	47.92	44.13	-89.66	-2,940.22	913.82	325.37	234.16	91.22	3.567	
8,535.66	5,606.00	8,295.55	5,572.41	48.40	44.56	-89.44	-2,975.21	913.77	325.34	233.20	92.14	3.531	
8,600.00	5,606.00	8,357.79	5,571.23	49.27	45.31	-89.23	-3,037.44	913.88	325.47	231.68	93.79	3.470	
8,700.00	5,606.00	8,450.41	5,572.10	50.62	46.40	-89.39	-3,130.04	915.67	327.37	231.09	96.29	3.400	
8,800.00	5,606.00	8,550.68	5,574.04	51.98	47.63	-89.73	-3,230.23	918.80	330.49	231.59	98.90	3.342	
8,900.00	5,606.00	8,661.53	5,577.63	53.34	48.99	-90.35	-3,341.00	920.40	331.96	230.40	101.56	3.268	
9,000.00	5,606.00	8,770.32	5,582.27	54.71	50.34	-91.16	-3,449.67	917.99	329.76	225.62	104.15	3.166	
9,100.00	5,606.00	8,873.34	5,583.74	56.09	51.68	-91.43	-3,552.60	914.28	326.20	219.39	106.81	3.054	
9,200.00	5,606.00	8,972.48	5,583.17	57.47	52.94	-91.35	-3,651.66	910.34	322.21	212.73	109.48	2.943	
9,300.00	5,606.00	9,063.27	5,582.16	58.85	54.08	-91.18	-3,742.42	908.10	319.73	207.56	112.17	2.850	
9,350.79	5,606.00	9,111.22	5,580.80	59.56	54.68	-90.93	-3,790.34	907.97	319.56	206.02	113.54	2.815	
9,400.00	5,606.00	9,158.68	5,579.52	60.24	55.29	-90.70	-3,837.78	908.12	319.70	204.84	114.86	2.783	
9,500.00	5,606.00	9,257.45	5,577.06	61.63	56.53	-90.26	-3,936.53	908.92	320.49	202.96	117.53	2.727	

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-3104
Project:	Weld County, CO	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-3104	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 141-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
9,600.00	5,606.00	9,347.93	5,575.95	63.03	57.67	-90.06	-4,026.96	911.06	322.86	202.77	120.09	2.688		
9,700.00	5,606.00	9,454.13	5,576.87	64.43	58.99	-90.22	-4,133.11	914.15	325.77	202.94	122.83	2.652		
9,800.00	5,606.00	9,550.87	5,577.75	65.83	60.22	-90.38	-4,229.80	916.97	328.67	203.19	125.48	2.619		
9,900.00	5,606.00	9,664.31	5,578.11	67.24	61.68	-90.44	-4,343.24	916.98	328.56	200.29	128.27	2.561		
10,000.00	5,606.00	9,763.58	5,579.04	68.64	62.96	-90.60	-4,442.50	916.39	327.98	197.00	130.97	2.504		
10,100.00	5,606.00	9,870.46	5,578.90	70.06	64.34	-90.58	-4,549.35	914.35	326.06	192.41	133.66	2.440		
10,200.00	5,606.00	9,971.88	5,580.81	71.47	65.61	-90.93	-4,650.69	910.76	322.55	186.25	136.30	2.366		
10,300.00	5,606.00	10,067.65	5,583.14	72.88	66.82	-91.35	-4,746.39	907.92	319.63	180.63	139.00	2.299		
10,400.00	5,606.00	10,168.09	5,584.73	74.30	68.15	-91.65	-4,846.80	905.86	317.62	175.90	141.72	2.241		
10,500.00	5,606.00	10,272.02	5,584.73	75.72	69.54	-91.66	-4,950.67	902.87	314.75	170.30	144.46	2.179		
10,600.00	5,606.00	10,370.34	5,583.67	77.14	70.84	-91.48	-5,048.94	899.70	311.50	164.26	147.24	2.116		
10,700.00	5,606.00	10,470.91	5,582.97	78.57	72.12	-91.37	-5,149.46	896.47	308.27	158.33	149.94	2.056		
10,800.00	5,606.00	10,566.37	5,582.80	79.99	73.34	-91.35	-5,244.89	894.09	305.77	153.08	152.69	2.003		
10,900.00	5,606.00	10,661.76	5,581.31	81.42	74.60	-91.07	-5,340.26	893.25	304.86	149.39	155.47	1.961		
10,928.00	5,606.00	10,689.06	5,580.78	81.82	74.96	-90.97	-5,367.55	893.23	304.82	148.58	156.24	1.951		
11,000.00	5,606.00	10,761.57	5,579.58	82.85	75.91	-90.75	-5,440.05	893.36	304.94	146.70	158.24	1.927		
11,100.00	5,606.00	10,864.23	5,576.23	84.28	77.27	-90.12	-5,542.66	892.44	304.01	142.99	161.02	1.888		
11,200.00	5,606.00	10,962.40	5,572.80	85.71	78.57	-89.47	-5,640.76	891.79	303.36	139.57	163.78	1.852		
11,276.96	5,606.00	11,038.18	5,570.99	86.81	79.55	-89.13	-5,716.51	891.59	303.18	137.29	165.88	1.828		
11,300.00	5,606.00	11,060.68	5,570.45	87.14	79.85	-89.03	-5,739.01	891.60	303.20	136.68	166.51	1.821		
11,400.00	5,606.00	11,162.27	5,567.46	88.58	81.19	-88.46	-5,840.56	891.72	303.38	134.12	169.27	1.792		
11,500.00	5,606.00	11,263.50	5,564.86	90.01	82.52	-87.97	-5,941.74	890.97	302.72	130.72	171.99	1.760		
11,600.00	5,606.00	11,361.79	5,565.66	91.45	83.80	-88.12	-6,040.02	890.50	302.22	127.47	174.74	1.729		
11,700.00	5,606.00	11,463.98	5,566.37	92.89	85.16	-88.25	-6,142.21	890.10	301.81	124.28	177.53	1.700		
11,800.00	5,606.00	11,565.74	5,566.35	94.33	86.53	-88.24	-6,243.97	888.84	300.57	120.26	180.31	1.667		
11,858.47	5,606.00	11,619.80	5,566.22	95.17	87.25	-88.21	-6,298.02	888.44	300.14	118.20	181.93	1.650 CC		
11,900.00	5,606.00	11,658.49	5,566.19	95.77	87.77	-88.20	-6,336.71	888.64	300.35	117.28	183.07	1.641		
12,000.00	5,606.00	11,757.33	5,566.33	97.21	89.08	-88.24	-6,435.54	889.73	301.46	115.62	185.84	1.622		
12,100.00	5,606.00	11,854.72	5,567.18	98.65	90.37	-88.41	-6,532.91	891.49	303.23	114.65	188.58	1.608		
12,200.00	5,606.00	11,953.21	5,569.24	100.09	91.68	-88.81	-6,631.35	894.03	305.76	114.41	191.35	1.598		
12,300.00	5,606.00	12,052.90	5,569.63	101.53	93.01	-88.89	-6,731.01	896.62	308.35	114.21	194.14	1.588		
12,400.00	5,606.00	12,152.03	5,570.02	102.98	94.35	-88.97	-6,830.09	899.70	311.44	114.52	196.93	1.582		
12,500.00	5,606.00	12,257.47	5,569.32	104.42	95.76	-88.85	-6,935.49	902.24	313.88	114.08	199.80	1.571		
12,600.00	5,606.00	12,358.83	5,568.38	105.87	97.11	-88.68	-7,036.84	902.88	314.53	111.94	202.59	1.553		
12,700.00	5,606.00	12,458.23	5,567.57	107.31	98.41	-88.54	-7,136.23	903.92	315.59	110.25	205.34	1.537		
12,800.00	5,606.00	12,558.81	5,566.88	108.76	99.74	-88.42	-7,236.81	904.87	316.56	108.45	208.11	1.521		
12,900.00	5,606.00	12,654.97	5,566.32	110.21	101.03	-88.33	-7,332.96	906.18	317.94	107.09	210.85	1.508		
13,000.00	5,606.00	12,752.64	5,567.38	111.66	102.34	-88.53	-7,430.58	908.62	320.40	106.79	213.61	1.500 Level 3		
13,100.00	5,606.00	12,854.87	5,570.16	113.11	103.67	-89.03	-7,532.75	911.15	322.82	106.39	216.43	1.492 Level 3		
13,200.00	5,606.00	12,953.52	5,573.93	114.56	104.95	-89.71	-7,631.30	913.46	325.13	105.95	219.18	1.483 Level 3, ES, SF		
13,300.00	5,606.00	13,013.00	5,576.64	116.01	105.75	-90.18	-7,690.70	915.02	330.21	110.65	219.56	1.504		
13,400.00	5,606.00	13,013.00	5,576.64	117.46	105.75	-90.18	-7,690.70	915.02	358.90	153.79	205.11	1.750		
13,500.00	5,606.00	13,013.00	5,576.64	118.91	105.75	-90.18	-7,690.70	915.02	410.58	227.81	182.78	2.246		
13,600.00	5,606.00	13,013.00	5,576.64	120.36	105.75	-90.18	-7,690.70	915.02	477.86	317.18	160.68	2.974		
13,700.00	5,606.00	13,013.00	5,576.64	121.81	105.75	-90.18	-7,690.70	915.02	555.09	413.10	141.99	3.909		
13,742.83	5,606.00	13,013.00	5,576.64	122.43	105.75	-90.18	-7,690.70	915.02	590.26	455.11	135.15	4.367		



WOG

Anticollision Report

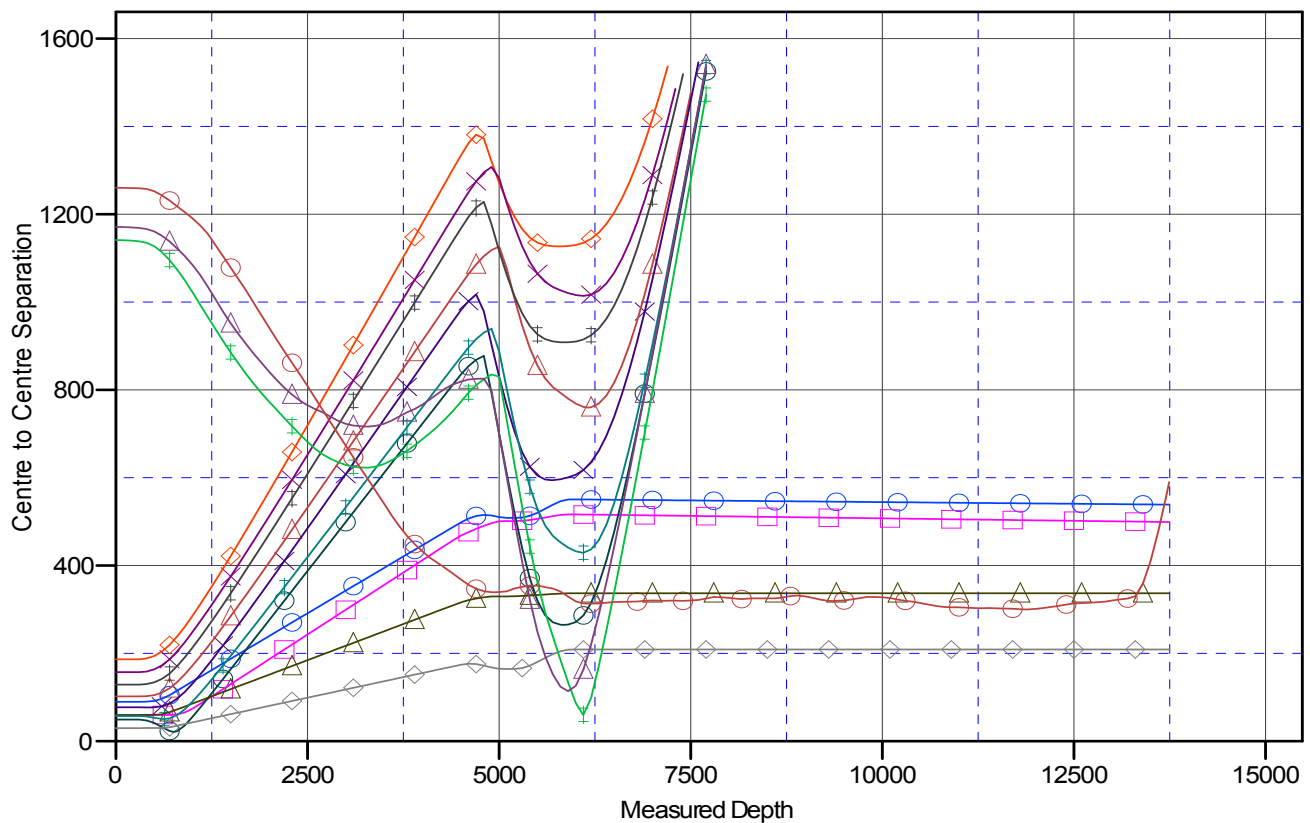
Company: Whiting Petroleum Corp.
Project: Weld County, CO
Reference Site: Sec 30-T10N-R57W
Site Error: 0.00 usft
Reference Well: Horsetail #30E-3104
Well Error: 0.00 usft
Reference Wellbore: Hz
Reference Design: APD

Local Co-ordinate Reference: Well Horsetail #30E-3104
TVD Reference: KBE @ 4827.40usft (Original Well Elev)
MD Reference: KBE @ 4827.40usft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 3.00 sigma
Database: LandmarkEDM
Offset TVD Reference: Offset Datum

Reference Depths are relative to KBE @ 4827.40usft (Original Well Ele)
Offset Depths are relative to Offset Datum
Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: Horsetail #30E-3104
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 1.10°

Ladder Plot



LEGEND

- Horsetail #30E-1935, Hz, APDV0
- Horsetail #30E-1902, Hz, APDV0
- Horsetail #30E-1904, Hz, APDV0
- Horsetail #30E-1936, Hz, APDV0
- Horsetail #30E-1901, Hz, APDV0
- Horsetail #30E-1903, Hz, APDV0
- Horsetail #30E-1904, Hz, APDV0
- Horsetail #30F-1941, Hz, HzV0
- Horsetail #30F-1942, Hz, HzV0
- Horsetail #30F-3105, Hz, HzV0



WOG

Anticollision Report

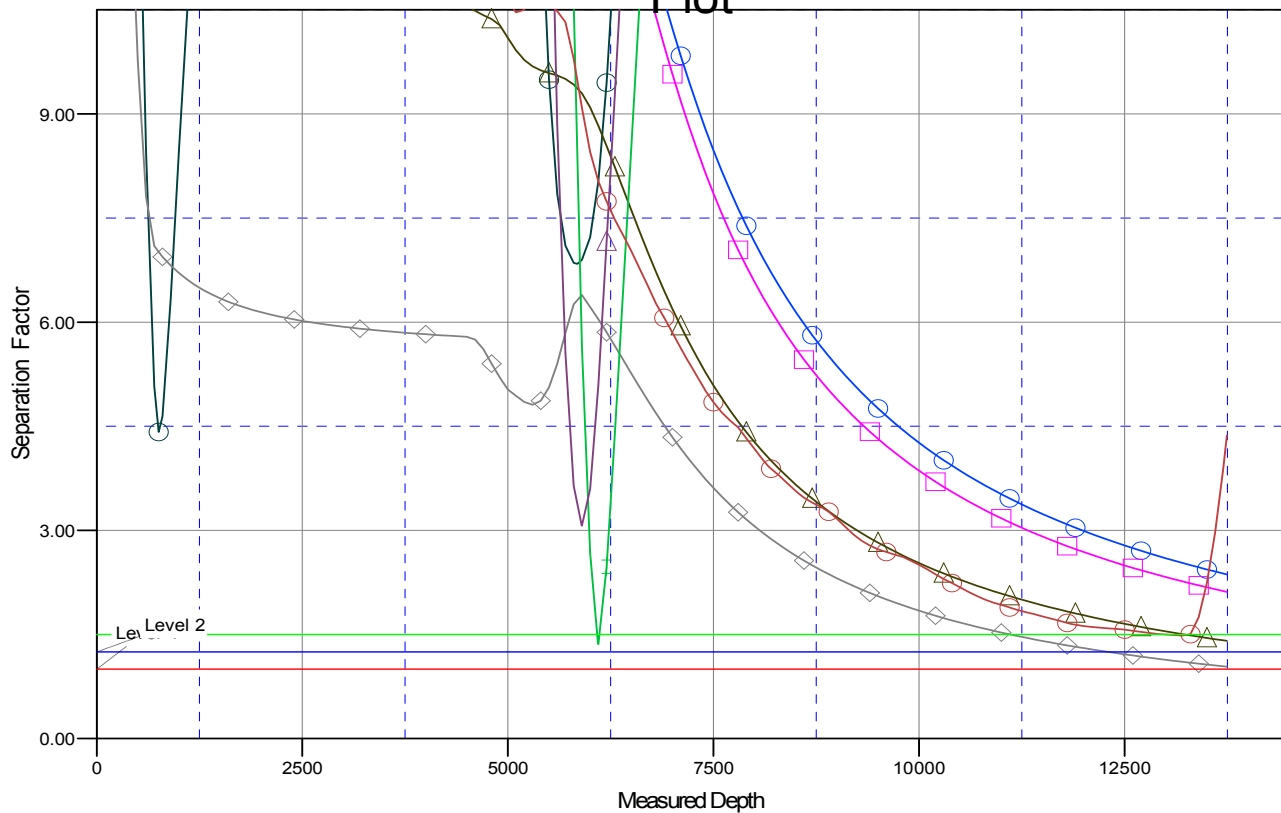
Company: Whiting Petroleum Corp.
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Site Error: 0.00 usft
Reference Well: Horsetail #30E-3104
Well Error: 0.00 usft
Reference Wellbore: Hz
Reference Design: APD

Local Co-ordinate Reference: Well Horsetail #30E-3104
TVD Reference: KBE @ 4827.40usft (Original Well Elev)
MD Reference: KBE @ 4827.40usft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 3.00 sigma
Database: LandmarkEDM
Offset TVD Reference: Offset Datum

Reference Depths are relative to KBE @ 4827.40usft (Original Well Ele
Offset Depths are relative to Offset Datum
Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: Horsetail #30E-3104
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 1.10°

Separation Factor Plot



LEGEND

- Horsetail #30E-1935, Hz, APDV0
- Horsetail #30E-1902, Hz, APDV0
- Horsetail #30E-3135, Hz, APDV0
- Horsetail #30E-3138, Hz, APDV0
- Horsetail #30E-1904, Hz, APDV0
- Horsetail #30E-3136, Hz, APDV0
- Horsetail #30E-1901, Hz, APDV0
- Horsetail #30E-1903, Hz, APDV0
- Horsetail #30E-1934, Hz, APDV0
- Horsetail #30E-3103, Hz, APDV0
- Horsetail #30E-1936, Hz, APDV0
- Horsetail #30F-1941, Hz, HzV0
- Horsetail #30F-1942, Hz, HzV0
- Horsetail #30F-3105, Hz, HzV0