



Whiting Petroleum Corp.

Weld County, CO

Sec 30-T10N-R57W

Horsetail #30E-1902

Hz

APD

Anticollision Report

22 October, 2015



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1902
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-1902	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	13,718.76	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	60.75	59.13	37.616	CC
Horsetail #30E-1901 - Hz - APD	400.00	399.11	61.03	58.81	27.467	ES
Horsetail #30E-1901 - Hz - APD	13,719.75	13,657.75	336.69	107.34	1.468	Level 3, SF
Horsetail #30E-1903 - Hz - APD	300.00	300.00	59.98	58.36	37.140	CC
Horsetail #30E-1903 - Hz - APD	400.00	399.85	60.55	58.34	27.385	ES
Horsetail #30E-1903 - Hz - APD	13,719.75	13,650.75	336.72	107.49	1.469	Level 3, SF
Horsetail #30E-1904 - Hz - APD	300.00	300.00	119.96	118.34	74.279	CC, ES
Horsetail #30E-1904 - Hz - APD	13,719.75	13,732.32	659.56	426.45	2.829	SF
Horsetail #30E-1934 - Hz - APD	300.00	300.00	29.99	28.37	18.570	CC
Horsetail #30E-1934 - Hz - APD	13,719.75	13,849.50	209.65	18.00	1.094	Level 2, ES, SF
Horsetail #30E-1935 - Hz - APD	300.00	300.00	29.99	28.37	18.570	CC
Horsetail #30E-1935 - Hz - APD	400.00	400.11	30.25	28.04	13.674	ES
Horsetail #30E-1935 - Hz - APD	13,719.75	13,926.28	269.92	110.88	1.697	SF
Horsetail #30E-1936 - Hz - APD	300.00	300.00	89.97	88.35	55.709	CC, ES
Horsetail #30E-1936 - Hz - APD	13,719.75	13,849.49	511.59	284.73	2.255	SF
Horsetail #30E-3103 - Hz - APD	300.00	300.00	77.24	75.62	47.826	CC
Horsetail #30E-3103 - Hz - APD	400.00	398.71	77.33	75.08	34.362	ES
Horsetail #30E-3103 - Hz - APD	5,600.00	5,989.41	581.20	541.82	14.759	SF
Horsetail #30E-3104 - Hz - APD	300.00	300.00	129.10	127.49	79.941	CC, ES
Horsetail #30E-3104 - Hz - APD	5,700.00	6,002.54	910.90	871.72	23.251	SF
Horsetail #30E-3135 - Hz - APD	649.96	648.35	49.45	45.60	12.831	CC, ES
Horsetail #30E-3135 - Hz - APD	6,200.00	5,628.26	400.92	362.36	10.396	SF
Horsetail #30E-3136 - Hz - APD	300.00	300.00	102.06	100.45	63.199	CC, ES
Horsetail #30E-3136 - Hz - APD	6,109.27	5,685.19	744.36	706.02	19.411	SF
Horsetail #30E-3137 Dropped - Hz - APD	300.00	300.00	157.20	155.59	97.344	CC, ES
Horsetail #30E-3137 Dropped - Hz - APD	6,200.00	5,656.96	1,062.51	1,023.95	27.560	SF
Horsetail #30E-3138 - Hz - APD	300.00	300.00	185.91	184.29	115.116	CC, ES
Horsetail #30E-3138 - Hz - APD	6,500.00	5,600.00	1,444.93	1,404.89	36.082	SF

Offset Design		Sec 30-T10N-R57W - Horsetail #30E-1901 - Hz - APD										Offset Site Error:		0.00 usft
Survey Program:		0-MWD+IFR1+MS+sag										Offset Well Error:		0.00 usft
Reference		Offset		Semi Major Axis				Distance						
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	

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



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Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1902
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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-1902	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-90.00	0.00	-60.75	60.75					
100.00	100.00	100.00	100.00	0.13	0.13	-90.00	0.00	-60.75	60.75	60.48	0.27	228.075		
200.00	200.00	200.00	200.00	0.47	0.47	-90.00	0.00	-60.75	60.75	59.81	0.94	64.580		
300.00	300.00	300.00	300.00	0.81	0.81	-90.00	0.00	-60.75	60.75	59.13	1.61	37.616 CC		
400.00	399.98	399.11	399.09	1.11	1.11	75.19	-1.56	-61.47	61.03	58.81	2.22	27.467 ES		
500.00	499.84	498.22	498.06	1.41	1.41	75.50	-6.22	-63.65	61.88	59.06	2.82	21.943		
600.00	599.45	597.31	596.78	1.73	1.73	76.00	-13.97	-67.27	63.29	59.82	3.47	18.222		
700.00	698.70	696.40	695.13	2.07	2.06	76.65	-24.82	-72.33	65.28	61.11	4.17	15.645		
800.00	797.47	795.46	793.00	2.43	2.42	77.44	-38.73	-78.82	67.85	62.93	4.92	13.797		
900.00	895.73	894.50	890.24	2.82	2.81	77.93	-55.70	-86.74	71.11	65.40	5.71	12.452		
1,000.00	993.93	994.41	987.99	3.24	3.24	77.40	-74.41	-95.47	74.97	68.45	6.52	11.503		
1,100.00	1,092.12	1,094.33	1,085.76	3.66	3.67	76.92	-93.12	-104.20	78.83	71.49	7.34	10.738		
1,200.00	1,190.32	1,194.25	1,183.53	4.08	4.11	76.48	-111.84	-112.94	82.70	74.53	8.18	10.114		
1,300.00	1,288.52	1,294.18	1,281.29	4.51	4.55	76.08	-130.55	-121.67	86.58	77.56	9.02	9.597		
1,400.00	1,386.72	1,394.10	1,379.06	4.94	5.00	75.72	-149.26	-130.40	90.46	80.59	9.87	9.163		
1,500.00	1,484.92	1,494.02	1,476.83	5.38	5.45	75.39	-167.97	-139.13	94.34	83.61	10.73	8.795		
1,600.00	1,583.12	1,593.95	1,574.59	5.81	5.90	75.08	-186.68	-147.87	98.23	86.64	11.59	8.479		
1,700.00	1,681.32	1,693.87	1,672.36	6.25	6.35	74.79	-205.40	-156.60	102.12	89.67	12.45	8.205		
1,800.00	1,779.51	1,793.79	1,770.12	6.69	6.80	74.53	-224.11	-165.33	106.01	92.70	13.31	7.965		
1,900.00	1,877.71	1,893.72	1,867.89	7.13	7.26	74.29	-242.82	-174.06	109.90	95.73	14.17	7.754		
2,000.00	1,975.91	1,993.64	1,965.66	7.57	7.72	74.06	-261.53	-182.80	113.79	98.76	15.04	7.567		
2,100.00	2,074.11	2,093.56	2,063.42	8.01	8.17	73.85	-280.25	-191.53	117.69	101.79	15.90	7.400		
2,200.00	2,172.31	2,193.49	2,161.19	8.45	8.63	73.65	-298.96	-200.26	121.59	104.82	16.77	7.250		
2,300.00	2,270.51	2,293.41	2,258.95	8.89	9.09	73.46	-317.67	-208.99	125.49	107.85	17.64	7.114		
2,400.00	2,368.70	2,393.33	2,356.72	9.34	9.55	73.29	-336.38	-217.73	129.39	110.88	18.51	6.991		
2,500.00	2,466.90	2,493.26	2,454.49	9.78	10.01	73.12	-355.10	-226.46	133.29	113.91	19.38	6.879		
2,600.00	2,565.10	2,593.18	2,552.25	10.22	10.47	72.96	-373.81	-235.19	137.19	116.95	20.25	6.776		
2,700.00	2,663.30	2,693.10	2,650.02	10.67	10.93	72.82	-392.52	-243.92	141.10	119.98	21.11	6.682		
2,800.00	2,761.50	2,793.03	2,747.79	11.11	11.39	72.68	-411.23	-252.66	145.00	123.02	21.98	6.596		
2,900.00	2,859.70	2,892.95	2,845.55	11.55	11.85	72.55	-429.94	-261.39	148.91	126.05	22.85	6.515		
3,000.00	2,957.89	2,992.87	2,943.32	12.00	12.31	72.42	-448.66	-270.12	152.81	129.09	23.72	6.441		
3,100.00	3,056.09	3,092.79	3,041.08	12.44	12.77	72.30	-467.37	-278.85	156.72	132.12	24.59	6.372		
3,200.00	3,154.29	3,192.72	3,138.85	12.88	13.23	72.19	-486.08	-287.59	160.63	135.16	25.46	6.308		
3,300.00	3,252.49	3,292.64	3,236.62	13.33	13.69	72.08	-504.79	-296.32	164.53	138.20	26.33	6.248		
3,400.00	3,350.69	3,392.56	3,334.38	13.77	14.15	71.98	-523.51	-305.05	168.44	141.24	27.20	6.192		
3,500.00	3,448.89	3,492.49	3,432.15	14.22	14.61	71.88	-542.22	-313.78	172.35	144.28	28.08	6.139		
3,600.00	3,547.08	3,592.41	3,529.92	14.66	15.07	71.79	-560.93	-322.51	176.26	147.32	28.95	6.089		
3,700.00	3,645.28	3,692.33	3,627.68	15.11	15.53	71.70	-579.64	-331.25	180.17	150.36	29.82	6.043		
3,800.00	3,743.48	3,792.26	3,725.45	15.55	15.99	71.61	-598.36	-339.98	184.08	153.39	30.69	5.999		
3,900.00	3,841.68	3,892.18	3,823.21	16.00	16.46	71.53	-617.07	-348.71	187.99	156.44	31.56	5.957		
4,000.00	3,939.88	3,992.10	3,920.98	16.44	16.92	71.45	-635.78	-357.44	191.90	159.48	32.43	5.918		
4,100.00	4,038.08	4,092.03	4,018.75	16.88	17.38	71.37	-654.49	-366.18	195.81	162.52	33.30	5.881		
4,200.00	4,136.28	4,191.95	4,116.51	17.33	17.84	71.30	-673.20	-374.91	199.73	165.56	34.17	5.845		
4,300.00	4,234.47	4,291.87	4,214.28	17.77	18.30	71.23	-691.92	-383.64	203.64	168.60	35.04	5.812		
4,400.00	4,332.67	4,394.98	4,315.45	18.22	18.69	71.52	-709.91	-392.04	206.87	170.98	35.88	5.765		
4,500.00	4,431.12	4,498.44	4,417.62	18.58	18.97	72.36	-724.65	-398.92	208.85	172.26	36.59	5.708		
4,600.00	4,530.11	4,601.86	4,520.27	18.84	19.23	73.15	-736.04	-404.23	210.24	173.08	37.16	5.657		
4,700.00	4,629.54	4,705.22	4,623.24	19.09	19.48	73.89	-744.06	-407.97	211.05	173.34	37.70	5.598		
4,800.00	4,729.27	4,808.51	4,726.39	19.33	19.71	74.58	-748.70	-410.14	211.26	173.05	38.21	5.529		
4,900.00	4,829.20	4,911.33	4,829.20	19.55	19.96	75.22	-750.00	-410.75	210.89	172.18	38.71	5.448		
5,000.00	4,929.19	5,011.32	4,929.19	19.79	20.19	-89.62	-750.00	-410.75	210.64	171.43	39.22	5.371		
5,000.00	4,929.20	5,011.32	4,929.20	19.79	20.19	-89.73	-750.00	-410.75	210.75	171.54	39.21	5.375		

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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		
5,012.12	4,941.31	5,023.44	4,941.31	19.81	20.22	-89.73	-750.00	-410.75	210.75	171.49	39.26	5.368		
5,100.00	5,029.20	5,111.22	5,029.09	20.00	20.40	-89.69	-749.86	-410.75	210.75	171.12	39.63	5.318		
5,200.00	5,129.14	5,209.06	5,126.11	20.20	20.55	-86.93	-738.45	-410.94	211.23	171.05	40.18	5.257		
5,300.00	5,227.36	5,304.53	5,217.13	20.33	20.62	-83.64	-710.04	-411.41	212.67	172.14	40.52	5.248		
5,400.00	5,320.35	5,398.11	5,299.84	20.37	20.61	-80.66	-666.56	-412.12	214.86	174.32	40.55	5.299		
5,500.00	5,404.70	5,490.07	5,372.28	20.34	20.55	-78.07	-610.10	-413.05	217.54	177.27	40.28	5.401		
5,600.00	5,477.30	5,580.74	5,432.89	20.27	20.46	-75.95	-542.84	-414.15	220.41	180.61	39.80	5.538		
5,700.00	5,535.50	5,670.40	5,480.49	20.18	20.35	-74.34	-466.99	-415.40	223.18	183.92	39.25	5.685		
5,800.00	5,577.15	5,759.36	5,514.18	20.10	20.24	-73.27	-384.79	-416.75	225.61	186.82	38.79	5.816		
5,900.00	5,600.73	5,850.00	5,533.63	20.05	20.14	-72.73	-296.39	-418.20	227.54	188.99	38.56	5.901		
6,000.00	5,606.00	5,938.81	5,538.00	20.06	20.09	-72.72	-207.78	-419.66	228.91	190.34	38.57	5.935		
6,100.00	5,606.00	6,038.80	5,538.00	20.18	20.12	-72.82	-107.81	-421.30	230.29	191.39	38.90	5.920		
6,200.00	5,606.00	6,138.79	5,538.00	20.40	20.26	-72.93	-7.83	-422.95	231.66	192.24	39.43	5.875		
6,300.00	5,606.00	6,238.78	5,538.00	20.74	20.52	-73.03	92.15	-424.59	233.04	192.89	40.15	5.804		
6,400.00	5,606.00	6,338.77	5,538.00	21.18	20.92	-73.14	192.12	-426.23	234.42	193.37	41.05	5.710		
6,500.00	5,606.00	6,438.75	5,538.00	21.71	21.43	-73.24	292.10	-427.87	235.80	193.67	42.13	5.597		
6,600.00	5,606.00	6,538.74	5,538.00	22.34	22.04	-73.34	392.08	-429.52	237.18	193.81	43.37	5.469		
6,700.00	5,606.00	6,638.73	5,538.00	23.04	22.75	-73.44	492.05	-431.16	238.56	193.81	44.75	5.331		
6,800.00	5,606.00	6,738.72	5,538.00	23.82	23.52	-73.53	592.03	-432.80	239.94	193.67	46.27	5.186		
6,900.00	5,606.00	6,838.71	5,538.00	24.66	24.37	-73.63	692.00	-434.45	241.32	193.41	47.91	5.037		
7,000.00	5,606.00	6,938.70	5,538.00	25.55	25.27	-73.73	791.98	-436.09	242.70	193.04	49.66	4.887		
7,100.00	5,606.00	7,038.69	5,538.00	26.50	26.23	-73.82	891.96	-437.73	244.08	192.57	51.52	4.738		
7,200.00	5,606.00	7,138.68	5,538.00	27.50	27.23	-73.92	991.93	-439.37	245.47	192.01	53.46	4.592		
7,300.00	5,606.00	7,238.67	5,538.00	28.54	28.28	-74.01	1,091.91	-441.02	246.85	191.37	55.48	4.449		
7,400.00	5,606.00	7,338.66	5,538.00	29.61	29.36	-74.10	1,191.88	-442.66	248.24	190.66	57.57	4.312		
7,500.00	5,606.00	7,438.65	5,538.00	30.72	30.47	-74.19	1,291.86	-444.30	249.62	189.89	59.73	4.179		
7,600.00	5,606.00	7,538.64	5,538.00	31.85	31.62	-74.28	1,391.84	-445.95	251.01	189.06	61.95	4.052		
7,700.00	5,606.00	7,638.63	5,538.00	33.02	32.79	-74.37	1,491.81	-447.59	252.39	188.17	64.22	3.930		
7,800.00	5,606.00	7,738.62	5,538.00	34.20	33.98	-74.46	1,591.79	-449.23	253.78	187.24	66.54	3.814		
7,900.00	5,606.00	7,838.61	5,538.00	35.41	35.19	-74.54	1,691.77	-450.87	255.17	186.27	68.90	3.704		
8,000.00	5,606.00	7,938.60	5,538.00	36.64	36.43	-74.63	1,791.74	-452.52	256.56	185.26	71.30	3.598		
8,100.00	5,606.00	8,038.59	5,538.00	37.88	37.68	-74.71	1,891.72	-454.16	257.95	184.22	73.73	3.499		
8,200.00	5,606.00	8,138.58	5,538.00	39.14	38.94	-74.80	1,991.69	-455.80	259.34	183.14	76.20	3.404		
8,300.00	5,606.00	8,238.57	5,538.00	40.42	40.22	-74.88	2,091.67	-457.45	260.73	182.03	78.69	3.313		
8,400.00	5,606.00	8,338.56	5,538.00	41.70	41.52	-74.96	2,191.65	-459.09	262.12	180.90	81.21	3.228		
8,500.00	5,606.00	8,438.55	5,538.00	43.00	42.82	-75.04	2,291.62	-460.73	263.51	179.75	83.76	3.146		
8,600.00	5,606.00	8,538.54	5,538.00	44.31	44.14	-75.12	2,391.60	-462.37	264.90	178.57	86.33	3.069		
8,700.00	5,606.00	8,638.53	5,538.00	45.63	45.46	-75.20	2,491.57	-464.02	266.29	177.38	88.92	2.995		
8,800.00	5,606.00	8,738.52	5,538.00	46.96	46.80	-75.28	2,591.55	-465.66	267.68	176.16	91.52	2.925		
8,900.00	5,606.00	8,838.51	5,538.00	48.30	48.14	-75.36	2,691.53	-467.30	269.08	174.93	94.15	2.858		
9,000.00	5,606.00	8,938.50	5,538.00	49.65	49.49	-75.44	2,791.50	-468.95	270.47	173.68	96.79	2.794		
9,100.00	5,606.00	9,038.49	5,538.00	51.00	50.84	-75.51	2,891.48	-470.59	271.86	172.42	99.44	2.734		
9,200.00	5,606.00	9,138.47	5,538.00	52.36	52.21	-75.59	2,991.46	-472.23	273.26	171.15	102.11	2.676		
9,300.00	5,606.00	9,238.46	5,538.00	53.72	53.57	-75.66	3,091.43	-473.87	274.65	169.86	104.80	2.621		
9,400.00	5,606.00	9,338.45	5,538.00	55.09	54.95	-75.74	3,191.41	-475.52	276.05	168.56	107.49	2.568		
9,500.00	5,606.00	9,438.44	5,538.00	56.46	56.33	-75.81	3,291.38	-477.16	277.45	167.25	110.20	2.518		
9,600.00	5,606.00	9,538.43	5,538.00	57.84	57.71	-75.88	3,391.36	-478.80	278.84	165.93	112.91	2.470		
9,700.00	5,606.00	9,638.42	5,538.00	59.23	59.10	-75.96	3,491.34	-480.45	280.24	164.60	115.64	2.423		
9,800.00	5,606.00	9,738.41	5,538.00	60.62	60.49	-76.03	3,591.31	-482.09	281.64	163.26	118.37	2.379		
9,900.00	5,606.00	9,838.40	5,538.00	62.01	61.89	-76.10	3,691.29	-483.73	283.03	161.92	121.11	2.337		
10,000.00	5,606.00	9,938.39	5,538.00	63.40	63.29	-76.17	3,791.26	-485.37	284.43	160.57	123.87	2.296		
10,100.00	5,606.00	10,038.38	5,538.00	64.80	64.69	-76.24	3,891.24	-487.02	285.83	159.21	126.62	2.257		

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-1902
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-1902	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	10,138.37	5,538.00	66.21	66.10	-76.30	3,991.22	-488.66	287.23	157.84	129.39	2.220		
10,300.00	5,606.00	10,238.36	5,538.00	67.61	67.51	-76.37	4,091.19	-490.30	288.63	156.47	132.16	2.184		
10,400.00	5,606.00	10,338.35	5,538.00	69.02	68.92	-76.44	4,191.17	-491.95	290.03	155.09	134.94	2.149		
10,500.00	5,606.00	10,438.34	5,538.00	70.43	70.33	-76.51	4,291.14	-493.59	291.43	153.70	137.73	2.116		
10,600.00	5,606.00	10,538.33	5,538.00	71.84	71.75	-76.57	4,391.12	-495.23	292.83	152.31	140.52	2.084		
10,700.00	5,606.00	10,638.32	5,538.00	73.26	73.17	-76.64	4,491.10	-496.87	294.23	150.92	143.31	2.053		
10,800.00	5,606.00	10,738.31	5,538.00	74.68	74.59	-76.70	4,591.07	-498.52	295.63	149.52	146.11	2.023		
10,900.00	5,606.00	10,838.30	5,538.00	76.10	76.01	-76.76	4,691.05	-500.16	297.03	148.11	148.92	1.995		
11,000.00	5,606.00	10,938.29	5,538.00	77.52	77.44	-76.83	4,791.03	-501.80	298.43	146.70	151.73	1.967		
11,100.00	5,606.00	11,038.28	5,538.00	78.94	78.87	-76.89	4,891.00	-503.45	299.84	145.29	154.55	1.940		
11,200.00	5,606.00	11,138.27	5,538.00	80.37	80.29	-76.95	4,990.98	-505.09	301.24	143.87	157.37	1.914		
11,300.00	5,606.00	11,238.26	5,538.00	81.79	81.72	-77.01	5,090.95	-506.73	302.64	142.45	160.19	1.889		
11,400.00	5,606.00	11,338.25	5,538.00	83.22	83.16	-77.08	5,190.93	-508.37	304.05	141.03	163.02	1.865		
11,500.00	5,606.00	11,438.24	5,538.00	84.65	84.59	-77.14	5,290.91	-510.02	305.45	139.60	165.85	1.842		
11,600.00	5,606.00	11,538.23	5,538.00	86.08	86.02	-77.20	5,390.88	-511.66	306.85	138.17	168.68	1.819		
11,700.00	5,606.00	11,638.22	5,538.00	87.52	87.46	-77.25	5,490.86	-513.30	308.26	136.74	171.52	1.797		
11,800.00	5,606.00	11,738.21	5,538.00	88.95	88.90	-77.31	5,590.83	-514.95	309.66	135.30	174.36	1.776		
11,900.00	5,606.00	11,838.20	5,538.00	90.39	90.34	-77.37	5,690.81	-516.59	311.07	133.86	177.21	1.755		
12,000.00	5,606.00	11,938.18	5,538.00	91.82	91.78	-77.43	5,790.79	-518.23	312.47	132.42	180.05	1.735		
12,100.00	5,606.00	12,038.17	5,538.00	93.26	93.22	-77.49	5,890.76	-519.88	313.88	130.98	182.90	1.716		
12,200.00	5,606.00	12,138.16	5,538.00	94.70	94.66	-77.54	5,990.74	-521.52	315.29	129.53	185.75	1.697		
12,300.00	5,606.00	12,238.15	5,538.00	96.14	96.10	-77.60	6,090.72	-523.16	316.69	128.08	188.61	1.679		
12,400.00	5,606.00	12,338.14	5,538.00	97.58	97.55	-77.66	6,190.69	-524.80	318.10	126.63	191.47	1.661		
12,500.00	5,606.00	12,438.13	5,538.00	99.02	98.99	-77.71	6,290.67	-526.45	319.51	125.18	194.33	1.644		
12,600.00	5,606.00	12,538.12	5,538.00	100.46	100.44	-77.77	6,390.64	-528.09	320.91	123.72	197.19	1.627		
12,700.00	5,606.00	12,638.11	5,538.00	101.91	101.88	-77.82	6,490.62	-529.73	322.32	122.27	200.06	1.611		
12,800.00	5,606.00	12,738.10	5,538.00	103.35	103.33	-77.87	6,590.60	-531.38	323.73	120.81	202.92	1.595		
12,900.00	5,606.00	12,838.09	5,538.00	104.79	104.78	-77.93	6,690.57	-533.02	325.14	119.35	205.79	1.580		
13,000.00	5,606.00	12,938.08	5,538.00	106.24	106.23	-77.98	6,790.55	-534.66	326.55	117.88	208.66	1.565		
13,100.00	5,606.00	13,038.07	5,538.00	107.69	107.68	-78.03	6,890.52	-536.30	327.95	116.42	211.54	1.550		
13,200.00	5,606.00	13,138.06	5,538.00	109.13	109.13	-78.08	6,990.50	-537.95	329.36	114.95	214.41	1.536		
13,300.00	5,606.00	13,238.05	5,538.00	110.58	110.58	-78.14	7,090.48	-539.59	330.77	113.49	217.29	1.522		
13,400.00	5,606.00	13,338.04	5,538.00	112.03	112.03	-78.19	7,190.45	-541.23	332.18	112.02	220.17	1.509		
13,500.00	5,606.00	13,438.03	5,538.00	113.48	113.48	-78.24	7,290.43	-542.88	333.59	110.55	223.05	1.496 Level 3		
13,600.00	5,606.00	13,538.02	5,538.00	114.93	114.94	-78.29	7,390.40	-544.52	335.00	109.07	225.93	1.483 Level 3		
13,700.00	5,606.00	13,638.01	5,538.00	116.38	116.39	-78.34	7,490.38	-546.16	336.41	107.60	228.81	1.470 Level 3		
13,719.75	5,606.00	13,657.75	5,538.00	116.63	116.68	-78.35	7,510.12	-546.49	336.69	107.34	229.35	1.468 Level 3, SF		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1902
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-1902	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	HZ	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	90.00	0.00	59.98	59.98					
100.00	100.00	100.00	100.00	0.13	0.13	90.00	0.00	59.98	59.98	59.71	0.27	225.188		
200.00	200.00	200.00	200.00	0.47	0.47	90.00	0.00	59.98	59.98	59.04	0.94	63.763		
300.00	300.00	300.00	300.00	0.81	0.81	90.00	0.00	59.98	59.98	58.36	1.61	37.140 CC		
400.00	399.98	399.85	399.83	1.11	1.11	-104.85	-1.74	60.10	60.55	58.34	2.21	27.385 ES		
500.00	499.84	499.68	499.52	1.41	1.41	-104.68	-6.94	60.47	62.26	59.48	2.79	22.329		
600.00	599.45	599.47	598.93	1.73	1.73	-104.41	-15.60	61.08	65.12	61.70	3.42	19.017		
700.00	698.70	699.20	697.91	2.07	2.06	-104.06	-27.70	61.93	69.11	65.00	4.11	16.807		
800.00	797.47	798.86	796.34	2.43	2.42	-103.67	-43.22	63.02	74.24	69.39	4.85	15.299		
900.00	895.73	898.59	894.37	2.82	2.81	-103.41	-61.51	64.31	80.31	74.67	5.64	14.240		
1,000.00	993.93	998.40	992.43	3.24	3.22	-103.28	-80.07	65.62	86.49	80.03	6.45	13.400		
1,100.00	1,092.12	1,098.21	1,090.49	3.66	3.64	-103.17	-98.63	66.93	92.67	85.38	7.28	12.720		
1,200.00	1,190.32	1,198.01	1,188.55	4.08	4.06	-103.08	-117.19	68.23	98.84	90.72	8.13	12.163		
1,300.00	1,288.52	1,297.82	1,286.61	4.51	4.49	-103.00	-135.75	69.54	105.02	96.04	8.98	11.699		
1,400.00	1,386.72	1,397.63	1,384.66	4.94	4.92	-102.92	-154.32	70.85	111.20	101.37	9.83	11.309		
1,500.00	1,484.92	1,497.44	1,482.72	5.38	5.35	-102.86	-172.88	72.16	117.38	106.68	10.69	10.977		
1,600.00	1,583.12	1,597.25	1,580.78	5.81	5.78	-102.80	-191.44	73.46	123.55	112.00	11.56	10.691		
1,700.00	1,681.32	1,697.06	1,678.84	6.25	6.22	-102.74	-210.00	74.77	129.73	117.31	12.42	10.442		
1,800.00	1,779.51	1,796.87	1,776.90	6.69	6.65	-102.70	-228.56	76.08	135.91	122.62	13.29	10.225		
1,900.00	1,877.71	1,896.68	1,874.96	7.13	7.09	-102.65	-247.12	77.39	142.09	127.92	14.16	10.032		
2,000.00	1,975.91	1,996.49	1,973.02	7.57	7.53	-102.61	-265.68	78.69	148.27	133.23	15.04	9.861		
2,100.00	2,074.11	2,096.29	2,071.08	8.01	7.97	-102.57	-284.24	80.00	154.44	138.54	15.91	9.708		
2,200.00	2,172.31	2,196.10	2,169.14	8.45	8.40	-102.54	-302.80	81.31	160.62	143.84	16.78	9.570		
2,300.00	2,270.51	2,295.91	2,267.20	8.89	8.84	-102.51	-321.36	82.62	166.80	149.14	17.66	9.445		
2,400.00	2,368.70	2,395.72	2,365.26	9.34	9.28	-102.48	-339.92	83.92	172.98	154.44	18.54	9.332		
2,500.00	2,466.90	2,495.53	2,463.32	9.78	9.72	-102.45	-358.48	85.23	179.16	159.75	19.41	9.229		
2,600.00	2,565.10	2,595.34	2,561.38	10.22	10.16	-102.42	-377.04	86.54	185.34	165.05	20.29	9.134		
2,700.00	2,663.30	2,695.15	2,659.43	10.67	10.60	-102.40	-395.60	87.85	191.52	170.35	21.17	9.047		
2,800.00	2,761.50	2,794.96	2,757.49	11.11	11.04	-102.38	-414.17	89.15	197.69	175.65	22.05	8.967		
2,900.00	2,859.70	2,894.77	2,855.55	11.55	11.48	-102.35	-432.73	90.46	203.87	180.95	22.93	8.892		
3,000.00	2,957.89	2,994.57	2,953.61	12.00	11.92	-102.33	-451.29	91.77	210.05	186.25	23.81	8.823		
3,100.00	3,056.09	3,094.38	3,051.67	12.44	12.36	-102.31	-469.85	93.07	216.23	191.54	24.69	8.759		
3,200.00	3,154.29	3,194.19	3,149.73	12.88	12.81	-102.30	-488.41	94.38	222.41	196.84	25.57	8.699		
3,300.00	3,252.49	3,294.00	3,247.79	13.33	13.25	-102.28	-506.97	95.69	228.59	202.14	26.45	8.643		
3,400.00	3,350.69	3,393.81	3,345.85	13.77	13.69	-102.26	-525.53	97.00	234.77	207.44	27.33	8.591		
3,500.00	3,448.89	3,493.62	3,443.91	14.22	14.13	-102.25	-544.09	98.30	240.95	212.74	28.21	8.542		
3,600.00	3,547.08	3,593.43	3,541.97	14.66	14.57	-102.23	-562.65	99.61	247.12	218.04	29.09	8.496		
3,700.00	3,645.28	3,693.24	3,640.03	15.11	15.01	-102.22	-581.21	100.92	253.30	223.33	29.97	8.452		
3,800.00	3,743.48	3,793.05	3,738.09	15.55	15.45	-102.21	-599.77	102.23	259.48	228.63	30.85	8.411		
3,900.00	3,841.68	3,892.85	3,836.14	16.00	15.89	-102.19	-618.33	103.53	265.66	233.93	31.73	8.372		
4,000.00	3,939.88	3,992.66	3,934.20	16.44	16.34	-102.18	-636.89	104.84	271.84	239.23	32.61	8.335		
4,100.00	4,038.08	4,092.47	4,032.26	16.88	16.78	-102.17	-655.46	106.15	278.02	244.52	33.50	8.300		
4,200.00	4,136.28	4,192.28	4,130.32	17.33	17.22	-102.16	-674.02	107.46	284.20	249.82	34.38	8.267		
4,300.00	4,234.47	4,292.09	4,228.38	17.77	17.66	-102.15	-692.58	108.76	290.38	255.12	35.26	8.235		
4,400.00	4,332.67	4,392.42	4,327.01	18.22	18.07	-102.14	-710.99	110.05	296.52	260.41	36.11	8.212		
4,500.00	4,431.12	4,493.39	4,426.78	18.66	18.54	-102.13	-729.37	111.34	302.64	265.50	36.94	8.189		
4,600.00	4,530.11	4,594.37	4,527.04	19.11	18.99	-102.12	-747.75	112.63	308.72	270.58	37.74	8.166		
4,700.00	4,629.54	4,695.33	4,627.65	19.55	19.43	-102.11	-766.13	113.92	314.80	275.66	38.54	8.143		
4,800.00	4,729.27	4,796.26	4,728.45	20.00	19.88	-102.10	-784.51	115.21	320.88	280.74	39.34	8.120		
4,900.00	4,829.20	4,897.02	4,829.20	20.44	20.32	-102.09	-802.89	116.50	326.96	285.82	40.14	8.097		
5,000.00	4,929.20	4,997.02	4,929.20	20.88	20.76	-102.08	-821.27	117.79	333.04	290.90	40.94	8.074		
5,100.00	5,029.20	5,097.07	5,029.24	21.33	21.21	-102.07	-839.65	119.08	339.12	295.98	41.74	8.051		

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-1902
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-1902	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		
5,136.05	5,065.24	5,133.17	5,065.27	20.07	19.81	90.17	-750.76	113.02	313.02	273.35	39.67	7.891		
5,200.00	5,129.14	5,196.09	5,127.42	20.20	19.89	88.64	-741.16	113.02	313.13	273.28	39.85	7.858		
5,300.00	5,227.36	5,292.62	5,219.33	20.33	19.96	86.36	-712.11	113.02	313.74	273.79	39.96	7.852		
5,400.00	5,320.35	5,387.11	5,302.61	20.37	19.95	84.24	-667.74	113.02	314.80	274.93	39.87	7.896		
5,500.00	5,404.70	5,479.85	5,375.25	20.34	19.90	82.34	-610.28	113.02	316.16	276.53	39.63	7.978		
5,600.00	5,477.30	5,571.14	5,435.71	20.27	19.83	80.73	-542.04	113.02	317.63	278.33	39.30	8.082		
5,700.00	5,535.50	5,661.28	5,482.83	20.18	19.77	79.44	-465.33	113.02	319.03	280.06	38.97	8.187		
5,800.00	5,577.15	5,750.00	5,515.63	20.10	19.72	78.51	-383.01	113.02	320.21	281.48	38.72	8.269		
5,900.00	5,600.73	5,839.32	5,534.09	20.05	19.72	77.95	-295.73	113.02	321.03	282.38	38.64	8.307		
6,000.00	5,606.00	5,931.02	5,538.00	20.06	19.78	77.79	-204.19	113.02	321.40	282.64	38.76	8.292		
6,100.00	5,606.00	6,031.02	5,538.00	20.18	19.94	77.79	-104.19	113.02	321.60	282.54	39.07	8.232		
6,200.00	5,606.00	6,131.02	5,538.00	20.40	20.20	77.80	-4.19	113.02	321.80	282.22	39.58	8.130		
6,300.00	5,606.00	6,231.02	5,538.00	20.74	20.56	77.81	95.81	113.02	322.00	281.70	40.30	7.991		
6,400.00	5,606.00	6,331.02	5,538.00	21.18	21.03	77.82	195.81	113.02	322.20	281.00	41.20	7.820		
6,500.00	5,606.00	6,431.02	5,538.00	21.71	21.58	77.82	295.81	113.02	322.40	280.11	42.29	7.624		
6,600.00	5,606.00	6,531.02	5,538.00	22.34	22.21	77.83	395.81	113.02	322.59	279.06	43.53	7.410		
6,700.00	5,606.00	6,631.02	5,538.00	23.04	22.93	77.84	495.81	113.02	322.79	277.86	44.93	7.184		
6,800.00	5,606.00	6,731.02	5,538.00	23.82	23.71	77.85	595.81	113.02	322.99	276.52	46.47	6.950		
6,900.00	5,606.00	6,831.02	5,538.00	24.66	24.56	77.85	695.81	113.02	323.19	275.05	48.13	6.714		
7,000.00	5,606.00	6,931.02	5,538.00	25.55	25.46	77.86	795.81	113.02	323.39	273.48	49.91	6.480		
7,100.00	5,606.00	7,031.02	5,538.00	26.50	26.41	77.87	895.81	113.02	323.58	271.80	51.78	6.249		
7,200.00	5,606.00	7,131.02	5,538.00	27.50	27.41	77.88	995.81	113.02	323.78	270.04	53.75	6.024		
7,300.00	5,606.00	7,231.02	5,538.00	28.54	28.46	77.88	1,095.81	113.02	323.98	268.19	55.79	5.807		
7,400.00	5,606.00	7,331.02	5,538.00	29.61	29.53	77.89	1,195.81	113.02	324.18	266.27	57.91	5.598		
7,500.00	5,606.00	7,431.02	5,538.00	30.72	30.65	77.90	1,295.81	113.02	324.38	264.29	60.09	5.398		
7,600.00	5,606.00	7,531.02	5,538.00	31.85	31.79	77.91	1,395.81	113.02	324.58	262.24	62.33	5.207		
7,700.00	5,606.00	7,631.02	5,538.00	33.02	32.95	77.91	1,495.81	113.02	324.77	260.15	64.62	5.026		
7,800.00	5,606.00	7,731.02	5,538.00	34.20	34.14	77.92	1,595.81	113.01	324.97	258.01	66.96	4.853		
7,900.00	5,606.00	7,831.02	5,538.00	35.41	35.35	77.93	1,695.81	113.01	325.17	255.83	69.34	4.690		
8,000.00	5,606.00	7,931.02	5,538.00	36.64	36.58	77.94	1,795.81	113.01	325.37	253.61	71.76	4.534		
8,100.00	5,606.00	8,031.02	5,538.00	37.88	37.83	77.94	1,895.81	113.01	325.57	251.36	74.21	4.387		
8,200.00	5,606.00	8,131.02	5,538.00	39.14	39.09	77.95	1,995.81	113.01	325.77	249.07	76.69	4.248		
8,300.00	5,606.00	8,231.02	5,538.00	40.42	40.37	77.96	2,095.81	113.01	325.96	246.76	79.20	4.116		
8,400.00	5,606.00	8,331.02	5,538.00	41.70	41.66	77.97	2,195.81	113.01	326.16	244.43	81.74	3.990		
8,500.00	5,606.00	8,431.02	5,538.00	43.00	42.96	77.97	2,295.81	113.01	326.36	242.07	84.29	3.872		
8,600.00	5,606.00	8,531.02	5,538.00	44.31	44.28	77.98	2,395.81	113.01	326.56	239.69	86.87	3.759		
8,700.00	5,606.00	8,631.02	5,538.00	45.63	45.60	77.99	2,495.81	113.01	326.76	237.29	89.47	3.652		
8,800.00	5,606.00	8,731.01	5,538.00	46.96	46.93	78.00	2,595.81	113.01	326.95	234.87	92.09	3.551		
8,900.00	5,606.00	8,831.01	5,538.00	48.30	48.27	78.00	2,695.80	113.01	327.15	232.44	94.72	3.454		
9,000.00	5,606.00	8,931.01	5,538.00	49.65	49.62	78.01	2,795.80	113.01	327.35	229.99	97.37	3.362		
9,100.00	5,606.00	9,031.01	5,538.00	51.00	50.97	78.02	2,895.80	113.01	327.55	227.52	100.03	3.275		
9,200.00	5,606.00	9,131.01	5,538.00	52.36	52.33	78.03	2,995.80	113.01	327.75	225.05	102.70	3.191		
9,300.00	5,606.00	9,231.01	5,538.00	53.72	53.70	78.03	3,095.80	113.01	327.95	222.56	105.38	3.112		
9,400.00	5,606.00	9,331.01	5,538.00	55.09	55.07	78.04	3,195.80	113.01	328.14	220.07	108.08	3.036		
9,500.00	5,606.00	9,431.01	5,538.00	56.46	56.44	78.05	3,295.80	113.01	328.34	217.56	110.78	2.964		
9,600.00	5,606.00	9,531.01	5,538.00	57.84	57.82	78.05	3,395.80	113.01	328.54	215.04	113.50	2.895		
9,700.00	5,606.00	9,631.01	5,538.00	59.23	59.21	78.06	3,495.80	113.01	328.74	212.52	116.22	2.829		
9,800.00	5,606.00	9,731.01	5,538.00	60.62	60.60	78.07	3,595.80	113.01	328.94	209.98	118.95	2.765		
9,900.00	5,606.00	9,831.01	5,538.00	62.01	61.99	78.08	3,695.80	113.01	329.14	207.44	121.69	2.705		
10,000.00	5,606.00	9,931.01	5,538.00	63.40	63.39	78.08	3,795.80	113.01	329.34	204.89	124.44	2.647		
10,100.00	5,606.00	10,031.01	5,538.00	64.80	64.79	78.09	3,895.80	113.01	329.53	202.34	127.19	2.591		
10,200.00	5,606.00	10,131.01	5,538.00	66.21	66.19	78.10	3,995.80	113.01	329.73	199.78	129.95	2.537		

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-1902
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-1902	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,300.00	5,606.00	10,231.01	5,538.00	67.61	67.60	78.11	4,095.80	113.01	329.93	197.21	132.72	2.486	
10,400.00	5,606.00	10,331.01	5,538.00	69.02	69.01	78.11	4,195.80	113.01	330.13	194.64	135.49	2.437	
10,500.00	5,606.00	10,431.01	5,538.00	70.43	70.42	78.12	4,295.80	113.01	330.33	192.06	138.26	2.389	
10,600.00	5,606.00	10,531.01	5,538.00	71.84	71.83	78.13	4,395.80	113.01	330.53	189.48	141.04	2.343	
10,700.00	5,606.00	10,631.01	5,538.00	73.26	73.25	78.13	4,495.80	113.01	330.72	186.89	143.83	2.299	
10,800.00	5,606.00	10,731.01	5,538.00	74.68	74.67	78.14	4,595.80	113.01	330.92	184.30	146.62	2.257	
10,900.00	5,606.00	10,831.01	5,538.00	76.10	76.09	78.15	4,695.80	113.01	331.12	181.71	149.41	2.216	
11,000.00	5,606.00	10,931.01	5,538.00	77.52	77.51	78.16	4,795.80	113.01	331.32	179.11	152.21	2.177	
11,100.00	5,606.00	11,031.01	5,538.00	78.94	78.94	78.16	4,895.80	113.01	331.52	176.51	155.01	2.139	
11,200.00	5,606.00	11,131.01	5,538.00	80.37	80.36	78.17	4,995.80	113.01	331.72	173.90	157.82	2.102	
11,300.00	5,606.00	11,231.01	5,538.00	81.79	81.79	78.18	5,095.80	113.01	331.91	171.29	160.62	2.066	
11,400.00	5,606.00	11,331.01	5,538.00	83.22	83.22	78.19	5,195.80	113.01	332.11	168.68	163.43	2.032	
11,500.00	5,606.00	11,431.01	5,538.00	84.65	84.65	78.19	5,295.80	113.01	332.31	166.06	166.25	1.999	
11,600.00	5,606.00	11,531.01	5,538.00	86.08	86.08	78.20	5,395.80	113.01	332.51	163.44	169.06	1.967	
11,700.00	5,606.00	11,631.01	5,538.00	87.52	87.51	78.21	5,495.80	113.01	332.71	160.82	171.88	1.936	
11,800.00	5,606.00	11,731.01	5,538.00	88.95	88.95	78.21	5,595.80	113.01	332.91	158.20	174.71	1.906	
11,900.00	5,606.00	11,831.01	5,538.00	90.39	90.38	78.22	5,695.80	113.01	333.11	155.57	177.53	1.876	
12,000.00	5,606.00	11,931.01	5,538.00	91.82	91.82	78.23	5,795.80	113.01	333.30	152.95	180.36	1.848	
12,100.00	5,606.00	12,031.01	5,538.00	93.26	93.26	78.24	5,895.80	113.01	333.50	150.32	183.19	1.821	
12,200.00	5,606.00	12,131.01	5,538.00	94.70	94.70	78.24	5,995.80	113.00	333.70	147.68	186.02	1.794	
12,300.00	5,606.00	12,231.01	5,538.00	96.14	96.14	78.25	6,095.80	113.00	333.90	145.05	188.85	1.768	
12,400.00	5,606.00	12,331.01	5,538.00	97.58	97.58	78.26	6,195.80	113.00	334.10	142.41	191.69	1.743	
12,500.00	5,606.00	12,431.01	5,538.00	99.02	99.02	78.26	6,295.80	113.00	334.30	139.77	194.52	1.719	
12,600.00	5,606.00	12,531.01	5,538.00	100.46	100.46	78.27	6,395.80	113.00	334.49	137.13	197.36	1.695	
12,700.00	5,606.00	12,631.01	5,538.00	101.91	101.90	78.28	6,495.80	113.00	334.69	134.49	200.20	1.672	
12,800.00	5,606.00	12,731.01	5,538.00	103.35	103.35	78.28	6,595.80	113.00	334.89	131.84	203.05	1.649	
12,900.00	5,606.00	12,831.01	5,538.00	104.79	104.79	78.29	6,695.80	113.00	335.09	129.20	205.89	1.628	
13,000.00	5,606.00	12,931.01	5,538.00	106.24	106.24	78.30	6,795.80	113.00	335.29	126.55	208.74	1.606	
13,100.00	5,606.00	13,031.01	5,538.00	107.69	107.69	78.31	6,895.80	113.00	335.49	123.90	211.58	1.586	
13,200.00	5,606.00	13,131.01	5,538.00	109.13	109.13	78.31	6,995.80	113.00	335.69	121.25	214.43	1.565	
13,300.00	5,606.00	13,231.01	5,538.00	110.58	110.58	78.32	7,095.80	113.00	335.88	118.60	217.28	1.546	
13,400.00	5,606.00	13,331.01	5,538.00	112.03	112.03	78.33	7,195.80	113.00	336.08	115.95	220.13	1.527	
13,500.00	5,606.00	13,431.01	5,538.00	113.48	113.48	78.33	7,295.80	113.00	336.28	113.29	222.99	1.508	
13,600.00	5,606.00	13,531.01	5,538.00	114.93	114.93	78.34	7,395.80	113.00	336.48	110.64	225.84	1.490 Level 3	
13,700.00	5,606.00	13,631.01	5,538.00	116.38	116.38	78.35	7,495.80	113.00	336.68	107.98	228.69	1.472 Level 3	
13,719.75	5,606.00	13,650.75	5,538.00	116.63	116.66	78.35	7,515.54	113.00	336.72	107.49	229.22	1.469 Level 3, SF	



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1902
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-1902	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					
0.00	0.00	0.00	0.00	0.00	0.00	90.01	-0.02	119.96	119.96								
100.00	100.00	100.00	100.00	0.13	0.13	90.01	-0.02	119.96	119.96	119.69	0.27	450.375					
200.00	200.00	200.00	200.00	0.47	0.47	90.01	-0.02	119.96	119.96	119.02	0.94	127.526					
300.00	300.00	300.00	300.00	0.81	0.81	90.01	-0.02	119.96	119.96	118.34	1.61	74.279	CC, ES				
400.00	399.98	398.37	398.35	1.11	1.10	-104.93	-1.57	120.62	121.08	118.86	2.22	54.566					
500.00	499.84	496.66	496.51	1.41	1.40	-105.01	-6.22	122.61	124.45	121.64	2.82	44.198					
600.00	599.45	594.81	594.29	1.73	1.72	-105.14	-13.95	125.92	130.06	126.59	3.47	37.500					
700.00	698.70	692.74	691.51	2.07	2.05	-105.28	-24.73	130.53	137.91	133.74	4.17	33.099					
800.00	797.47	790.39	787.99	2.43	2.40	-105.44	-38.52	136.42	147.97	143.06	4.91	30.147					
900.00	895.73	887.86	883.75	2.82	2.79	-105.54	-55.27	143.58	160.08	154.39	5.69	28.139					
1,000.00	993.93	987.05	980.91	3.24	3.20	-105.39	-73.60	151.42	172.81	166.33	6.48	26.666					
1,100.00	1,092.12	1,086.23	1,078.07	3.66	3.63	-105.26	-91.92	159.26	185.55	178.25	7.29	25.443					
1,200.00	1,190.32	1,185.42	1,175.24	4.08	4.06	-105.15	-110.24	167.09	198.28	190.16	8.12	24.426					
1,300.00	1,288.52	1,284.60	1,272.40	4.51	4.49	-105.05	-128.57	174.93	211.02	202.06	8.95	23.565					
1,400.00	1,386.72	1,383.79	1,369.56	4.94	4.93	-104.96	-146.89	182.76	223.75	213.96	9.80	22.835					
1,500.00	1,484.92	1,482.97	1,466.72	5.38	5.37	-104.88	-165.21	190.60	236.49	225.84	10.65	22.208					
1,600.00	1,583.12	1,582.16	1,563.89	5.81	5.82	-104.81	-183.54	198.43	249.23	237.73	11.50	21.666					
1,700.00	1,681.32	1,681.34	1,661.05	6.25	6.26	-104.75	-201.86	206.27	261.97	249.61	12.36	21.193					
1,800.00	1,779.51	1,780.53	1,758.21	6.69	6.71	-104.69	-220.18	214.11	274.71	261.48	13.22	20.776					
1,900.00	1,877.71	1,879.71	1,855.37	7.13	7.15	-104.64	-238.51	221.94	287.44	273.36	14.09	20.407					
2,000.00	1,975.91	1,978.90	1,952.53	7.57	7.60	-104.59	-256.83	229.78	300.18	285.23	14.95	20.078					
2,100.00	2,074.11	2,078.08	2,049.70	8.01	8.05	-104.55	-275.15	237.61	312.92	297.10	15.82	19.783					
2,200.00	2,172.31	2,177.27	2,146.86	8.45	8.50	-104.51	-293.48	245.45	325.66	308.97	16.69	19.517					
2,300.00	2,270.51	2,276.45	2,244.02	8.89	8.95	-104.47	-311.80	253.29	338.40	320.84	17.56	19.276					
2,400.00	2,368.70	2,375.64	2,341.18	9.34	9.40	-104.44	-330.12	261.12	351.14	332.71	18.43	19.056					
2,500.00	2,466.90	2,474.82	2,438.35	9.78	9.85	-104.40	-348.45	268.96	363.88	344.58	19.30	18.856					
2,600.00	2,565.10	2,574.01	2,535.51	10.22	10.30	-104.37	-366.77	276.79	376.62	356.45	20.17	18.672					
2,700.00	2,663.30	2,673.19	2,632.67	10.67	10.75	-104.35	-385.09	284.63	389.36	368.31	21.04	18.503					
2,800.00	2,761.50	2,772.38	2,729.83	11.11	11.21	-104.32	-403.42	292.46	402.10	380.18	21.92	18.347					
2,900.00	2,859.70	2,871.56	2,827.00	11.55	11.66	-104.29	-421.74	300.30	414.84	392.05	22.79	18.202					
3,000.00	2,957.89	2,970.75	2,924.16	12.00	12.11	-104.27	-440.06	308.14	427.58	403.91	23.66	18.068					
3,100.00	3,056.09	3,069.93	3,021.32	12.44	12.56	-104.25	-458.39	315.97	440.32	415.78	24.54	17.943					
3,200.00	3,154.29	3,169.12	3,118.48	12.88	13.01	-104.23	-476.71	323.81	453.06	427.64	25.41	17.826					
3,300.00	3,252.49	3,268.30	3,215.65	13.33	13.47	-104.21	-495.04	331.64	465.80	439.51	26.29	17.717					
3,400.00	3,350.69	3,367.49	3,312.81	13.77	13.92	-104.19	-513.36	339.48	478.54	451.37	27.17	17.615					
3,500.00	3,448.89	3,466.67	3,409.97	14.22	14.37	-104.17	-531.68	347.31	491.28	463.23	28.04	17.519					
3,600.00	3,547.08	3,565.86	3,507.13	14.66	14.82	-104.16	-550.01	355.15	504.02	475.10	28.92	17.429					
3,700.00	3,645.28	3,665.04	3,604.29	15.11	15.28	-104.14	-568.33	362.99	516.76	486.96	29.80	17.343					
3,800.00	3,743.48	3,764.23	3,701.46	15.55	15.73	-104.13	-586.65	370.82	529.50	498.82	30.67	17.263					
3,900.00	3,841.68	3,863.41	3,798.62	16.00	16.18	-104.11	-604.98	378.66	542.24	510.69	31.55	17.187					
4,000.00	3,939.88	3,962.60	3,895.78	16.44	16.63	-104.10	-623.30	386.49	554.98	522.55	32.43	17.115					
4,100.00	4,038.08	4,061.78	3,992.94	16.88	17.09	-104.08	-641.62	394.33	567.72	534.41	33.30	17.046					
4,200.00	4,136.28	4,160.97	4,090.11	17.33	17.54	-104.07	-659.95	402.16	580.46	546.28	34.18	16.982					
4,300.00	4,234.47	4,260.15	4,187.27	17.77	17.99	-104.06	-678.27	410.00	593.20	558.14	35.06	16.920					
4,400.00	4,332.67	4,359.34	4,284.43	18.22	18.45	-104.05	-696.59	417.84	605.94	570.00	35.94	16.861					
4,500.00	4,431.12	4,465.47	4,388.61	18.58	18.81	-104.20	-715.17	425.78	617.93	581.27	36.67	16.853					
4,600.00	4,530.11	4,574.40	4,496.23	18.84	19.10	-104.34	-730.65	432.40	627.64	590.40	37.24	16.854					
4,700.00	4,629.54	4,683.72	4,604.80	19.09	19.38	-104.45	-742.39	437.42	634.97	597.19	37.78	16.806					
4,800.00	4,729.27	4,793.32	4,714.05	19.33	19.65	-104.51	-750.32	440.81	639.91	601.63	38.29	16.713					
4,900.00	4,829.20	4,903.09	4,823.72	19.55	19.89	-104.55	-754.42	442.56	642.46	603.70	38.76	16.576					
5,000.00	4,929.20	5,008.57	4,929.20	19.79	20.14	90.36	-755.02	442.82	642.83	603.57	39.26	16.374					
5,100.00	5,029.20	5,108.57	5,029.20	20.00	20.35	90.36	-755.02	442.82	642.83	603.15	39.68	16.200					

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1902
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-1902	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	5,029.20	5,108.57	5,029.20	20.00	20.35	90.36	-755.02	442.82	642.83	603.15	39.68	16.200					
5,200.00	5,129.14	5,208.91	5,129.49	20.20	20.56	90.47	-753.12	442.82	642.84	602.75	40.09	16.034					
5,300.00	5,227.36	5,309.68	5,228.43	20.33	20.68	90.46	-734.89	442.82	642.87	602.53	40.35	15.934					
5,400.00	5,320.35	5,410.40	5,321.98	20.37	20.73	90.42	-698.00	442.82	642.94	602.52	40.42	15.905					
5,500.00	5,404.70	5,511.05	5,406.66	20.34	20.70	90.37	-643.87	442.82	643.05	602.68	40.37	15.930					
5,600.00	5,477.30	5,611.61	5,479.30	20.27	20.62	90.31	-574.56	442.82	643.19	602.96	40.23	15.989					
5,700.00	5,535.50	5,712.06	5,537.24	20.18	20.51	90.24	-492.70	442.82	643.35	603.28	40.07	16.058					
5,800.00	5,577.15	5,812.38	5,578.39	20.10	20.41	90.15	-401.38	442.82	643.53	603.59	39.94	16.111					
5,900.00	5,600.73	5,912.55	5,601.28	20.05	20.33	90.07	-304.01	442.82	643.73	603.82	39.91	16.129					
6,000.00	5,606.00	6,012.59	5,606.00	20.06	20.29	90.00	-204.19	442.82	643.93	603.93	40.00	16.099					
6,100.00	5,606.00	6,112.59	5,606.00	20.18	20.36	90.00	-104.19	442.82	644.13	603.84	40.29	15.988					
6,200.00	5,606.00	6,212.59	5,606.00	20.40	20.54	90.00	-4.19	442.82	644.33	603.54	40.79	15.796					
6,300.00	5,606.00	6,312.59	5,606.00	20.74	20.84	90.00	95.81	442.82	644.54	603.04	41.50	15.532					
6,400.00	5,606.00	6,412.59	5,606.00	21.18	21.25	90.00	195.81	442.82	644.74	602.34	42.39	15.208					
6,500.00	5,606.00	6,512.59	5,606.00	21.71	21.77	90.00	295.81	442.82	644.94	601.47	43.47	14.835					
6,600.00	5,606.00	6,612.59	5,606.00	22.34	22.39	90.00	395.81	442.81	645.14	600.42	44.72	14.426					
6,700.00	5,606.00	6,712.59	5,606.00	23.04	23.08	90.00	495.81	442.81	645.35	599.22	46.12	13.992					
6,800.00	5,606.00	6,812.59	5,606.00	23.82	23.85	90.00	595.81	442.81	645.55	597.88	47.67	13.543					
6,900.00	5,606.00	6,912.59	5,606.00	24.66	24.69	90.00	695.81	442.81	645.75	596.41	49.34	13.089					
7,000.00	5,606.00	7,012.59	5,606.00	25.55	25.58	90.00	795.81	442.81	645.95	594.83	51.12	12.636					
7,100.00	5,606.00	7,112.59	5,606.00	26.50	26.53	90.00	895.81	442.81	646.15	593.15	53.01	12.189					
7,200.00	5,606.00	7,212.59	5,606.00	27.50	27.52	90.00	995.81	442.81	646.36	591.37	54.99	11.754					
7,300.00	5,606.00	7,312.59	5,606.00	28.54	28.56	90.00	1,095.81	442.81	646.56	589.50	57.06	11.332					
7,400.00	5,606.00	7,412.59	5,606.00	29.61	29.63	90.00	1,195.81	442.81	646.76	587.57	59.19	10.926					
7,500.00	5,606.00	7,512.59	5,606.00	30.72	30.73	90.00	1,295.81	442.81	646.96	585.56	61.40	10.537					
7,600.00	5,606.00	7,612.59	5,606.00	31.85	31.86	90.00	1,395.81	442.81	647.17	583.50	63.67	10.165					
7,700.00	5,606.00	7,712.59	5,606.00	33.02	33.02	90.00	1,495.81	442.81	647.37	581.39	65.98	9.811					
7,800.00	5,606.00	7,812.59	5,606.00	34.20	34.21	90.00	1,595.81	442.81	647.57	579.22	68.35	9.474					
7,900.00	5,606.00	7,912.59	5,606.00	35.41	35.41	90.00	1,695.81	442.81	647.77	577.01	70.76	9.154					
8,000.00	5,606.00	8,012.59	5,606.00	36.64	36.64	90.00	1,795.81	442.81	647.98	574.77	73.21	8.851					
8,100.00	5,606.00	8,112.58	5,606.00	37.88	37.88	90.00	1,895.81	442.81	648.18	572.48	75.70	8.563					
8,200.00	5,606.00	8,212.58	5,606.00	39.14	39.14	90.00	1,995.81	442.81	648.38	570.17	78.21	8.290					
8,300.00	5,606.00	8,312.58	5,606.00	40.42	40.41	90.00	2,095.81	442.81	648.58	567.83	80.76	8.031					
8,400.00	5,606.00	8,412.58	5,606.00	41.70	41.69	90.00	2,195.81	442.81	648.79	565.46	83.33	7.786					
8,500.00	5,606.00	8,512.58	5,606.00	43.00	42.99	90.00	2,295.81	442.81	648.99	563.06	85.93	7.553					
8,600.00	5,606.00	8,612.58	5,606.00	44.31	44.30	90.00	2,395.81	442.81	649.19	560.65	88.54	7.332					
8,700.00	5,606.00	8,712.58	5,606.00	45.63	45.61	90.00	2,495.81	442.80	649.39	558.21	91.18	7.122					
8,800.00	5,606.00	8,812.58	5,606.00	46.96	46.94	90.00	2,595.81	442.80	649.60	555.76	93.84	6.923					
8,900.00	5,606.00	8,912.58	5,606.00	48.30	48.28	90.00	2,695.81	442.80	649.80	553.29	96.51	6.733					
9,000.00	5,606.00	9,012.58	5,606.00	49.65	49.62	90.00	2,795.81	442.80	650.00	550.81	99.20	6.553					
9,100.00	5,606.00	9,112.58	5,606.00	51.00	50.97	90.00	2,895.81	442.80	650.20	548.31	101.90	6.381					
9,200.00	5,606.00	9,212.58	5,606.00	52.36	52.32	90.00	2,995.81	442.80	650.41	545.79	104.61	6.217					
9,300.00	5,606.00	9,312.58	5,606.00	53.72	53.69	90.00	3,095.81	442.80	650.61	543.27	107.34	6.061					
9,400.00	5,606.00	9,412.58	5,606.00	55.09	55.05	90.00	3,195.81	442.80	650.81	540.73	110.08	5.912					
9,500.00	5,606.00	9,512.58	5,606.00	56.46	56.43	90.00	3,295.81	442.80	651.01	538.19	112.83	5.770					
9,600.00	5,606.00	9,612.58	5,606.00	57.84	57.80	90.00	3,395.81	442.80	651.22	535.63	115.58	5.634					
9,700.00	5,606.00	9,712.58	5,606.00	59.23	59.19	90.00	3,495.81	442.80	651.42	533.07	118.35	5.504					
9,800.00	5,606.00	9,812.58	5,606.00	60.62	60.57	90.00	3,595.81	442.80	651.62	530.50	121.13	5.380					
9,900.00	5,606.00	9,912.58	5,606.00	62.01	61.96	90.00	3,695.81	442.80	651.82	527.91	123.91	5.260					
10,000.00	5,606.00	10,012.58	5,606.00	63.40	63.36	90.00	3,795.81	442.80	652.03	525.33	126.70	5.146					
10,100.00	5,606.00	10,112.58	5,606.00	64.80	64.76	90.00	3,895.80	442.80	652.23	522.73	129.50	5.037					
10,200.00	5,606.00	10,212.58	5,606.00	66.21	66.16	90.00	3,995.80	442.80	652.43	520.13	132.30	4.931					

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-1902
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-1902	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	10,312.58	5,606.00	67.61	67.56	90.00	4,095.80	442.80	652.63	517.52	135.11	4.830		
10,400.00	5,606.00	10,412.58	5,606.00	69.02	68.97	90.00	4,195.80	442.80	652.84	514.91	137.93	4.733		
10,500.00	5,606.00	10,512.58	5,606.00	70.43	70.38	90.00	4,295.80	442.80	653.04	512.29	140.75	4.640		
10,600.00	5,606.00	10,612.58	5,606.00	71.84	71.79	90.00	4,395.80	442.80	653.24	509.67	143.57	4.550		
10,700.00	5,606.00	10,712.58	5,606.00	73.26	73.20	90.00	4,495.80	442.80	653.44	507.04	146.40	4.463		
10,800.00	5,606.00	10,812.58	5,606.00	74.68	74.62	90.00	4,595.80	442.80	653.65	504.41	149.24	4.380		
10,900.00	5,606.00	10,912.58	5,606.00	76.10	76.04	90.00	4,695.80	442.79	653.85	501.77	152.07	4.300		
11,000.00	5,606.00	11,012.58	5,606.00	77.52	77.46	90.00	4,795.80	442.79	654.05	499.13	154.92	4.222		
11,100.00	5,606.00	11,112.58	5,606.00	78.94	78.88	90.00	4,895.80	442.79	654.25	496.49	157.76	4.147		
11,200.00	5,606.00	11,212.58	5,606.00	80.37	80.30	90.00	4,995.80	442.79	654.46	493.84	160.61	4.075		
11,300.00	5,606.00	11,312.58	5,606.00	81.79	81.73	90.00	5,095.80	442.79	654.66	491.19	163.47	4.005		
11,400.00	5,606.00	11,412.58	5,606.00	83.22	83.15	90.00	5,195.80	442.79	654.86	488.54	166.32	3.937		
11,500.00	5,606.00	11,512.58	5,606.00	84.65	84.58	90.00	5,295.80	442.79	655.06	485.88	169.18	3.872		
11,600.00	5,606.00	11,612.58	5,606.00	86.08	86.01	90.00	5,395.80	442.79	655.27	483.22	172.04	3.809		
11,700.00	5,606.00	11,712.58	5,606.00	87.52	87.44	90.00	5,495.80	442.79	655.47	480.56	174.91	3.747		
11,800.00	5,606.00	11,812.58	5,606.00	88.95	88.88	90.00	5,595.80	442.79	655.67	477.90	177.78	3.688		
11,900.00	5,606.00	11,912.58	5,606.00	90.39	90.31	90.00	5,695.80	442.79	655.87	475.23	180.65	3.631		
12,000.00	5,606.00	12,012.58	5,606.00	91.82	91.75	90.00	5,795.80	442.79	656.08	472.56	183.52	3.575		
12,100.00	5,606.00	12,112.58	5,606.00	93.26	93.18	90.00	5,895.80	442.79	656.28	469.89	186.39	3.521		
12,200.00	5,606.00	12,212.58	5,606.00	94.70	94.62	90.00	5,995.80	442.79	656.48	467.21	189.27	3.469		
12,300.00	5,606.00	12,312.58	5,606.00	96.14	96.06	90.00	6,095.80	442.79	656.68	464.54	192.15	3.418		
12,400.00	5,606.00	12,412.58	5,606.00	97.58	97.50	90.00	6,195.80	442.79	656.89	461.86	195.03	3.368		
12,500.00	5,606.00	12,512.58	5,606.00	99.02	98.94	90.00	6,295.80	442.79	657.09	459.18	197.91	3.320		
12,600.00	5,606.00	12,612.58	5,606.00	100.46	100.38	90.00	6,395.80	442.79	657.29	456.50	200.79	3.273		
12,700.00	5,606.00	12,712.58	5,606.00	101.91	101.82	90.00	6,495.80	442.79	657.49	453.81	203.68	3.228		
12,800.00	5,606.00	12,812.58	5,606.00	103.35	103.27	90.00	6,595.80	442.79	657.70	451.13	206.57	3.184		
12,900.00	5,606.00	12,912.58	5,606.00	104.79	104.71	90.00	6,695.80	442.79	657.90	448.44	209.46	3.141		
13,000.00	5,606.00	13,012.57	5,606.00	106.24	106.15	90.00	6,795.80	442.78	658.10	445.75	212.35	3.099		
13,100.00	5,606.00	13,112.57	5,606.00	107.69	107.60	90.00	6,895.80	442.78	658.30	443.06	215.24	3.058		
13,200.00	5,606.00	13,212.57	5,606.00	109.13	109.05	90.00	6,995.80	442.78	658.51	440.37	218.13	3.019		
13,300.00	5,606.00	13,312.57	5,606.00	110.58	110.49	90.00	7,095.80	442.78	658.71	437.68	221.03	2.980		
13,400.00	5,606.00	13,412.57	5,606.00	112.03	111.94	90.00	7,195.80	442.78	658.91	434.99	223.92	2.943		
13,500.00	5,606.00	13,512.57	5,606.00	113.48	113.39	90.00	7,295.80	442.78	659.11	432.29	226.82	2.906		
13,600.00	5,606.00	13,612.57	5,606.00	114.93	114.84	90.00	7,395.80	442.78	659.32	429.60	229.72	2.870		
13,700.00	5,606.00	13,712.57	5,606.00	116.38	116.27	90.00	7,495.80	442.78	659.52	426.92	232.60	2.835		
13,719.75	5,606.00	13,732.32	5,606.00	116.63	116.52	90.00	7,515.54	442.78	659.56	426.45	233.10	2.829 SF		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1902
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-1902	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-90.02	-0.01	-29.99	29.99					
100.00	100.00	100.00	100.00	0.13	0.13	-90.02	-0.01	-29.99	29.99	29.72	0.27	112.594		
200.00	200.00	200.00	200.00	0.47	0.47	-90.02	-0.01	-29.99	29.99	29.05	0.94	31.881		
300.00	300.00	300.00	300.00	0.81	0.81	-90.02	-0.01	-29.99	29.99	28.37	1.61	18.570 CC		
400.00	399.98	399.64	399.62	1.11	1.11	75.17	-1.63	-30.58	30.14	27.92	2.22	13.583		
500.00	499.84	499.28	499.12	1.41	1.41	75.46	-6.51	-32.37	30.58	27.77	2.81	10.884		
600.00	599.45	598.92	598.38	1.73	1.73	75.92	-14.64	-35.35	31.33	27.87	3.46	9.061		
700.00	698.70	698.55	697.27	2.07	2.06	76.54	-26.00	-39.51	32.38	28.22	4.15	7.796		
800.00	797.47	798.18	795.68	2.43	2.42	77.27	-40.58	-44.85	33.73	28.83	4.90	6.887		
900.00	895.73	898.01	893.78	2.82	2.82	78.07	-57.92	-51.19	35.33	29.66	5.68	6.224		
1,000.00	993.93	997.99	991.97	3.24	3.23	78.82	-75.60	-57.67	36.98	30.50	6.48	5.704		
1,100.00	1,092.12	1,097.98	1,090.17	3.66	3.65	79.51	-93.29	-64.15	38.63	31.32	7.31	5.285		
1,200.00	1,190.32	1,197.96	1,188.36	4.08	4.08	80.14	-110.98	-70.62	40.29	32.14	8.15	4.944		
1,300.00	1,288.52	1,297.95	1,286.56	4.51	4.51	80.72	-128.66	-77.10	41.95	32.95	9.00	4.661		
1,400.00	1,386.72	1,397.93	1,384.75	4.94	4.94	81.26	-146.35	-83.58	43.61	33.76	9.86	4.424		
1,500.00	1,484.92	1,497.92	1,482.95	5.38	5.37	81.76	-164.04	-90.05	45.28	34.56	10.72	4.224		
1,600.00	1,583.12	1,597.91	1,581.14	5.81	5.81	82.22	-181.73	-96.53	46.95	35.36	11.59	4.051		
1,700.00	1,681.32	1,697.89	1,679.34	6.25	6.24	82.65	-199.41	-103.01	48.63	36.17	12.46	3.902		
1,800.00	1,779.51	1,797.88	1,777.53	6.69	6.68	83.05	-217.10	-109.48	50.30	36.97	13.34	3.772		
1,900.00	1,877.71	1,897.86	1,875.73	7.13	7.12	83.43	-234.79	-115.96	51.98	37.77	14.21	3.657		
2,000.00	1,975.91	1,997.85	1,973.92	7.57	7.56	83.78	-252.47	-122.44	53.66	38.57	15.09	3.556		
2,100.00	2,074.11	2,097.83	2,072.12	8.01	8.00	84.11	-270.16	-128.91	55.35	39.38	15.97	3.465		
2,200.00	2,172.31	2,197.82	2,170.32	8.45	8.44	84.42	-287.85	-135.39	57.03	40.18	16.85	3.384		
2,300.00	2,270.51	2,297.80	2,268.51	8.89	8.88	84.71	-305.53	-141.87	58.72	40.98	17.74	3.310		
2,400.00	2,368.70	2,397.79	2,366.71	9.34	9.33	84.99	-323.22	-148.34	60.41	41.79	18.62	3.244		
2,500.00	2,466.90	2,497.77	2,464.90	9.78	9.77	85.25	-340.91	-154.82	62.10	42.59	19.51	3.183		
2,600.00	2,565.10	2,597.76	2,563.10	10.22	10.21	85.50	-358.59	-161.30	63.79	43.40	20.39	3.128		
2,700.00	2,663.30	2,697.74	2,661.29	10.67	10.65	85.74	-376.28	-167.77	65.48	44.20	21.28	3.077		
2,800.00	2,761.50	2,797.73	2,759.49	11.11	11.10	85.96	-393.97	-174.25	67.17	45.01	22.16	3.031		
2,900.00	2,859.70	2,897.71	2,857.68	11.55	11.54	86.17	-411.65	-180.73	68.87	45.82	23.05	2.988		
3,000.00	2,957.89	2,997.70	2,955.88	12.00	11.98	86.37	-429.34	-187.20	70.56	46.62	23.94	2.948		
3,100.00	3,056.09	3,097.69	3,054.07	12.44	12.43	86.57	-447.03	-193.68	72.26	47.43	24.83	2.910		
3,200.00	3,154.29	3,197.67	3,152.27	12.88	12.87	86.75	-464.71	-200.16	73.95	48.24	25.71	2.876		
3,300.00	3,252.49	3,297.66	3,250.46	13.33	13.31	86.93	-482.40	-206.63	75.65	49.05	26.60	2.844		
3,400.00	3,350.69	3,397.64	3,348.66	13.77	13.76	87.09	-500.09	-213.11	77.35	49.86	27.49	2.813		
3,500.00	3,448.89	3,497.63	3,446.85	14.22	14.20	87.25	-517.78	-219.59	79.05	50.67	28.38	2.785		
3,600.00	3,547.08	3,597.61	3,545.05	14.66	14.65	87.41	-535.46	-226.06	80.75	51.48	29.27	2.759		
3,700.00	3,645.28	3,697.60	3,643.24	15.11	15.09	87.56	-553.15	-232.54	82.44	52.29	30.16	2.734		
3,800.00	3,743.48	3,797.58	3,741.44	15.55	15.53	87.70	-570.84	-239.01	84.14	53.10	31.05	2.710		
3,900.00	3,841.68	3,897.57	3,839.63	16.00	15.98	87.83	-588.52	-245.49	85.85	53.91	31.94	2.688		
4,000.00	3,939.88	3,997.55	3,937.83	16.44	16.42	87.96	-606.21	-251.97	87.55	54.72	32.83	2.667		
4,100.00	4,038.08	4,097.54	4,036.02	16.88	16.87	88.09	-623.90	-258.44	89.25	55.53	33.72	2.647		
4,200.00	4,136.28	4,197.52	4,134.22	17.33	17.31	88.21	-641.58	-264.92	90.95	56.34	34.61	2.628		
4,300.00	4,234.47	4,297.51	4,232.41	17.77	17.75	88.33	-659.27	-271.40	92.65	57.16	35.50	2.610		
4,400.00	4,332.67	4,397.49	4,330.61	18.22	18.20	88.44	-676.96	-277.87	94.35	57.97	36.39	2.593		
4,500.00	4,431.12	4,497.47	4,428.79	18.66	18.64	88.56	-694.64	-284.35	96.10	58.78	37.18	2.584		
4,600.00	4,530.11	4,597.65	4,527.28	19.10	19.08	88.67	-712.32	-290.83	97.85	59.59	38.07	2.575		
4,700.00	4,629.54	4,698.21	4,626.65	19.55	19.53	88.78	-730.00	-297.31	99.60	60.40	38.96	2.566		
4,800.00	4,729.27	4,798.93	4,726.66	20.00	19.98	88.89	-747.67	-303.79	101.35	61.21	39.85	2.557		
4,900.00	4,829.20	4,899.82	4,827.20	20.45	20.43	88.99	-765.34	-310.27	103.10	62.02	40.74	2.548		
5,000.00	4,929.20	5,000.89	4,928.15	20.90	20.88	89.10	-783.01	-316.75	104.85	62.83	41.63	2.539		
5,100.00	5,029.20	5,101.95	5,029.20	21.35	21.33	89.21	-800.68	-323.23	106.60	63.64	42.52	2.530		

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-1902
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-1902	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		
5,122.01	5,051.21	5,123.96	5,051.21	20.04	20.33	-90.00	-751.01	-304.99	104.99	65.19	39.80	2.638		
5,200.00	5,129.14	5,201.89	5,129.14	20.20	20.49	-90.91	-751.01	-304.99	105.00	64.94	40.06	2.621		
5,300.00	5,227.36	5,300.61	5,227.86	20.33	20.70	-100.17	-750.82	-304.99	106.78	67.16	39.62	2.695		
5,400.00	5,320.35	5,403.70	5,329.98	20.37	20.86	-112.08	-737.94	-305.11	113.92	75.65	38.26	2.977		
5,500.00	5,404.70	5,512.43	5,432.69	20.34	20.93	-121.90	-702.89	-305.44	125.05	88.87	36.18	3.456		
5,600.00	5,477.30	5,627.25	5,530.78	20.27	20.91	-129.35	-643.65	-305.99	137.95	104.64	33.31	4.142		
5,700.00	5,535.50	5,748.22	5,617.45	20.18	20.82	-134.59	-559.66	-306.77	150.41	120.55	29.86	5.037		
5,800.00	5,577.15	5,874.75	5,684.89	20.10	20.69	-137.94	-452.97	-307.77	160.54	133.93	26.61	6.032		
5,900.00	5,600.73	6,005.44	5,725.49	20.05	20.59	-139.61	-329.12	-308.92	166.93	142.04	24.90	6.705		
6,000.00	5,606.00	6,129.96	5,735.00	20.06	20.57	-139.81	-205.21	-310.08	168.87	143.46	25.41	6.646		
6,100.00	5,606.00	6,229.96	5,735.00	20.18	20.64	-139.62	-105.21	-311.01	169.34	143.52	25.81	6.560		
6,200.00	5,606.00	6,329.95	5,735.00	20.40	20.83	-139.44	-5.22	-311.94	169.81	143.43	26.38	6.437		
6,300.00	5,606.00	6,429.95	5,735.00	20.74	21.14	-139.25	94.77	-312.87	170.29	143.19	27.10	6.284		
6,400.00	5,606.00	6,529.95	5,735.00	21.18	21.55	-139.06	194.77	-313.81	170.76	142.80	27.96	6.107		
6,500.00	5,606.00	6,629.95	5,735.00	21.71	22.07	-138.88	294.76	-314.74	171.24	142.29	28.96	5.914		
6,600.00	5,606.00	6,729.94	5,735.00	22.34	22.67	-138.70	394.75	-315.67	171.72	141.65	30.07	5.710		
6,700.00	5,606.00	6,829.94	5,735.00	23.04	23.37	-138.51	494.75	-316.60	172.21	140.90	31.30	5.501		
6,800.00	5,606.00	6,929.94	5,735.00	23.82	24.13	-138.33	594.74	-317.54	172.69	140.06	32.63	5.292		
6,900.00	5,606.00	7,029.94	5,735.00	24.66	24.96	-138.15	694.73	-318.47	173.17	139.12	34.05	5.086		
7,000.00	5,606.00	7,129.93	5,735.00	25.55	25.85	-137.97	794.72	-319.40	173.66	138.11	35.56	4.884		
7,100.00	5,606.00	7,229.93	5,735.00	26.50	26.79	-137.79	894.72	-320.33	174.15	137.02	37.13	4.690		
7,200.00	5,606.00	7,329.93	5,735.00	27.50	27.77	-137.62	994.71	-321.26	174.64	135.87	38.78	4.504		
7,300.00	5,606.00	7,429.93	5,735.00	28.54	28.80	-137.44	1,094.70	-322.20	175.13	134.65	40.48	4.326		
7,400.00	5,606.00	7,529.92	5,735.00	29.61	29.87	-137.27	1,194.70	-323.13	175.63	133.39	42.24	4.158		
7,500.00	5,606.00	7,629.92	5,735.00	30.72	30.96	-137.09	1,294.69	-324.06	176.12	132.08	44.05	3.999		
7,600.00	5,606.00	7,729.92	5,735.00	31.85	32.09	-136.92	1,394.68	-324.99	176.62	130.72	45.90	3.848		
7,700.00	5,606.00	7,829.91	5,735.00	33.02	33.25	-136.75	1,494.68	-325.92	177.12	129.33	47.79	3.706		
7,800.00	5,606.00	7,929.91	5,735.00	34.20	34.43	-136.58	1,594.67	-326.86	177.62	127.90	49.72	3.572		
7,900.00	5,606.00	8,029.91	5,735.00	35.41	35.63	-136.40	1,694.66	-327.79	178.12	126.44	51.69	3.446		
8,000.00	5,606.00	8,129.91	5,735.00	36.64	36.85	-136.24	1,794.65	-328.72	178.63	124.94	53.69	3.327		
8,100.00	5,606.00	8,229.90	5,735.00	37.88	38.09	-136.07	1,894.65	-329.65	179.13	123.42	55.71	3.215		
8,200.00	5,606.00	8,329.90	5,735.00	39.14	39.35	-135.90	1,994.64	-330.59	179.64	121.87	57.77	3.110		
8,300.00	5,606.00	8,429.90	5,735.00	40.42	40.62	-135.73	2,094.63	-331.52	180.15	120.30	59.85	3.010		
8,400.00	5,606.00	8,529.90	5,735.00	41.70	41.90	-135.57	2,194.63	-332.45	180.66	118.71	61.95	2.916		
8,500.00	5,606.00	8,629.89	5,735.00	43.00	43.19	-135.40	2,294.62	-333.38	181.17	117.09	64.08	2.827		
8,600.00	5,606.00	8,729.89	5,735.00	44.31	44.50	-135.24	2,394.61	-334.31	181.68	115.46	66.22	2.743		
8,700.00	5,606.00	8,829.89	5,735.00	45.63	45.82	-135.08	2,494.61	-335.25	182.19	113.80	68.39	2.664		
8,800.00	5,606.00	8,929.89	5,735.00	46.96	47.14	-134.91	2,594.60	-336.18	182.71	112.13	70.58	2.589		
8,900.00	5,606.00	9,029.88	5,735.00	48.30	48.47	-134.75	2,694.59	-337.11	183.23	110.45	72.78	2.518		
9,000.00	5,606.00	9,129.88	5,735.00	49.65	49.82	-134.59	2,794.58	-338.04	183.75	108.74	75.00	2.450		
9,100.00	5,606.00	9,229.88	5,735.00	51.00	51.17	-134.43	2,894.58	-338.97	184.27	107.03	77.24	2.386		
9,200.00	5,606.00	9,329.87	5,735.00	52.36	52.52	-134.28	2,994.57	-339.91	184.79	105.30	79.49	2.325		
9,300.00	5,606.00	9,429.87	5,735.00	53.72	53.88	-134.12	3,094.56	-340.84	185.31	103.55	81.76	2.267		
9,400.00	5,606.00	9,529.87	5,735.00	55.09	55.25	-133.96	3,194.56	-341.77	185.83	101.79	84.04	2.211		
9,500.00	5,606.00	9,629.87	5,735.00	56.46	56.62	-133.81	3,294.55	-342.70	186.36	100.02	86.34	2.159		
9,600.00	5,606.00	9,729.86	5,735.00	57.84	58.00	-133.65	3,394.54	-343.64	186.89	98.24	88.65	2.108		
9,700.00	5,606.00	9,829.86	5,735.00	59.23	59.38	-133.50	3,494.54	-344.57	187.42	96.45	90.97	2.060		
9,800.00	5,606.00	9,929.86	5,735.00	60.62	60.77	-133.34	3,594.53	-345.50	187.95	94.64	93.30	2.014		
9,900.00	5,606.00	10,029.86	5,735.00	62.01	62.16	-133.19	3,694.52	-346.43	188.48	92.83	95.65	1.971		
10,000.00	5,606.00	10,129.85	5,735.00	63.40	63.56	-133.04	3,794.51	-347.36	189.01	91.00	98.00	1.929		
10,100.00	5,606.00	10,229.85	5,735.00	64.80	64.95	-132.89	3,894.51	-348.30	189.54	89.17	100.37	1.888		
10,200.00	5,606.00	10,329.85	5,735.00	66.21	66.35	-132.74	3,994.50	-349.23	190.08	87.33	102.75	1.850		

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-1902
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-1902	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,300.00	5,606.00	10,429.85	5,735.00	67.61	67.76	-132.59	4,094.49	-350.16	190.61	85.47	105.14	1.813	
10,400.00	5,606.00	10,529.84	5,735.00	69.02	69.17	-132.44	4,194.49	-351.09	191.15	83.61	107.54	1.777	
10,500.00	5,606.00	10,629.84	5,735.00	70.43	70.58	-132.30	4,294.48	-352.03	191.69	81.74	109.95	1.743	
10,600.00	5,606.00	10,729.84	5,735.00	71.84	71.99	-132.15	4,394.47	-352.96	192.23	79.86	112.37	1.711	
10,700.00	5,606.00	10,829.84	5,735.00	73.26	73.40	-132.01	4,494.47	-353.89	192.77	77.97	114.80	1.679	
10,800.00	5,606.00	10,929.83	5,735.00	74.68	74.82	-131.86	4,594.46	-354.82	193.31	76.08	117.24	1.649	
10,900.00	5,606.00	11,029.83	5,735.00	76.10	76.24	-131.72	4,694.45	-355.75	193.86	74.17	119.68	1.620	
11,000.00	5,606.00	11,129.83	5,735.00	77.52	77.66	-131.57	4,794.44	-356.69	194.40	72.26	122.14	1.592	
11,100.00	5,606.00	11,229.82	5,735.00	78.94	79.08	-131.43	4,894.44	-357.62	194.95	70.34	124.60	1.565	
11,200.00	5,606.00	11,329.82	5,735.00	80.37	80.51	-131.29	4,994.43	-358.55	195.50	68.42	127.08	1.538	
11,300.00	5,606.00	11,429.82	5,735.00	81.79	81.93	-131.15	5,094.42	-359.48	196.04	66.49	129.56	1.513	
11,400.00	5,606.00	11,529.82	5,735.00	83.22	83.36	-131.01	5,194.42	-360.41	196.59	64.55	132.05	1.489 Level 3	
11,500.00	5,606.00	11,629.81	5,735.00	84.65	84.79	-130.87	5,294.41	-361.35	197.14	62.60	134.54	1.465 Level 3	
11,600.00	5,606.00	11,729.81	5,735.00	86.08	86.22	-130.73	5,394.40	-362.28	197.70	60.65	137.05	1.443 Level 3	
11,700.00	5,606.00	11,829.81	5,735.00	87.52	87.66	-130.59	5,494.40	-363.21	198.25	58.69	139.56	1.421 Level 3	
11,800.00	5,606.00	11,929.81	5,735.00	88.95	89.09	-130.46	5,594.39	-364.14	198.80	56.73	142.08	1.399 Level 3	
11,900.00	5,606.00	12,029.80	5,735.00	90.39	90.52	-130.32	5,694.38	-365.08	199.36	54.76	144.60	1.379 Level 3	
12,000.00	5,606.00	12,129.80	5,735.00	91.82	91.96	-130.19	5,794.37	-366.01	199.92	52.78	147.14	1.359 Level 3	
12,100.00	5,606.00	12,229.80	5,735.00	93.26	93.40	-130.05	5,894.37	-366.94	200.47	50.80	149.68	1.339 Level 3	
12,200.00	5,606.00	12,329.80	5,735.00	94.70	94.84	-129.92	5,994.36	-367.87	201.03	48.81	152.22	1.321 Level 3	
12,300.00	5,606.00	12,429.79	5,735.00	96.14	96.28	-129.79	6,094.35	-368.80	201.59	46.82	154.78	1.302 Level 3	
12,400.00	5,606.00	12,529.79	5,735.00	97.58	97.72	-129.65	6,194.35	-369.74	202.15	44.82	157.34	1.285 Level 3	
12,500.00	5,606.00	12,629.79	5,735.00	99.02	99.16	-129.52	6,294.34	-370.67	202.71	42.81	159.90	1.268 Level 3	
12,600.00	5,606.00	12,729.78	5,735.00	100.46	100.60	-129.39	6,394.33	-371.60	203.28	40.80	162.48	1.251 Level 3	
12,700.00	5,606.00	12,829.78	5,735.00	101.91	102.05	-129.26	6,494.33	-372.53	203.84	38.79	165.06	1.235 Level 2	
12,800.00	5,606.00	12,929.78	5,735.00	103.35	103.49	-129.13	6,594.32	-373.46	204.41	36.77	167.64	1.219 Level 2	
12,900.00	5,606.00	13,029.78	5,735.00	104.79	104.94	-129.00	6,694.31	-374.40	204.97	34.74	170.23	1.204 Level 2	
13,000.00	5,606.00	13,129.77	5,735.00	106.24	106.38	-128.88	6,794.30	-375.33	205.54	32.71	172.83	1.189 Level 2	
13,100.00	5,606.00	13,229.77	5,735.00	107.69	107.83	-128.75	6,894.30	-376.26	206.11	30.68	175.43	1.175 Level 2	
13,200.00	5,606.00	13,329.77	5,735.00	109.13	109.28	-128.62	6,994.29	-377.19	206.68	28.64	178.04	1.161 Level 2	
13,300.00	5,606.00	13,429.77	5,735.00	110.58	110.72	-128.50	7,094.28	-378.13	207.25	26.59	180.65	1.147 Level 2	
13,400.00	5,606.00	13,529.76	5,735.00	112.03	112.17	-128.37	7,194.28	-379.06	207.82	24.55	183.27	1.134 Level 2	
13,500.00	5,606.00	13,629.76	5,735.00	113.48	113.62	-128.25	7,294.27	-379.99	208.39	22.49	185.90	1.121 Level 2	
13,600.00	5,606.00	13,729.76	5,735.00	114.93	115.07	-128.12	7,394.26	-380.92	208.96	20.44	188.53	1.108 Level 2	
13,700.00	5,606.00	13,829.76	5,735.00	116.38	116.52	-128.00	7,494.26	-381.85	209.54	18.37	191.16	1.096 Level 2	
13,719.75	5,606.00	13,849.50	5,735.00	116.63	116.81	-127.97	7,514.00	-382.04	209.65	18.00	191.65	1.094 Level 2, ES, SF	



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1902
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-1902	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	90.02	-0.01	29.99	29.99				
100.00	100.00	100.00	100.00	0.13	0.13	90.02	-0.01	29.99	29.99	29.72	0.27	112.594	
200.00	200.00	200.00	200.00	0.47	0.47	90.02	-0.01	29.99	29.99	29.05	0.94	31.881	
300.00	300.00	300.00	300.00	0.81	0.81	90.02	-0.01	29.99	29.99	28.37	1.61	18.570 CC	
400.00	399.98	400.11	400.09	1.11	1.11	-104.80	-1.75	29.80	30.25	28.04	2.21	13.674 ES	
500.00	499.84	500.22	500.06	1.41	1.41	-104.51	-6.96	29.23	31.03	28.24	2.79	11.120	
600.00	599.45	600.32	599.77	1.73	1.73	-104.05	-15.64	28.28	32.32	28.89	3.43	9.434	
700.00	698.70	700.41	699.11	2.07	2.07	-103.47	-27.78	26.95	34.14	30.02	4.11	8.297	
800.00	797.47	800.48	797.94	2.43	2.43	-102.81	-43.35	25.24	36.47	31.61	4.85	7.512	
900.00	895.73	900.43	896.38	2.82	2.82	-104.02	-60.55	23.36	39.34	33.70	5.64	6.976	
1,000.00	993.93	1,000.38	994.82	3.24	3.22	-105.55	-77.74	21.48	42.33	35.88	6.45	6.566	
1,100.00	1,092.12	1,100.33	1,093.26	3.66	3.63	-106.87	-94.94	19.59	45.33	38.07	7.26	6.241	
1,200.00	1,190.32	1,200.28	1,191.71	4.08	4.04	-108.02	-112.14	17.71	48.36	40.27	8.09	5.979	
1,300.00	1,288.52	1,300.23	1,290.15	4.51	4.46	-109.04	-129.33	15.83	51.41	42.49	8.92	5.764	
1,400.00	1,386.72	1,400.18	1,388.59	4.94	4.88	-109.95	-146.53	13.94	54.47	44.72	9.75	5.586	
1,500.00	1,484.92	1,500.13	1,487.03	5.38	5.30	-110.76	-163.72	12.06	57.55	46.96	10.59	5.436	
1,600.00	1,583.12	1,600.08	1,585.47	5.81	5.72	-111.48	-180.92	10.18	60.63	49.21	11.42	5.308	
1,700.00	1,681.32	1,700.03	1,683.91	6.25	6.15	-112.14	-198.11	8.29	63.72	51.46	12.26	5.198	
1,800.00	1,779.51	1,799.98	1,782.35	6.69	6.57	-112.73	-215.31	6.41	66.82	53.73	13.10	5.102	
1,900.00	1,877.71	1,899.93	1,880.80	7.13	7.00	-113.28	-232.50	4.53	69.93	56.00	13.93	5.018	
2,000.00	1,975.91	1,999.88	1,979.24	7.57	7.42	-113.77	-249.70	2.64	73.04	58.27	14.77	4.945	
2,100.00	2,074.11	2,099.83	2,077.68	8.01	7.85	-114.23	-266.89	0.76	76.16	60.55	15.61	4.879	
2,200.00	2,172.31	2,199.78	2,176.12	8.45	8.28	-114.65	-284.09	-1.12	79.28	62.83	16.45	4.820	
2,300.00	2,270.51	2,299.73	2,274.56	8.89	8.70	-115.04	-301.28	-3.01	82.41	65.12	17.29	4.768	
2,400.00	2,368.70	2,399.68	2,373.00	9.34	9.13	-115.40	-318.48	-4.89	85.54	67.41	18.12	4.720	
2,500.00	2,466.90	2,499.63	2,471.44	9.78	9.56	-115.73	-335.67	-6.77	88.67	69.71	18.96	4.677	
2,600.00	2,565.10	2,599.58	2,569.89	10.22	9.99	-116.04	-352.87	-8.66	91.81	72.01	19.80	4.637	
2,700.00	2,663.30	2,699.53	2,668.33	10.67	10.42	-116.33	-370.06	-10.54	94.94	74.31	20.63	4.601	
2,800.00	2,761.50	2,799.47	2,766.77	11.11	10.85	-116.61	-387.26	-12.42	98.08	76.61	21.47	4.568	
2,900.00	2,859.70	2,899.42	2,865.21	11.55	11.28	-116.86	-404.45	-14.31	101.23	78.92	22.31	4.537	
3,000.00	2,957.89	2,999.37	2,963.65	12.00	11.70	-117.10	-421.65	-16.19	104.37	81.22	23.15	4.509	
3,100.00	3,056.09	3,099.32	3,062.09	12.44	12.13	-117.33	-438.84	-18.07	107.52	83.53	23.98	4.483	
3,200.00	3,154.29	3,199.27	3,160.53	12.88	12.56	-117.54	-456.04	-19.96	110.66	85.84	24.82	4.459	
3,300.00	3,252.49	3,299.22	3,258.98	13.33	12.99	-117.74	-473.23	-21.84	113.81	88.16	25.66	4.436	
3,400.00	3,350.69	3,399.17	3,357.42	13.77	13.42	-117.93	-490.43	-23.72	116.96	90.47	26.49	4.415	
3,500.00	3,448.89	3,499.12	3,455.86	14.22	13.85	-118.11	-507.62	-25.60	120.11	92.79	27.33	4.395	
3,600.00	3,547.08	3,599.07	3,554.30	14.66	14.28	-118.28	-524.82	-27.49	123.27	95.10	28.16	4.377	
3,700.00	3,645.28	3,699.02	3,652.74	15.11	14.71	-118.45	-542.01	-29.37	126.42	97.42	29.00	4.359	
3,800.00	3,743.48	3,798.97	3,751.18	15.55	15.14	-118.60	-559.21	-31.25	129.57	99.74	29.84	4.343	
3,900.00	3,841.68	3,898.92	3,849.62	16.00	15.57	-118.75	-576.40	-33.14	132.73	102.06	30.67	4.327	
4,000.00	3,939.88	3,998.87	3,948.07	16.44	16.00	-118.89	-593.60	-35.02	135.89	104.38	31.51	4.313	
4,100.00	4,038.08	4,098.82	4,046.51	16.88	16.43	-119.02	-610.80	-36.90	139.04	106.70	32.34	4.299	
4,200.00	4,136.28	4,198.77	4,144.95	17.33	16.86	-119.15	-627.99	-38.79	142.20	109.02	33.18	4.286	
4,300.00	4,234.47	4,298.72	4,243.39	17.77	17.29	-119.27	-645.19	-40.67	145.36	111.35	34.01	4.274	
4,400.00	4,332.67	4,398.67	4,341.83	18.22	17.72	-119.39	-662.38	-42.55	148.52	113.67	34.85	4.262	
4,500.00	4,431.12	4,498.63	4,440.28	18.68	18.15	-119.09	-679.58	-44.44	151.01	115.36	35.65	4.236	
4,600.00	4,530.11	4,598.54	4,538.69	18.84	18.58	-117.62	-696.77	-46.32	151.86	115.41	36.45	4.166	
4,700.00	4,629.54	4,697.79	4,636.47	19.09	18.98	-115.06	-713.65	-48.17	151.36	114.08	37.28	4.060	
4,800.00	4,729.27	4,796.16	4,733.81	19.33	19.24	-112.28	-727.77	-49.72	150.48	112.53	37.96	3.964	
4,900.00	4,829.20	4,894.79	4,831.82	19.55	19.49	-109.49	-738.60	-50.90	149.46	110.87	38.59	3.873	
5,000.00	4,929.20	4,993.69	4,930.44	19.79	19.72	88.10	-746.07	-51.72	148.37	109.17	39.20	3.785	
5,100.00	5,029.20	5,092.95	5,029.61	20.00	19.95	89.68	-750.17	-52.17	147.83	108.14	39.70	3.724	

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-1902
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-1902	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		
5,155.42	5,084.60	5,148.03	5,084.67	20.11	20.08	90.61	-750.97	-52.26	147.75	107.78	39.98	3.696		
5,200.00	5,129.14	5,192.50	5,129.14	20.20	20.19	90.84	-751.01	-52.26	147.76	107.57	40.19	3.677		
5,300.00	5,227.36	5,290.71	5,227.36	20.33	20.40	97.47	-751.01	-52.26	149.11	108.42	40.68	3.665		
5,400.00	5,320.35	5,386.27	5,322.91	20.37	20.61	109.07	-750.46	-52.26	158.00	117.24	40.76	3.877		
5,500.00	5,404.70	5,493.39	5,428.66	20.34	20.76	120.93	-734.62	-52.26	176.52	136.75	39.77	4.438		
5,600.00	5,477.30	5,612.22	5,539.40	20.27	20.83	130.33	-692.23	-52.26	200.11	162.69	37.42	5.348		
5,700.00	5,535.50	5,745.22	5,648.32	20.18	20.79	137.30	-616.55	-52.26	224.27	190.65	33.62	6.671		
5,800.00	5,577.15	5,893.62	5,742.87	20.10	20.70	142.05	-502.81	-52.26	244.69	215.77	28.92	8.461		
5,900.00	5,600.73	6,055.54	5,805.03	20.05	20.63	144.65	-354.00	-52.26	257.57	232.32	25.25	10.199		
6,000.00	5,606.00	6,206.56	5,820.00	20.06	20.69	145.18	-204.19	-52.26	260.68	235.65	25.03	10.416		
6,100.00	5,606.00	6,306.55	5,820.00	20.18	20.84	145.14	-104.19	-52.26	260.79	235.37	25.42	10.258		
6,200.00	5,606.00	6,406.55	5,820.00	20.40	21.09	145.11	-4.19	-52.26	260.91	234.95	25.95	10.053		
6,300.00	5,606.00	6,506.55	5,820.00	20.74	21.44	145.07	95.81	-52.26	261.02	234.42	26.61	9.810		
6,400.00	5,606.00	6,606.55	5,820.00	21.18	21.88	145.03	195.81	-52.26	261.14	233.76	27.38	9.537		
6,500.00	5,606.00	6,706.55	5,820.00	21.71	22.42	145.00	295.81	-52.26	261.26	233.00	28.26	9.244		
6,600.00	5,606.00	6,806.55	5,820.00	22.34	23.03	144.96	395.81	-52.26	261.37	232.13	29.24	8.939		
6,700.00	5,606.00	6,906.55	5,820.00	23.04	23.73	144.92	495.81	-52.26	261.49	231.18	30.31	8.627		
6,800.00	5,606.00	7,006.55	5,820.00	23.82	24.49	144.89	595.81	-52.26	261.61	230.15	31.46	8.316		
6,900.00	5,606.00	7,106.55	5,820.00	24.66	25.31	144.85	695.81	-52.26	261.72	229.04	32.68	8.008		
7,000.00	5,606.00	7,206.55	5,820.00	25.55	26.19	144.81	795.81	-52.26	261.84	227.87	33.97	7.708		
7,100.00	5,606.00	7,306.55	5,820.00	26.50	27.13	144.78	895.81	-52.26	261.96	226.64	35.31	7.418		
7,200.00	5,606.00	7,406.55	5,820.00	27.50	28.11	144.74	995.81	-52.26	262.07	225.36	36.71	7.139		
7,300.00	5,606.00	7,506.55	5,820.00	28.54	29.13	144.71	1,095.81	-52.26	262.19	224.03	38.16	6.871		
7,400.00	5,606.00	7,606.55	5,820.00	29.61	30.18	144.67	1,195.81	-52.26	262.31	222.66	39.65	6.616		
7,500.00	5,606.00	7,706.55	5,820.00	30.72	31.28	144.63	1,295.81	-52.26	262.43	221.25	41.17	6.374		
7,600.00	5,606.00	7,806.55	5,820.00	31.85	32.40	144.60	1,395.81	-52.26	262.54	219.81	42.73	6.144		
7,700.00	5,606.00	7,906.55	5,820.00	33.02	33.55	144.56	1,495.81	-52.26	262.66	218.34	44.32	5.926		
7,800.00	5,606.00	8,006.55	5,820.00	34.20	34.72	144.53	1,595.81	-52.26	262.78	216.84	45.94	5.720		
7,900.00	5,606.00	8,106.55	5,820.00	35.41	35.91	144.49	1,695.81	-52.26	262.90	215.31	47.59	5.525		
8,000.00	5,606.00	8,206.55	5,820.00	36.64	37.13	144.45	1,795.81	-52.26	263.01	213.76	49.25	5.340		
8,100.00	5,606.00	8,306.55	5,820.00	37.88	38.36	144.42	1,895.81	-52.26	263.13	212.19	50.94	5.165		
8,200.00	5,606.00	8,406.55	5,820.00	39.14	39.61	144.38	1,995.81	-52.26	263.25	210.60	52.65	5.000		
8,300.00	5,606.00	8,506.55	5,820.00	40.42	40.87	144.35	2,095.81	-52.26	263.37	208.99	54.37	4.844		
8,400.00	5,606.00	8,606.55	5,820.00	41.70	42.15	144.31	2,195.81	-52.26	263.49	207.37	56.12	4.695		
8,500.00	5,606.00	8,706.55	5,820.00	43.00	43.44	144.27	2,295.81	-52.26	263.60	205.73	57.87	4.555		
8,600.00	5,606.00	8,806.55	5,820.00	44.31	44.74	144.24	2,395.81	-52.26	263.72	204.08	59.64	4.422		
8,700.00	5,606.00	8,906.55	5,820.00	45.63	46.05	144.20	2,495.80	-52.26	263.84	202.41	61.43	4.295		
8,800.00	5,606.00	9,006.55	5,820.00	46.96	47.37	144.17	2,595.80	-52.27	263.96	200.74	63.22	4.175		
8,900.00	5,606.00	9,106.55	5,820.00	48.30	48.70	144.13	2,695.80	-52.27	264.08	199.05	65.03	4.061		
9,000.00	5,606.00	9,206.55	5,820.00	49.65	50.04	144.10	2,795.80	-52.27	264.20	197.35	66.85	3.952		
9,100.00	5,606.00	9,306.55	5,820.00	51.00	51.39	144.06	2,895.80	-52.27	264.32	195.64	68.68	3.849		
9,200.00	5,606.00	9,406.55	5,820.00	52.36	52.74	144.02	2,995.80	-52.27	264.44	193.92	70.52	3.750		
9,300.00	5,606.00	9,506.55	5,820.00	53.72	54.09	143.99	3,095.80	-52.27	264.55	192.19	72.36	3.656		
9,400.00	5,606.00	9,606.55	5,820.00	55.09	55.46	143.95	3,195.80	-52.27	264.67	190.46	74.22	3.566		
9,500.00	5,606.00	9,706.55	5,820.00	56.46	56.83	143.92	3,295.80	-52.27	264.79	188.72	76.08	3.481		
9,600.00	5,606.00	9,806.55	5,820.00	57.84	58.20	143.88	3,395.80	-52.27	264.91	186.97	77.95	3.399		
9,700.00	5,606.00	9,906.55	5,820.00	59.23	59.58	143.85	3,495.80	-52.27	265.03	185.21	79.82	3.320		
9,800.00	5,606.00	10,006.55	5,820.00	60.62	60.96	143.81	3,595.80	-52.27	265.15	183.44	81.71	3.245		
9,900.00	5,606.00	10,106.55	5,820.00	62.01	62.35	143.78	3,695.80	-52.27	265.27	181.67	83.60	3.173		
10,000.00	5,606.00	10,206.55	5,820.00	63.40	63.74	143.74	3,795.80	-52.27	265.39	179.90	85.50	3.104		
10,100.00	5,606.00	10,306.55	5,820.00	64.80	65.13	143.71	3,895.80	-52.27	265.51	178.11	87.40	3.038		
10,200.00	5,606.00	10,406.55	5,820.00	66.21	66.53	143.67	3,995.80	-52.27	265.63	176.33	89.31	2.974		

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-1902
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-1902	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	10,506.55	5,820.00	67.61	67.93	143.64	4,095.80	-52.27	265.75	174.53	91.22	2.913	
10,400.00	5,606.00	10,606.55	5,820.00	69.02	69.34	143.60	4,195.80	-52.27	265.87	172.73	93.14	2.855	
10,500.00	5,606.00	10,706.55	5,820.00	70.43	70.74	143.57	4,295.80	-52.27	265.99	170.93	95.06	2.798	
10,600.00	5,606.00	10,806.55	5,820.00	71.84	72.15	143.53	4,395.80	-52.27	266.11	169.12	96.99	2.744	
10,700.00	5,606.00	10,906.55	5,820.00	73.26	73.56	143.49	4,495.80	-52.27	266.23	167.31	98.93	2.691	
10,800.00	5,606.00	11,006.55	5,820.00	74.68	74.98	143.46	4,595.80	-52.27	266.35	165.49	100.86	2.641	
10,900.00	5,606.00	11,106.55	5,820.00	76.10	76.39	143.42	4,695.80	-52.27	266.48	163.67	102.81	2.592	
11,000.00	5,606.00	11,206.55	5,820.00	77.52	77.81	143.39	4,795.80	-52.27	266.60	161.84	104.75	2.545	
11,100.00	5,606.00	11,306.54	5,820.00	78.94	79.23	143.35	4,895.80	-52.27	266.72	160.01	106.71	2.500	
11,200.00	5,606.00	11,406.54	5,820.00	80.37	80.65	143.32	4,995.80	-52.27	266.84	158.18	108.66	2.456	
11,300.00	5,606.00	11,506.54	5,820.00	81.79	82.08	143.29	5,095.80	-52.27	266.96	156.34	110.62	2.413	
11,400.00	5,606.00	11,606.54	5,820.00	83.22	83.50	143.25	5,195.80	-52.27	267.08	154.50	112.58	2.372	
11,500.00	5,606.00	11,706.54	5,820.00	84.65	84.93	143.22	5,295.80	-52.27	267.20	152.65	114.55	2.333	
11,600.00	5,606.00	11,806.54	5,820.00	86.08	86.36	143.18	5,395.80	-52.27	267.32	150.80	116.52	2.294	
11,700.00	5,606.00	11,906.54	5,820.00	87.52	87.79	143.15	5,495.80	-52.27	267.45	148.95	118.50	2.257	
11,800.00	5,606.00	12,006.54	5,820.00	88.95	89.22	143.11	5,595.80	-52.27	267.57	147.09	120.48	2.221	
11,900.00	5,606.00	12,106.54	5,820.00	90.39	90.65	143.08	5,695.80	-52.27	267.69	145.23	122.46	2.186	
12,000.00	5,606.00	12,206.54	5,820.00	91.82	92.09	143.04	5,795.80	-52.27	267.81	143.37	124.44	2.152	
12,100.00	5,606.00	12,306.54	5,820.00	93.26	93.52	143.01	5,895.80	-52.27	267.93	141.50	126.43	2.119	
12,200.00	5,606.00	12,406.54	5,820.00	94.70	94.96	142.97	5,995.80	-52.27	268.06	139.63	128.43	2.087	
12,300.00	5,606.00	12,506.54	5,820.00	96.14	96.39	142.94	6,095.80	-52.27	268.18	137.76	130.42	2.056	
12,400.00	5,606.00	12,606.54	5,820.00	97.58	97.83	142.90	6,195.80	-52.27	268.30	135.88	132.42	2.026	
12,500.00	5,606.00	12,706.54	5,820.00	99.02	99.27	142.87	6,295.80	-52.27	268.42	134.00	134.42	1.997	
12,600.00	5,606.00	12,806.54	5,820.00	100.46	100.71	142.83	6,395.80	-52.27	268.54	132.12	136.43	1.968	
12,700.00	5,606.00	12,906.54	5,820.00	101.91	102.15	142.80	6,495.80	-52.27	268.67	130.23	138.44	1.941	
12,800.00	5,606.00	13,006.54	5,820.00	103.35	103.59	142.77	6,595.80	-52.27	268.79	128.34	140.45	1.914	
12,900.00	5,606.00	13,106.54	5,820.00	104.79	105.04	142.73	6,695.80	-52.27	268.91	126.45	142.46	1.888	
13,000.00	5,606.00	13,206.54	5,820.00	106.24	106.48	142.70	6,795.80	-52.27	269.04	124.56	144.48	1.862	
13,100.00	5,606.00	13,306.54	5,820.00	107.69	107.92	142.66	6,895.80	-52.27	269.16	122.66	146.50	1.837	
13,200.00	5,606.00	13,406.54	5,820.00	109.13	109.37	142.63	6,995.80	-52.27	269.28	120.76	148.52	1.813	
13,300.00	5,606.00	13,506.54	5,820.00	110.58	110.81	142.59	7,095.80	-52.27	269.40	118.86	150.55	1.790	
13,400.00	5,606.00	13,606.54	5,820.00	112.03	112.26	142.56	7,195.80	-52.27	269.53	116.95	152.58	1.767	
13,500.00	5,606.00	13,706.54	5,820.00	113.48	113.71	142.53	7,295.80	-52.27	269.65	115.04	154.61	1.744	
13,600.00	5,606.00	13,806.54	5,820.00	114.93	115.15	142.49	7,395.79	-52.27	269.77	113.13	156.64	1.722	
13,700.00	5,606.00	13,906.54	5,820.00	116.38	116.60	142.46	7,495.79	-52.27	269.90	111.22	158.68	1.701	
13,719.75	5,606.00	13,926.28	5,820.00	116.63	116.89	142.45	7,515.54	-52.27	269.92	110.88	159.04	1.697 SF	



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1902
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-1902	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 (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning				
0.00	0.00	0.00	0.00	0.00	0.00	90.00	-0.01	89.97	89.97								
100.00	100.00	100.00	100.00	0.13	0.13	90.00	-0.01	89.97	89.97	89.70	0.27	337.782					
200.00	200.00	200.00	200.00	0.47	0.47	90.00	-0.01	89.97	89.97	89.03	0.94	95.644					
300.00	300.00	300.00	300.00	0.81	0.81	90.00	-0.01	89.97	89.97	88.35	1.61	55.709	CC, ES				
400.00	399.98	399.24	399.22	1.11	1.11	-104.89	-1.68	90.38	90.84	88.62	2.21	41.031					
500.00	499.84	498.43	498.27	1.41	1.41	-104.86	-6.67	91.63	93.44	90.64	2.80	33.389					
600.00	599.45	597.54	597.00	1.73	1.72	-104.79	-14.98	93.71	97.78	94.34	3.44	28.418					
700.00	698.70	696.51	695.25	2.07	2.05	-104.71	-26.59	96.61	103.84	99.71	4.13	25.127					
800.00	797.47	795.31	792.85	2.43	2.41	-104.61	-41.45	100.32	111.62	106.74	4.87	22.902					
900.00	895.73	894.60	890.50	2.82	2.80	-104.72	-58.87	104.67	120.77	115.11	5.65	21.373					
1,000.00	993.93	994.17	988.40	3.24	3.21	-104.97	-76.50	109.08	130.04	123.59	6.45	20.160					
1,100.00	1,092.12	1,093.74	1,086.29	3.66	3.62	-105.18	-94.13	113.48	139.32	132.05	7.27	19.170					
1,200.00	1,190.32	1,193.31	1,184.19	4.08	4.04	-105.36	-111.76	117.88	148.60	140.51	8.10	18.353					
1,300.00	1,288.52	1,292.87	1,282.08	4.51	4.46	-105.53	-129.39	122.29	157.89	148.95	8.93	17.671					
1,400.00	1,386.72	1,392.44	1,379.98	4.94	4.89	-105.67	-147.02	126.69	167.17	157.39	9.78	17.095					
1,500.00	1,484.92	1,492.01	1,477.87	5.38	5.32	-105.80	-164.65	131.09	176.46	165.83	10.63	16.603					
1,600.00	1,583.12	1,591.57	1,575.77	5.81	5.75	-105.92	-182.28	135.50	185.74	174.26	11.48	16.179					
1,700.00	1,681.32	1,691.14	1,673.66	6.25	6.18	-106.03	-199.91	139.90	195.03	182.69	12.34	15.810					
1,800.00	1,779.51	1,790.71	1,771.56	6.69	6.61	-106.12	-217.55	144.31	204.31	191.12	13.19	15.486					
1,900.00	1,877.71	1,890.28	1,869.45	7.13	7.04	-106.21	-235.18	148.71	213.60	199.55	14.05	15.199					
2,000.00	1,975.91	1,989.84	1,967.35	7.57	7.47	-106.29	-252.81	153.11	222.89	207.98	14.91	14.944					
2,100.00	2,074.11	2,089.41	2,065.24	8.01	7.91	-106.37	-270.44	157.52	232.18	216.40	15.78	14.716					
2,200.00	2,172.31	2,188.98	2,163.14	8.45	8.34	-106.43	-288.07	161.92	241.47	224.83	16.64	14.510					
2,300.00	2,270.51	2,288.55	2,261.03	8.89	8.77	-106.50	-305.70	166.33	250.76	233.25	17.51	14.324					
2,400.00	2,368.70	2,388.11	2,358.93	9.34	9.21	-106.56	-323.33	170.73	260.05	241.67	18.37	14.155					
2,500.00	2,466.90	2,487.68	2,456.82	9.78	9.64	-106.61	-340.96	175.13	269.34	250.10	19.24	14.000					
2,600.00	2,565.10	2,587.25	2,554.72	10.22	10.08	-106.66	-358.59	179.54	278.63	258.52	20.10	13.859					
2,700.00	2,663.30	2,686.81	2,652.61	10.67	10.52	-106.71	-376.22	183.94	287.92	266.94	20.97	13.728					
2,800.00	2,761.50	2,786.38	2,750.50	11.11	10.95	-106.76	-393.85	188.35	297.21	275.37	21.84	13.608					
2,900.00	2,859.70	2,885.95	2,848.40	11.55	11.39	-106.80	-411.48	192.75	306.50	283.79	22.71	13.497					
3,000.00	2,957.89	2,985.52	2,946.29	12.00	11.82	-106.84	-429.11	197.15	315.79	292.21	23.58	13.394					
3,100.00	3,056.09	3,085.08	3,044.19	12.44	12.26	-106.88	-446.74	201.56	325.08	300.63	24.45	13.298					
3,200.00	3,154.29	3,184.65	3,142.08	12.88	12.70	-106.91	-464.37	205.96	334.37	309.05	25.32	13.208					
3,300.00	3,252.49	3,284.22	3,239.98	13.33	13.13	-106.94	-482.00	210.36	343.66	317.47	26.18	13.124					
3,400.00	3,350.69	3,383.79	3,337.87	13.77	13.57	-106.98	-499.63	214.77	352.95	325.90	27.05	13.046					
3,500.00	3,448.89	3,483.35	3,435.77	14.22	14.01	-107.01	-517.26	219.17	362.24	334.32	27.92	12.972					
3,600.00	3,547.08	3,582.92	3,533.66	14.66	14.44	-107.03	-534.89	223.58	371.53	342.74	28.79	12.903					
3,700.00	3,645.28	3,682.49	3,631.56	15.11	14.88	-107.06	-552.52	227.98	380.82	351.16	29.66	12.838					
3,800.00	3,743.48	3,782.05	3,729.45	15.55	15.32	-107.09	-570.15	232.38	390.12	359.58	30.54	12.776					
3,900.00	3,841.68	3,881.62	3,827.35	16.00	15.75	-107.11	-587.78	236.79	399.41	368.00	31.41	12.718					
4,000.00	3,939.88	3,981.19	3,925.24	16.44	16.19	-107.14	-605.41	241.19	408.70	376.42	32.28	12.662					
4,100.00	4,038.08	4,080.76	4,023.14	16.88	16.63	-107.16	-623.04	245.60	417.99	384.84	33.15	12.610					
4,200.00	4,136.28	4,180.32	4,121.03	17.33	17.07	-107.18	-640.67	250.00	427.28	393.26	34.02	12.560					
4,300.00	4,234.47	4,279.89	4,218.93	17.77	17.50	-107.20	-658.30	254.40	436.57	401.68	34.89	12.513					
4,400.00	4,332.67	4,379.46	4,316.82	18.22	17.94	-107.22	-675.93	258.81	445.86	410.10	35.76	12.468					
4,500.00	4,431.12	4,479.05	4,414.74	18.68	18.38	-107.22	-693.56	263.21	454.75	418.19	36.56	12.440					
4,600.00	4,530.11	4,579.39	4,513.42	18.84	18.80	-106.83	-711.25	267.63	462.62	425.38	37.24	12.422					
4,700.00	4,629.54	4,682.61	4,615.35	19.09	19.09	-106.29	-726.97	271.56	469.01	431.21	37.80	12.408					
4,800.00	4,729.27	4,786.17	4,718.14	19.33	19.36	-105.76	-739.15	274.60	473.70	435.39	38.31	12.365					
4,900.00	4,829.20	4,890.02	4,821.60	19.55	19.61	-105.22	-747.73	276.74	476.67	437.88	38.79	12.287					
5,000.00	4,929.20	4,994.11	4,925.57	19.79	19.85	90.20	-752.68	277.98	478.00	438.71	39.28	12.168					
5,100.00	5,029.20	5,097.75	5,029.20	20.00	20.10	90.36	-754.01	278.31	478.32	438.57	39.75	12.032					

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-1902
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-1902	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	HZ	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,101.41	5,030.61	5,099.17	5,030.61	20.00	20.11	90.48	-754.01	278.31	478.32	438.56	39.76	12.030	
5,200.00	5,129.14	5,197.70	5,129.14	20.20	20.31	90.70	-754.01	278.31	478.34	438.17	40.17	11.908	
5,300.00	5,227.36	5,296.53	5,227.97	20.33	20.52	92.74	-753.82	278.31	478.89	438.39	40.50	11.824	
5,400.00	5,320.35	5,400.49	5,330.93	20.37	20.69	95.56	-740.72	278.31	480.74	440.08	40.65	11.825	
5,500.00	5,404.70	5,510.17	5,434.44	20.34	20.76	98.24	-705.07	278.31	483.67	443.10	40.57	11.922	
5,600.00	5,477.30	5,626.00	5,533.10	20.27	20.74	100.66	-644.85	278.31	487.26	447.01	40.25	12.106	
5,700.00	5,535.50	5,747.93	5,619.91	20.18	20.66	102.67	-559.62	278.31	490.94	451.18	39.76	12.347	
5,800.00	5,577.15	5,875.25	5,686.88	20.10	20.57	104.14	-451.71	278.31	494.04	454.77	39.27	12.581	
5,900.00	5,600.73	6,006.44	5,726.45	20.05	20.51	104.94	-327.00	278.31	495.97	456.97	39.00	12.718	
6,000.00	5,606.00	6,129.76	5,735.00	20.06	20.55	105.06	-204.19	278.31	496.47	457.37	39.10	12.699	
6,100.00	5,606.00	6,229.76	5,735.00	20.18	20.68	105.05	-104.19	278.31	496.67	457.27	39.40	12.606	
6,200.00	5,606.00	6,329.76	5,735.00	20.40	20.91	105.05	-4.19	278.31	496.86	456.96	39.90	12.451	
6,300.00	5,606.00	6,429.76	5,735.00	20.74	21.25	105.04	95.81	278.31	497.06	456.45	40.61	12.241	
6,400.00	5,606.00	6,529.76	5,735.00	21.18	21.69	105.04	195.81	278.31	497.25	455.76	41.49	11.985	
6,500.00	5,606.00	6,629.76	5,735.00	21.71	22.22	105.03	295.81	278.31	497.45	454.90	42.55	11.691	
6,600.00	5,606.00	6,729.76	5,735.00	22.34	22.84	105.02	395.81	278.31	497.64	453.88	43.77	11.370	
6,700.00	5,606.00	6,829.76	5,735.00	23.04	23.54	105.02	495.81	278.31	497.84	452.70	45.14	11.030	
6,800.00	5,606.00	6,929.76	5,735.00	23.82	24.30	105.01	595.81	278.30	498.03	451.40	46.64	10.679	
6,900.00	5,606.00	7,029.76	5,735.00	24.66	25.13	105.01	695.81	278.30	498.23	449.97	48.26	10.323	
7,000.00	5,606.00	7,129.76	5,735.00	25.55	26.02	105.00	795.81	278.30	498.43	448.43	50.00	9.969	
7,100.00	5,606.00	7,229.76	5,735.00	26.50	26.95	104.99	895.81	278.30	498.62	446.79	51.83	9.619	
7,200.00	5,606.00	7,329.76	5,735.00	27.50	27.94	104.99	995.81	278.30	498.82	445.06	53.76	9.279	
7,300.00	5,606.00	7,429.76	5,735.00	28.54	28.96	104.98	1,095.81	278.30	499.01	443.25	55.76	8.949	
7,400.00	5,606.00	7,529.76	5,735.00	29.61	30.02	104.98	1,195.81	278.30	499.21	441.37	57.84	8.631	
7,500.00	5,606.00	7,629.76	5,735.00	30.72	31.12	104.97	1,295.81	278.30	499.40	439.42	59.98	8.326	
7,600.00	5,606.00	7,729.76	5,735.00	31.85	32.24	104.96	1,395.81	278.30	499.60	437.42	62.18	8.035	
7,700.00	5,606.00	7,829.76	5,735.00	33.02	33.40	104.96	1,495.81	278.30	499.80	435.37	64.43	7.757	
7,800.00	5,606.00	7,929.76	5,735.00	34.20	34.57	104.95	1,595.81	278.30	499.99	433.27	66.72	7.493	
7,900.00	5,606.00	8,029.76	5,735.00	35.41	35.77	104.95	1,695.81	278.30	500.19	431.12	69.06	7.242	
8,000.00	5,606.00	8,129.76	5,735.00	36.64	36.99	104.94	1,795.81	278.30	500.38	428.94	71.44	7.004	
8,100.00	5,606.00	8,229.76	5,735.00	37.88	38.22	104.93	1,895.81	278.30	500.58	426.73	73.85	6.778	
8,200.00	5,606.00	8,329.76	5,735.00	39.14	39.48	104.93	1,995.81	278.30	500.77	424.48	76.29	6.564	
8,300.00	5,606.00	8,429.76	5,735.00	40.42	40.74	104.92	2,095.81	278.30	500.97	422.21	78.76	6.361	
8,400.00	5,606.00	8,529.76	5,735.00	41.70	42.02	104.92	2,195.81	278.30	501.17	419.91	81.26	6.168	
8,500.00	5,606.00	8,629.76	5,735.00	43.00	43.31	104.91	2,295.81	278.30	501.36	417.59	83.78	5.985	
8,600.00	5,606.00	8,729.76	5,735.00	44.31	44.62	104.90	2,395.81	278.30	501.56	415.24	86.32	5.811	
8,700.00	5,606.00	8,829.76	5,735.00	45.63	45.93	104.90	2,495.81	278.30	501.75	412.88	88.87	5.646	
8,800.00	5,606.00	8,929.76	5,735.00	46.96	47.25	104.89	2,595.81	278.30	501.95	410.50	91.45	5.489	
8,900.00	5,606.00	9,029.76	5,735.00	48.30	48.58	104.89	2,695.81	278.30	502.14	408.10	94.05	5.339	
9,000.00	5,606.00	9,129.76	5,735.00	49.65	49.92	104.88	2,795.81	278.30	502.34	405.69	96.65	5.197	
9,100.00	5,606.00	9,229.76	5,735.00	51.00	51.27	104.87	2,895.81	278.29	502.54	403.26	99.28	5.062	
9,200.00	5,606.00	9,329.76	5,735.00	52.36	52.62	104.87	2,995.81	278.29	502.73	400.82	101.91	4.933	
9,300.00	5,606.00	9,429.76	5,735.00	53.72	53.98	104.86	3,095.81	278.29	502.93	398.37	104.56	4.810	
9,400.00	5,606.00	9,529.76	5,735.00	55.09	55.35	104.86	3,195.81	278.29	503.12	395.91	107.22	4.693	
9,500.00	5,606.00	9,629.76	5,735.00	56.46	56.72	104.85	3,295.80	278.29	503.32	393.43	109.89	4.580	
9,600.00	5,606.00	9,729.76	5,735.00	57.84	58.09	104.84	3,395.80	278.29	503.51	390.95	112.56	4.473	
9,700.00	5,606.00	9,829.76	5,735.00	59.23	59.47	104.84	3,495.80	278.29	503.71	388.46	115.25	4.371	
9,800.00	5,606.00	9,929.75	5,735.00	60.62	60.86	104.83	3,595.80	278.29	503.91	385.96	117.95	4.272	
9,900.00	5,606.00	10,029.75	5,735.00	62.01	62.24	104.83	3,695.80	278.29	504.10	383.45	120.65	4.178	
10,000.00	5,606.00	10,129.75	5,735.00	63.40	63.64	104.82	3,795.80	278.29	504.30	380.94	123.36	4.088	
10,100.00	5,606.00	10,229.75	5,735.00	64.80	65.03	104.82	3,895.80	278.29	504.49	378.42	126.07	4.002	
10,200.00	5,606.00	10,329.75	5,735.00	66.21	66.43	104.81	3,995.80	278.29	504.69	375.89	128.80	3.918	

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-1902
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-1902	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	10,429.75	5,735.00	67.61	67.83	104.80	4,095.80	278.29	504.89	373.36	131.53	3.839		
10,400.00	5,606.00	10,529.75	5,735.00	69.02	69.24	104.80	4,195.80	278.29	505.08	370.82	134.26	3.762		
10,500.00	5,606.00	10,629.75	5,735.00	70.43	70.64	104.79	4,295.80	278.29	505.28	368.28	137.00	3.688		
10,600.00	5,606.00	10,729.75	5,735.00	71.84	72.05	104.79	4,395.80	278.29	505.47	365.73	139.75	3.617		
10,700.00	5,606.00	10,829.75	5,735.00	73.26	73.47	104.78	4,495.80	278.29	505.67	363.17	142.50	3.549		
10,800.00	5,606.00	10,929.75	5,735.00	74.68	74.88	104.77	4,595.80	278.29	505.86	360.62	145.25	3.483		
10,900.00	5,606.00	11,029.75	5,735.00	76.10	76.30	104.77	4,695.80	278.29	506.06	358.05	148.01	3.419		
11,000.00	5,606.00	11,129.75	5,735.00	77.52	77.72	104.76	4,795.80	278.29	506.26	355.49	150.77	3.358		
11,100.00	5,606.00	11,229.75	5,735.00	78.94	79.14	104.76	4,895.80	278.29	506.45	352.92	153.54	3.299		
11,200.00	5,606.00	11,329.75	5,735.00	80.37	80.56	104.75	4,995.80	278.29	506.65	350.34	156.31	3.241		
11,300.00	5,606.00	11,429.75	5,735.00	81.79	81.98	104.74	5,095.80	278.29	506.84	347.77	159.08	3.186		
11,400.00	5,606.00	11,529.75	5,735.00	83.22	83.41	104.74	5,195.80	278.29	507.04	345.19	161.85	3.133		
11,500.00	5,606.00	11,629.75	5,735.00	84.65	84.84	104.73	5,295.80	278.28	507.24	342.60	164.63	3.081		
11,600.00	5,606.00	11,729.75	5,735.00	86.08	86.27	104.73	5,395.80	278.28	507.43	340.02	167.42	3.031		
11,700.00	5,606.00	11,829.75	5,735.00	87.52	87.70	104.72	5,495.80	278.28	507.63	337.43	170.20	2.983		
11,800.00	5,606.00	11,929.75	5,735.00	88.95	89.13	104.72	5,595.80	278.28	507.82	334.84	172.99	2.936		
11,900.00	5,606.00	12,029.75	5,735.00	90.39	90.56	104.71	5,695.80	278.28	508.02	332.24	175.78	2.890		
12,000.00	5,606.00	12,129.75	5,735.00	91.82	92.00	104.70	5,795.80	278.28	508.22	329.65	178.57	2.846		
12,100.00	5,606.00	12,229.75	5,735.00	93.26	93.43	104.70	5,895.80	278.28	508.41	327.05	181.36	2.803		
12,200.00	5,606.00	12,329.75	5,735.00	94.70	94.87	104.69	5,995.80	278.28	508.61	324.45	184.16	2.762		
12,300.00	5,606.00	12,429.75	5,735.00	96.14	96.31	104.69	6,095.80	278.28	508.80	321.84	186.96	2.721		
12,400.00	5,606.00	12,529.75	5,735.00	97.58	97.74	104.68	6,195.80	278.28	509.00	319.24	189.76	2.682		
12,500.00	5,606.00	12,629.75	5,735.00	99.02	99.18	104.68	6,295.80	278.28	509.19	316.63	192.56	2.644		
12,600.00	5,606.00	12,729.75	5,735.00	100.46	100.62	104.67	6,395.80	278.28	509.39	314.02	195.37	2.607		
12,700.00	5,606.00	12,829.75	5,735.00	101.91	102.07	104.66	6,495.80	278.28	509.59	311.41	198.18	2.571		
12,800.00	5,606.00	12,929.75	5,735.00	103.35	103.51	104.66	6,595.80	278.28	509.78	308.80	200.98	2.536		
12,900.00	5,606.00	13,029.75	5,735.00	104.79	104.95	104.65	6,695.80	278.28	509.98	306.18	203.79	2.502		
13,000.00	5,606.00	13,129.75	5,735.00	106.24	106.39	104.65	6,795.80	278.28	510.17	303.57	206.61	2.469		
13,100.00	5,606.00	13,229.75	5,735.00	107.69	107.84	104.64	6,895.80	278.28	510.37	300.95	209.42	2.437		
13,200.00	5,606.00	13,329.75	5,735.00	109.13	109.28	104.64	6,995.80	278.28	510.57	298.33	212.23	2.406		
13,300.00	5,606.00	13,429.75	5,735.00	110.58	110.73	104.63	7,095.80	278.28	510.76	295.71	215.05	2.375		
13,400.00	5,606.00	13,529.75	5,735.00	112.03	112.18	104.62	7,195.80	278.28	510.96	293.09	217.87	2.345		
13,500.00	5,606.00	13,629.75	5,735.00	113.48	113.62	104.62	7,295.80	278.28	511.15	290.47	220.69	2.316		
13,600.00	5,606.00	13,729.75	5,735.00	114.93	115.07	104.61	7,395.80	278.28	511.35	287.84	223.51	2.288		
13,700.00	5,606.00	13,829.75	5,735.00	116.38	116.52	104.61	7,495.80	278.28	511.55	285.22	226.33	2.260		
13,719.75	5,606.00	13,849.49	5,735.00	116.63	116.81	104.61	7,515.54	278.28	511.59	284.73	226.85	2.255 SF		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1902
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-1902	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	129.95	-49.59	59.21	77.24					
100.00	100.00	100.00	100.00	0.13	0.13	129.95	-49.59	59.21	77.24	76.97	0.27	289.981		
200.00	200.00	200.00	200.00	0.47	0.47	129.95	-49.59	59.21	77.24	76.30	0.94	82.109		
300.00	300.00	300.00	300.00	0.81	0.81	129.95	-49.59	59.21	77.24	75.62	1.61	47.826 CC		
300.61	300.61	300.60	300.60	0.81	0.81	-64.96	-49.59	59.21	77.24	75.62	1.62	47.713		
400.00	399.98	398.71	398.69	1.11	1.13	-67.24	-48.92	60.77	77.33	75.08	2.25	34.362 ES		
500.00	499.84	496.85	496.69	1.41	1.46	-73.93	-46.91	65.41	78.36	75.45	2.91	26.967		
600.00	599.45	595.15	594.69	1.73	1.80	-84.06	-43.83	72.50	81.87	78.28	3.59	22.813		
700.00	698.70	693.46	692.68	2.07	2.13	-95.33	-40.68	79.78	88.24	83.97	4.27	20.644		
800.00	797.47	791.12	790.02	2.43	2.46	-106.57	-37.54	87.02	98.60	93.63	4.97	19.822		
900.00	895.73	888.13	886.72	2.82	2.80	-116.77	-34.43	94.20	113.46	107.79	5.68	19.991		
1,000.00	993.93	985.06	983.33	3.24	3.13	-124.70	-31.32	101.38	131.35	124.99	6.36	20.660		
1,100.00	1,092.12	1,082.00	1,079.95	3.66	3.47	-130.69	-28.21	108.56	151.13	144.10	7.03	21.503		
1,200.00	1,190.32	1,178.93	1,176.56	4.08	3.81	-135.28	-25.10	115.74	172.15	164.45	7.70	22.367		
1,300.00	1,288.52	1,275.86	1,273.18	4.51	4.15	-138.87	-21.99	122.92	194.01	185.65	8.36	23.196		
1,400.00	1,386.72	1,372.79	1,369.79	4.94	4.49	-141.73	-18.87	130.10	216.45	207.42	9.03	23.967		
1,500.00	1,484.92	1,469.72	1,466.41	5.38	4.83	-144.05	-15.76	137.28	239.32	229.62	9.70	24.672		
1,600.00	1,583.12	1,566.65	1,563.02	5.81	5.17	-145.97	-12.65	144.46	262.49	252.12	10.37	25.313		
1,700.00	1,681.32	1,663.59	1,659.64	6.25	5.51	-147.58	-9.54	151.64	285.90	274.86	11.04	25.894		
1,800.00	1,779.51	1,760.52	1,756.26	6.69	5.85	-148.94	-6.43	158.82	309.50	297.78	11.71	26.421		
1,900.00	1,877.71	1,857.45	1,852.87	7.13	6.19	-150.12	-3.32	166.00	333.23	320.84	12.39	26.901		
2,000.00	1,975.91	1,954.38	1,949.49	7.57	6.54	-151.13	-0.21	173.18	357.08	344.02	13.06	27.337		
2,100.00	2,074.11	2,051.31	2,046.10	8.01	6.88	-152.02	2.91	180.36	381.02	367.29	13.74	27.736		
2,200.00	2,172.31	2,148.24	2,142.72	8.45	7.22	-152.81	6.02	187.54	405.04	390.63	14.41	28.101		
2,300.00	2,270.51	2,245.18	2,239.33	8.89	7.56	-153.50	9.13	194.72	429.13	414.04	15.09	28.437		
2,400.00	2,368.70	2,342.11	2,335.95	9.34	7.90	-154.13	12.24	201.90	453.26	437.50	15.77	28.745		
2,500.00	2,466.90	2,439.04	2,432.56	9.78	8.24	-154.68	15.35	209.08	477.45	461.00	16.45	29.031		
2,600.00	2,565.10	2,535.97	2,529.18	10.22	8.58	-155.19	18.46	216.26	501.67	484.54	17.12	29.295		
2,700.00	2,663.30	2,632.90	2,625.79	10.67	8.93	-155.65	21.57	223.43	525.92	508.12	17.80	29.540		
2,800.00	2,761.50	2,729.83	2,722.41	11.11	9.27	-156.07	24.68	230.61	550.20	531.72	18.48	29.768		
2,900.00	2,859.70	2,826.77	2,819.02	11.55	9.61	-156.45	27.80	237.79	574.51	555.35	19.16	29.980		
3,000.00	2,957.89	2,923.70	2,915.64	12.00	9.95	-156.80	30.91	244.97	598.84	579.00	19.84	30.179		
3,100.00	3,056.09	3,020.63	3,012.25	12.44	10.29	-157.13	34.02	252.15	623.19	602.67	20.52	30.365		
3,200.00	3,154.29	3,117.56	3,108.87	12.88	10.63	-157.43	37.13	259.33	647.56	626.36	21.20	30.539		
3,300.00	3,252.49	3,214.49	3,205.49	13.33	10.98	-157.71	40.24	266.51	671.95	650.06	21.89	30.703		
3,400.00	3,350.69	3,311.42	3,302.10	13.77	11.32	-157.97	43.35	273.69	696.34	673.78	22.57	30.858		
3,500.00	3,448.89	3,408.36	3,398.72	14.22	11.66	-158.21	46.46	280.87	720.75	697.51	23.25	31.003		
3,600.00	3,547.08	3,505.29	3,495.33	14.66	12.00	-158.44	49.57	288.05	745.17	721.25	23.93	31.141		
3,700.00	3,645.28	3,602.22	3,591.95	15.11	12.34	-158.65	52.69	295.23	769.61	745.00	24.61	31.271		
3,800.00	3,743.48	3,699.15	3,688.56	15.55	12.69	-158.85	55.80	302.41	794.05	768.75	25.29	31.394		
3,900.00	3,841.68	3,796.08	3,785.18	16.00	13.03	-159.03	58.91	309.59	818.50	792.52	25.97	31.511		
4,000.00	3,939.88	3,893.01	3,881.79	16.44	13.37	-159.21	62.02	316.77	842.95	816.30	26.66	31.622		
4,100.00	4,038.08	3,989.95	3,978.41	16.88	13.71	-159.37	65.13	323.95	867.42	840.08	27.34	31.728		
4,200.00	4,136.28	4,086.88	4,075.02	17.33	14.05	-159.53	68.24	331.13	891.89	863.87	28.02	31.828		
4,300.00	4,234.47	4,183.81	4,171.64	17.77	14.40	-159.68	71.35	338.31	916.36	887.66	28.70	31.924		
4,400.00	4,332.67	4,280.74	4,268.25	18.22	14.74	-159.82	74.46	345.49	940.85	911.46	29.39	32.016		
4,500.00	4,431.12	4,377.99	4,365.18	18.58	15.08	-160.07	77.59	352.69	964.08	934.05	30.03	32.104		
4,600.00	4,530.11	4,475.95	4,462.82	18.84	15.43	-160.24	80.73	359.95	984.12	953.50	30.63	32.132		
4,700.00	4,629.54	4,574.52	4,561.07	19.09	15.77	-160.31	83.89	367.25	1,000.94	969.72	31.23	32.053		
4,800.00	4,729.27	4,673.48	4,659.00	19.33	16.10	-160.37	-746.91	377.66	993.21	969.56	23.65	41.990		
4,900.00	4,829.20	4,771.04	4,756.00	19.55	16.42	-160.42	-750.47	377.66	914.29	888.59	25.70	35.571		
5,000.00	4,929.20	4,869.57	4,854.00	19.79	16.74	-160.47	-751.00	377.66	839.25	811.24	28.01	29.964		

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-1902
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-1902	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	5,029.20	6,167.57	5,538.00	20.00	21.32	90.00	-751.00	377.66	769.79	739.24	30.55	25.200		
5,200.00	5,129.14	6,165.70	5,538.00	20.20	21.30	93.55	-749.12	377.66	707.72	674.45	33.27	21.272		
5,300.00	5,227.36	6,147.74	5,538.00	20.33	21.18	98.47	-731.17	377.66	655.92	620.10	35.82	18.312		
5,400.00	5,320.35	6,111.38	5,538.00	20.37	20.92	99.76	-694.81	377.66	617.41	579.59	37.82	16.325		
5,500.00	5,404.70	6,057.95	5,538.00	20.34	20.57	98.15	-641.38	377.66	593.06	554.03	39.03	15.196		
5,600.00	5,477.30	5,989.41	5,538.00	20.27	20.15	94.60	-572.84	377.66	581.20	541.82	39.38	14.759 SF		
5,700.00	5,535.50	5,908.28	5,538.00	20.18	19.72	90.27	-491.71	377.66	578.19	539.08	39.12	14.782		
5,700.94	5,535.97	5,907.46	5,538.00	20.18	19.72	90.23	-490.89	377.66	578.19	539.08	39.11	14.784		
5,800.00	5,577.15	5,819.77	5,537.17	20.10	19.32	86.38	-403.22	377.66	579.76	541.17	38.58	15.026		
5,900.00	5,600.73	5,736.14	5,525.79	20.05	19.00	82.94	-320.45	377.66	583.63	545.60	38.03	15.346		
6,000.00	5,606.00	5,656.43	5,502.76	20.06	18.73	79.88	-244.23	377.66	589.27	551.72	37.55	15.693		
6,100.00	5,606.00	5,584.17	5,472.05	20.18	18.53	76.97	-178.88	377.66	598.94	561.79	37.15	16.122		
6,200.00	5,606.00	5,521.54	5,438.34	20.40	18.36	73.85	-126.14	377.66	615.16	578.36	36.81	16.714		
6,300.00	5,606.00	5,468.20	5,404.81	20.74	18.23	70.84	-84.68	377.66	639.32	602.78	36.55	17.494		
6,400.00	5,606.00	5,423.11	5,373.29	21.18	18.12	68.11	-52.47	377.66	672.09	635.70	36.39	18.469		
6,500.00	5,606.00	5,385.05	5,344.59	21.71	18.02	65.71	-27.47	377.66	713.44	677.10	36.34	19.631		
6,600.00	5,606.00	5,350.00	5,316.62	22.34	17.94	63.45	-6.37	377.66	762.81	726.47	36.34	20.991		
6,700.00	5,606.00	5,325.32	5,296.10	23.04	17.87	61.85	7.34	377.66	819.30	782.82	36.48	22.459		
6,800.00	5,606.00	5,300.00	5,274.40	23.82	17.81	60.21	20.38	377.66	882.00	845.42	36.59	24.107		
6,900.00	5,606.00	5,281.42	5,258.08	24.66	17.76	59.01	29.27	377.66	949.95	913.20	36.75	25.848		
7,000.00	5,606.00	5,250.00	5,229.81	25.55	17.68	57.00	42.96	377.66	1,022.56	985.80	36.76	27.817		
7,100.00	5,606.00	5,250.00	5,229.81	26.50	17.68	57.00	42.96	377.66	1,098.38	1,061.31	37.06	29.637		
7,200.00	5,606.00	5,250.00	5,229.81	27.50	17.68	57.00	42.96	377.66	1,177.81	1,140.51	37.30	31.577		
7,300.00	5,606.00	5,222.42	5,204.35	28.54	17.61	55.26	53.56	377.66	1,259.22	1,221.93	37.29	33.764		
7,400.00	5,606.00	5,200.00	5,183.26	29.61	17.55	53.88	61.17	377.66	1,343.28	1,305.95	37.33	35.987		
7,500.00	5,606.00	5,200.00	5,183.26	30.72	17.55	53.88	61.17	377.66	1,428.83	1,391.34	37.49	38.108		
7,600.00	5,606.00	5,200.00	5,183.26	31.85	17.55	53.88	61.17	377.66	1,516.15	1,478.52	37.63	40.287		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1902
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-1902	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	HZ	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	112.60	-49.61	119.19	129.10					
100.00	100.00	100.00	100.00	0.13	0.13	112.60	-49.61	119.19	129.10	128.83	0.27	484.706		
200.00	200.00	200.00	200.00	0.47	0.47	112.60	-49.61	119.19	129.10	128.16	0.94	137.247		
300.00	300.00	300.00	300.00	0.81	0.81	112.60	-49.61	119.19	129.10	127.49	1.61	79.941 CC, ES		
400.00	399.98	396.38	396.37	1.11	1.12	-83.44	-49.24	120.77	130.26	128.00	2.27	57.447		
500.00	499.84	492.27	492.13	1.41	1.44	-86.66	-48.16	125.47	134.06	131.10	2.96	45.358		
600.00	599.45	587.19	586.71	1.73	1.76	-91.55	-46.37	133.20	141.32	137.61	3.71	38.129		
700.00	698.70	680.67	679.55	2.07	2.09	-97.42	-43.92	143.79	153.12	148.62	4.50	34.031		
800.00	797.47	775.80	773.72	2.43	2.43	-103.72	-40.89	156.91	169.78	164.58	5.20	32.636		
900.00	895.73	871.80	868.73	2.82	2.79	-109.88	-37.80	170.31	189.53	183.67	5.86	32.327		
1,000.00	993.93	967.72	963.66	3.24	3.15	-115.09	-34.70	183.70	211.30	204.77	6.52	32.400		
1,100.00	1,092.12	1,063.64	1,058.59	3.66	3.51	-119.32	-31.61	197.08	234.46	227.27	7.18	32.642		
1,200.00	1,190.32	1,159.55	1,153.52	4.08	3.88	-122.80	-28.51	210.47	258.64	250.79	7.85	32.955		
1,300.00	1,288.52	1,255.47	1,248.45	4.51	4.25	-125.69	-25.42	223.86	283.57	275.05	8.52	33.282		
1,400.00	1,386.72	1,351.39	1,343.37	4.94	4.62	-128.11	-22.32	237.25	309.09	299.89	9.20	33.609		
1,500.00	1,484.92	1,447.31	1,438.30	5.38	4.99	-130.16	-19.23	250.63	335.05	325.17	9.88	33.923		
1,600.00	1,583.12	1,543.22	1,533.23	5.81	5.36	-131.92	-16.14	264.02	361.36	350.80	10.56	34.217		
1,700.00	1,681.32	1,639.14	1,628.16	6.25	5.73	-133.45	-13.04	277.41	387.94	376.69	11.25	34.491		
1,800.00	1,779.51	1,735.06	1,723.09	6.69	6.10	-134.78	-9.95	290.80	414.75	402.82	11.94	34.745		
1,900.00	1,877.71	1,830.98	1,818.02	7.13	6.47	-135.94	-6.85	304.19	441.75	429.12	12.63	34.979		
2,000.00	1,975.91	1,926.90	1,912.95	7.57	6.85	-136.98	-3.76	317.57	468.89	455.57	13.32	35.195		
2,100.00	2,074.11	2,022.81	2,007.87	8.01	7.22	-137.90	-0.66	330.96	496.16	482.14	14.02	35.394		
2,200.00	2,172.31	2,118.73	2,102.80	8.45	7.59	-138.72	2.43	344.35	523.54	508.83	14.72	35.578		
2,300.00	2,270.51	2,214.65	2,197.73	8.89	7.97	-139.47	5.52	357.74	551.01	535.60	15.41	35.749		
2,400.00	2,368.70	2,310.57	2,292.66	9.34	8.34	-140.14	8.62	371.13	578.56	562.45	16.11	35.907		
2,500.00	2,466.90	2,406.48	2,387.59	9.78	8.71	-140.75	11.71	384.51	606.18	589.36	16.81	36.054		
2,600.00	2,565.10	2,502.40	2,482.52	10.22	9.09	-141.31	14.81	397.90	633.85	616.33	17.51	36.190		
2,700.00	2,663.30	2,598.32	2,577.44	10.67	9.46	-141.83	17.90	411.29	661.57	643.36	18.22	36.318		
2,800.00	2,761.50	2,694.24	2,672.37	11.11	9.83	-142.30	20.99	424.68	689.35	670.43	18.92	36.437		
2,900.00	2,859.70	2,790.16	2,767.30	11.55	10.21	-142.73	24.09	438.07	717.16	697.53	19.62	36.548		
3,000.00	2,957.89	2,886.07	2,862.23	12.00	10.58	-143.13	27.18	451.45	745.00	724.67	20.33	36.652		
3,100.00	3,056.09	2,981.99	2,957.16	12.44	10.96	-143.51	30.28	464.84	772.88	751.85	21.03	36.750		
3,200.00	3,154.29	3,077.91	3,052.09	12.88	11.33	-143.86	33.37	478.23	800.78	779.05	21.74	36.843		
3,300.00	3,252.49	3,173.83	3,147.02	13.33	11.71	-144.18	36.47	491.62	828.72	806.27	22.44	36.929		
3,400.00	3,350.69	3,269.74	3,241.94	13.77	12.08	-144.48	39.56	505.00	856.67	833.52	23.15	37.011		
3,500.00	3,448.89	3,365.66	3,336.87	14.22	12.46	-144.77	42.65	518.39	884.64	860.79	23.85	37.089		
3,600.00	3,547.08	3,461.58	3,431.80	14.66	12.83	-145.03	45.75	531.78	912.64	888.08	24.56	37.162		
3,700.00	3,645.28	3,557.50	3,526.73	15.11	13.20	-145.28	48.84	545.17	940.65	915.38	25.26	37.232		
3,800.00	3,743.48	3,653.42	3,621.66	15.55	13.58	-145.52	51.94	558.56	968.67	942.70	25.97	37.297		
3,900.00	3,841.68	3,749.33	3,716.59	16.00	13.95	-145.74	55.03	571.94	996.71	970.04	26.68	37.360		
4,000.00	3,939.88	3,845.25	3,811.51	16.44	14.33	-145.96	58.13	585.33	1,024.77	997.38	27.39	37.419		
4,100.00	4,038.08	3,941.17	3,906.44	16.88	14.70	-146.15	61.22	598.72	1,052.83	1,024.74	28.09	37.476		
4,200.00	4,136.28	4,037.09	4,001.37	17.33	15.08	-146.34	64.31	612.11	1,080.91	1,052.11	28.80	37.530		
4,300.00	4,234.47	4,133.00	4,096.30	17.77	15.45	-146.52	67.41	625.50	1,109.00	1,079.49	29.51	37.581		
4,400.00	4,332.67	4,228.92	4,191.23	18.22	15.83	-146.69	70.50	638.88	1,137.10	1,106.88	30.22	37.630		
4,500.00	4,431.12	4,325.17	4,286.49	18.58	16.20	-147.09	73.61	652.32	1,164.09	1,133.21	30.88	37.700		
4,600.00	4,530.11	4,422.20	4,382.51	18.84	16.58	-147.38	76.74	665.86	1,188.28	1,156.80	31.48	37.746		
4,700.00	4,629.54	4,522.56	4,481.84	19.09	16.97	-147.55	79.97	679.86	1,209.59	1,177.49	32.10	37.681		
4,800.00	4,729.27	4,678.99	4,637.24	19.33	17.45	-147.59	83.98	697.18	1,225.48	1,192.53	32.96	37.185		
4,900.00	4,829.20	4,761.31	4,716.00	19.55	22.54	-105.83	-750.47	707.64	1,194.56	1,164.40	30.16	39.610		
5,000.00	4,929.20	4,861.84	4,816.00	19.79	22.54	90.00	-751.00	707.64	1,132.20	1,100.17	32.03	35.344		
5,100.00	5,029.20	4,961.84	4,916.00	20.00	22.54	90.00	-751.00	707.64	1,075.41	1,041.48	33.93	31.693		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1902
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-1902	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		Highside Toolface (°)	Offset Wellbore Centre		Distance				Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,200.00	5,129.14	6,259.96	5,606.00	20.20	22.53	92.66	-749.12	707.64	1,025.29	989.47	35.81	28.629		
5,300.00	5,227.36	6,242.01	5,606.00	20.33	22.41	96.61	-731.17	707.64	983.49	946.08	37.41	26.292		
5,400.00	5,320.35	6,205.65	5,606.00	20.37	22.17	98.19	-694.81	707.64	951.64	913.10	38.54	24.693		
5,500.00	5,404.70	6,152.22	5,606.00	20.34	21.84	97.84	-641.38	707.64	929.91	890.73	39.18	23.734		
5,600.00	5,477.30	6,083.68	5,606.00	20.27	21.45	96.17	-572.84	707.64	917.08	877.73	39.35	23.308		
5,700.00	5,535.50	6,002.54	5,606.00	20.18	21.04	93.90	-491.70	707.64	910.90	871.72	39.18	23.251 SF		
5,800.00	5,577.15	5,909.88	5,604.79	20.10	20.66	91.65	-399.07	707.64	908.77	869.92	38.85	23.391		
5,859.18	5,593.36	5,853.62	5,597.93	20.07	20.45	90.30	-343.26	707.64	908.48	869.82	38.66	23.501		
5,900.00	5,600.73	5,816.16	5,590.04	20.05	20.33	89.37	-306.64	707.64	908.61	870.09	38.52	23.587		
6,000.00	5,606.00	5,728.50	5,561.48	20.06	20.07	87.20	-223.88	707.64	910.05	871.80	38.25	23.789		
6,100.00	5,606.00	5,650.00	5,524.45	20.18	19.87	84.87	-154.74	707.64	914.00	875.89	38.11	23.981		
6,200.00	5,606.00	5,585.71	5,486.66	20.40	19.72	82.52	-102.78	707.64	922.24	884.14	38.10	24.206		
6,300.00	5,606.00	5,531.59	5,450.09	20.74	19.59	80.27	-62.92	707.64	936.18	898.00	38.18	24.518		
6,400.00	5,606.00	5,486.89	5,416.90	21.18	19.49	78.25	-33.00	707.64	956.77	918.42	38.36	24.945		
6,500.00	5,606.00	5,450.00	5,387.65	21.71	19.41	76.50	-10.53	707.64	984.47	945.88	38.60	25.507		
6,600.00	5,606.00	5,418.99	5,361.89	22.34	19.34	74.97	6.72	707.64	1,019.32	980.43	38.89	26.209		
6,700.00	5,606.00	5,400.00	5,345.62	23.04	19.30	74.02	16.52	707.64	1,061.09	1,021.85	39.24	27.040		
6,800.00	5,606.00	5,370.96	5,320.09	23.82	19.23	72.54	30.34	707.64	1,109.18	1,069.68	39.50	28.080		
6,900.00	5,606.00	5,350.00	5,301.20	24.66	19.18	71.47	39.42	707.64	1,163.14	1,123.35	39.80	29.228		
7,000.00	5,606.00	5,350.00	5,301.20	25.55	19.18	71.47	39.42	707.64	1,222.52	1,182.34	40.17	30.431		
7,100.00	5,606.00	5,321.53	5,274.98	26.50	19.11	70.00	50.52	707.64	1,286.07	1,245.73	40.34	31.880		
7,200.00	5,606.00	5,300.00	5,254.78	27.50	19.06	68.88	57.95	707.64	1,353.95	1,313.43	40.52	33.415		
7,300.00	5,606.00	5,300.00	5,254.78	28.54	19.06	68.88	57.95	707.64	1,425.17	1,384.39	40.78	34.948		
7,400.00	5,606.00	5,300.00	5,254.78	29.61	19.06	68.88	57.95	707.64	1,499.69	1,458.69	41.00	36.579		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1902
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-1902	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	149.49	-49.59	29.22	57.56					
100.00	100.00	100.00	100.00	0.13	0.13	149.49	-49.59	29.22	57.56	57.30	0.27	216.118		
200.00	200.00	200.00	200.00	0.47	0.47	149.49	-49.59	29.22	57.56	56.62	0.94	61.195		
300.00	300.00	300.00	300.00	0.81	0.81	149.49	-49.59	29.22	57.56	55.95	1.61	35.644		
400.00	399.98	400.20	400.18	1.11	1.14	-48.48	-48.49	30.58	56.15	53.90	2.25	24.982		
500.00	499.84	499.81	499.69	1.41	1.48	-57.61	-45.65	34.04	52.90	50.03	2.87	18.460		
600.00	599.45	598.98	598.75	1.73	1.81	-71.48	-42.70	37.65	49.97	46.45	3.51	14.221		
649.96	649.09	648.35	648.06	1.90	1.97	-80.22	-41.23	39.45	49.45	45.60	3.85	12.831	CC, ES	
700.00	698.70	697.66	697.32	2.07	2.14	-89.86	-39.76	41.24	50.11	45.91	4.20	11.938		
800.00	797.47	795.72	795.27	2.43	2.47	-109.58	-36.84	44.81	56.30	51.39	4.91	11.467		
900.00	895.73	893.16	892.61	2.82	2.80	-126.06	-33.94	48.36	69.48	63.86	5.62	12.370		
1,000.00	993.93	990.53	989.87	3.24	3.13	-137.02	-31.04	51.91	86.81	80.52	6.29	13.805		
1,100.00	1,092.12	1,087.90	1,087.13	3.66	3.46	-144.23	-28.15	55.45	106.23	99.28	6.95	15.293		
1,200.00	1,190.32	1,185.27	1,184.39	4.08	3.79	-149.18	-25.25	59.00	126.77	119.17	7.60	16.678		
1,300.00	1,288.52	1,282.64	1,281.65	4.51	4.12	-152.75	-22.35	62.54	147.97	139.71	8.26	17.922		
1,400.00	1,386.72	1,380.01	1,378.91	4.94	4.45	-155.41	-19.45	66.09	169.58	160.67	8.91	19.027		
1,500.00	1,484.92	1,477.38	1,476.18	5.38	4.78	-157.48	-16.55	69.63	191.47	181.89	9.57	20.004		
1,600.00	1,583.12	1,574.75	1,573.44	5.81	5.11	-159.12	-13.65	73.18	213.54	203.31	10.23	20.870		
1,700.00	1,681.32	1,672.12	1,670.70	6.25	5.44	-160.45	-10.75	76.72	235.75	224.85	10.89	21.641		
1,800.00	1,779.51	1,769.49	1,767.96	6.69	5.77	-161.55	-7.86	80.26	258.06	246.50	11.56	22.329		
1,900.00	1,877.71	1,866.86	1,865.22	7.13	6.10	-162.48	-4.96	83.81	280.45	268.22	12.22	22.947		
2,000.00	1,975.91	1,964.22	1,962.48	7.57	6.44	-163.27	-2.06	87.35	302.89	290.01	12.89	23.504		
2,100.00	2,074.11	2,061.59	2,059.74	8.01	6.77	-163.96	0.84	90.90	325.39	311.83	13.55	24.008		
2,200.00	2,172.31	2,158.96	2,157.01	8.45	7.10	-164.55	3.74	94.44	347.92	333.70	14.22	24.467		
2,300.00	2,270.51	2,256.33	2,254.27	8.89	7.43	-165.07	6.64	97.99	370.48	355.59	14.89	24.885		
2,400.00	2,368.70	2,353.70	2,351.53	9.34	7.76	-165.53	9.54	101.53	393.07	377.51	15.56	25.268		
2,500.00	2,466.90	2,451.07	2,448.79	9.78	8.09	-165.94	12.43	105.08	415.68	399.46	16.22	25.620		
2,600.00	2,565.10	2,548.44	2,546.05	10.22	8.43	-166.31	15.33	108.62	438.31	421.42	16.89	25.945		
2,700.00	2,663.30	2,645.81	2,643.31	10.67	8.76	-166.65	18.23	112.17	460.95	443.39	17.56	26.245		
2,800.00	2,761.50	2,743.18	2,740.57	11.11	9.09	-166.95	21.13	115.71	483.61	465.38	18.23	26.524		
2,900.00	2,859.70	2,840.55	2,837.84	11.55	9.42	-167.22	24.03	119.26	506.28	487.38	18.90	26.783		
3,000.00	2,957.89	2,937.92	2,935.10	12.00	9.75	-167.47	26.93	122.80	528.96	509.39	19.57	27.024		
3,100.00	3,056.09	3,035.29	3,032.36	12.44	10.09	-167.70	29.83	126.35	551.65	531.41	20.24	27.250		
3,200.00	3,154.29	3,132.65	3,129.62	12.88	10.42	-167.92	32.72	129.89	574.35	553.43	20.92	27.461		
3,300.00	3,252.49	3,230.02	3,226.88	13.33	10.75	-168.11	35.62	133.44	597.05	575.46	21.59	27.659		
3,400.00	3,350.69	3,327.39	3,324.14	13.77	11.08	-168.29	38.52	136.98	619.76	597.50	22.26	27.845		
3,500.00	3,448.89	3,424.76	3,421.40	14.22	11.41	-168.46	41.42	140.53	642.47	619.54	22.93	28.020		
3,600.00	3,547.08	3,522.13	3,518.67	14.66	11.75	-168.62	44.32	144.07	665.19	641.59	23.60	28.185		
3,700.00	3,645.28	3,619.50	3,615.93	15.11	12.08	-168.77	47.22	147.61	687.92	663.64	24.27	28.341		
3,800.00	3,743.48	3,716.87	3,713.19	15.55	12.41	-168.91	50.12	151.16	710.64	685.70	24.94	28.489		
3,900.00	3,841.68	3,814.24	3,810.45	16.00	12.74	-169.03	53.01	154.70	733.38	707.76	25.62	28.629		
4,000.00	3,939.88	3,911.61	3,907.71	16.44	13.07	-169.16	55.91	158.25	756.11	729.82	26.29	28.762		
4,100.00	4,038.08	4,008.98	4,004.97	16.88	13.40	-169.27	58.81	161.79	778.85	751.89	26.96	28.888		
4,200.00	4,136.28	4,106.35	4,102.23	17.33	13.74	-169.38	61.71	165.34	801.59	773.96	27.63	29.008		
4,300.00	4,234.47	4,203.72	4,199.50	17.77	14.07	-169.48	64.61	168.88	824.33	796.03	28.31	29.122		
4,400.00	4,332.67	4,301.08	4,296.76	18.22	14.40	-169.58	67.51	172.43	847.08	818.10	28.98	29.231		
4,500.00	4,431.12	4,398.75	4,394.32	18.58	14.73	-169.72	70.41	175.98	868.51	838.89	29.62	29.326		
4,600.00	4,530.11	4,497.10	4,492.55	18.84	15.07	-169.82	73.34	179.56	886.59	856.38	30.21	29.346		
4,700.00	4,629.54	4,596.01	4,591.35	19.09	15.41	-169.86	76.29	183.16	901.28	870.47	30.81	29.253		
4,800.00	4,729.27	4,695.36	4,690.60	19.33	15.74	-169.85	79.24	186.78	912.57	881.16	31.41	29.054		
4,900.00	4,829.20	4,795.03	4,790.16	19.55	16.08	-169.79	82.21	190.41	920.43	888.43	32.01	28.755		
5,000.00	4,929.20	4,894.90	4,889.92	19.79	16.42	25.23	85.18	194.05	925.21	892.57	32.64	28.346		

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-1902
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-1902	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	5,029.20	6,441.24	5,820.00	20.00	21.69	89.90	-750.33	200.61	886.49	866.30	20.19	43.909		
5,200.00	5,129.14	6,439.37	5,820.00	20.20	21.68	98.33	-748.46	200.61	798.61	776.51	22.10	36.138		
5,300.00	5,227.36	6,421.41	5,820.00	20.33	21.55	112.03	-730.51	200.58	715.34	691.09	24.25	29.498		
5,400.00	5,320.35	6,385.05	5,820.00	20.37	21.31	119.41	-694.14	200.51	640.43	613.86	26.57	24.106		
5,500.00	5,404.70	6,331.62	5,820.00	20.34	20.97	122.47	-640.71	200.43	577.06	548.14	28.91	19.959		
5,600.00	5,477.30	6,263.08	5,820.00	20.27	20.58	122.79	-572.17	200.31	527.24	496.18	31.06	16.974		
5,700.00	5,535.50	6,181.95	5,820.00	20.18	20.17	121.55	-491.04	200.18	491.43	458.66	32.77	14.995		
5,800.00	5,577.15	6,064.12	5,816.73	20.10	19.68	118.49	-373.34	199.98	467.67	433.67	34.00	13.755		
5,900.00	5,600.73	5,913.00	5,778.44	20.05	19.21	112.40	-227.69	199.74	444.87	409.19	35.68	12.468		
6,000.00	5,606.00	5,789.61	5,717.22	20.06	18.91	105.51	-120.90	199.56	424.08	386.94	37.14	11.418		
6,100.00	5,606.00	5,696.03	5,654.98	20.18	18.69	96.97	-51.18	199.44	407.20	369.09	38.12	10.683		
6,192.65	5,606.00	5,632.55	5,606.11	20.39	18.53	90.02	-10.73	199.38	400.88	362.33	38.55	10.398		
6,200.00	5,606.00	5,628.26	5,602.63	20.40	18.52	89.52	-8.22	199.37	400.92	362.36	38.57	10.396 SF		
6,300.00	5,606.00	5,578.48	5,560.85	20.74	18.39	83.57	18.82	199.33	410.86	372.24	38.62	10.639		
6,400.00	5,606.00	5,540.99	5,527.79	21.18	18.30	78.96	36.48	199.30	438.72	400.27	38.45	11.410		
6,500.00	5,606.00	5,512.02	5,501.43	21.71	18.22	75.38	48.47	199.28	482.94	444.72	38.22	12.636		
6,600.00	5,606.00	5,489.09	5,480.11	22.34	18.16	72.57	56.91	199.26	540.35	502.33	38.01	14.215		
6,700.00	5,606.00	5,470.56	5,462.62	23.04	18.11	70.32	63.05	199.25	607.68	569.83	37.85	16.054		
6,800.00	5,606.00	5,450.00	5,442.98	23.82	18.05	67.87	69.11	199.24	682.32	644.64	37.68	18.108		
6,900.00	5,606.00	5,450.00	5,442.98	24.66	18.05	67.87	69.11	199.24	762.28	724.56	37.72	20.209		
7,000.00	5,606.00	5,431.74	5,425.35	25.55	18.01	65.74	73.85	199.24	846.03	808.43	37.59	22.504		
7,100.00	5,606.00	5,422.47	5,416.34	26.50	17.98	64.68	76.02	199.23	932.79	895.23	37.55	24.840		
7,200.00	5,606.00	5,400.00	5,394.34	27.50	17.92	62.17	80.61	199.22	1,022.06	984.63	37.43	27.303		
7,300.00	5,606.00	5,400.00	5,394.34	28.54	17.92	62.17	80.61	199.22	1,112.57	1,075.11	37.47	29.695		
7,400.00	5,606.00	5,400.00	5,394.34	29.61	17.92	62.17	80.61	199.22	1,204.58	1,167.09	37.49	32.130		
7,500.00	5,606.00	5,400.00	5,394.34	30.72	17.92	62.17	80.61	199.22	1,297.78	1,260.26	37.51	34.596		
7,600.00	5,606.00	5,400.00	5,394.34	31.85	17.92	62.17	80.61	199.22	1,391.91	1,354.38	37.53	37.086		
7,700.00	5,606.00	5,400.00	5,394.34	33.02	17.92	62.17	80.61	199.22	1,486.82	1,449.27	37.55	39.593		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1902
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-1902	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	119.08	-49.60	89.20	102.06					
100.00	100.00	100.00	100.00	0.13	0.13	119.08	-49.60	89.20	102.06	101.80	0.27	383.193		
200.00	200.00	200.00	200.00	0.47	0.47	119.08	-49.60	89.20	102.06	101.12	0.94	108.503		
300.00	300.00	300.00	300.00	0.81	0.81	119.08	-49.60	89.20	102.06	100.45	1.61	63.199 CC, ES		
400.00	399.98	397.49	397.47	1.11	1.13	-77.40	-49.13	90.79	102.86	100.60	2.26	45.471		
500.00	499.84	494.45	494.30	1.41	1.45	-81.89	-47.71	95.52	105.73	102.79	2.94	35.957		
600.00	599.45	590.37	589.88	1.73	1.78	-88.68	-45.38	103.28	111.90	108.21	3.69	30.303		
700.00	698.70	687.83	686.78	2.07	2.11	-96.74	-42.40	113.22	121.96	117.59	4.38	27.872		
800.00	797.47	785.15	783.55	2.43	2.45	-104.81	-39.42	123.18	135.13	130.07	5.05	26.738		
900.00	895.73	881.81	879.65	2.82	2.80	-112.43	-36.45	133.08	151.76	146.01	5.74	26.435		
1,000.00	993.93	978.39	975.68	3.24	3.14	-118.72	-33.49	142.97	170.79	164.37	6.42	26.610		
1,100.00	1,092.12	1,074.97	1,071.70	3.66	3.49	-123.73	-30.53	152.86	191.45	184.36	7.09	27.001		
1,200.00	1,190.32	1,171.55	1,167.72	4.08	3.84	-127.77	-27.56	162.75	213.27	205.50	7.77	27.463		
1,300.00	1,288.52	1,268.12	1,263.75	4.51	4.19	-131.05	-24.60	172.63	235.92	227.48	8.44	27.951		
1,400.00	1,386.72	1,364.70	1,359.77	4.94	4.54	-133.76	-21.64	182.52	259.19	250.08	9.12	28.430		
1,500.00	1,484.92	1,461.28	1,455.80	5.38	4.89	-136.03	-18.67	192.41	282.93	273.13	9.79	28.885		
1,600.00	1,583.12	1,557.86	1,551.82	5.81	5.24	-137.94	-15.71	202.30	307.02	296.54	10.47	29.311		
1,700.00	1,681.32	1,654.43	1,647.85	6.25	5.60	-139.58	-12.74	212.19	331.39	320.23	11.16	29.706		
1,800.00	1,779.51	1,751.01	1,743.87	6.69	5.95	-140.99	-9.78	222.08	355.98	344.14	11.84	30.070		
1,900.00	1,877.71	1,847.59	1,839.89	7.13	6.30	-142.23	-6.82	231.97	380.75	368.23	12.52	30.406		
2,000.00	1,975.91	1,944.17	1,935.92	7.57	6.65	-143.31	-3.85	241.86	405.67	392.46	13.21	30.716		
2,100.00	2,074.11	2,040.74	2,031.94	8.01	7.01	-144.27	-0.89	251.74	430.70	416.81	13.89	31.001		
2,200.00	2,172.31	2,137.32	2,127.97	8.45	7.36	-145.12	2.07	261.63	455.84	441.26	14.58	31.265		
2,300.00	2,270.51	2,233.90	2,223.99	8.89	7.71	-145.88	5.04	271.52	481.06	465.80	15.27	31.509		
2,400.00	2,368.70	2,330.48	2,320.02	9.34	8.07	-146.57	8.00	281.41	506.36	490.40	15.96	31.735		
2,500.00	2,466.90	2,427.06	2,416.04	9.78	8.42	-147.19	10.96	291.30	531.71	515.07	16.64	31.945		
2,600.00	2,565.10	2,523.63	2,512.06	10.22	8.77	-147.76	13.93	301.19	557.12	539.79	17.33	32.140		
2,700.00	2,663.30	2,620.21	2,608.09	10.67	9.13	-148.27	16.89	311.08	582.58	564.56	18.02	32.322		
2,800.00	2,761.50	2,716.79	2,704.11	11.11	9.48	-148.75	19.85	320.97	608.08	589.36	18.71	32.492		
2,900.00	2,859.70	2,813.37	2,800.14	11.55	9.83	-149.18	22.82	330.85	633.61	614.21	19.41	32.651		
3,000.00	2,957.89	2,909.94	2,896.16	12.00	10.19	-149.58	25.78	340.74	659.18	639.08	20.10	32.800		
3,100.00	3,056.09	3,006.52	2,992.19	12.44	10.54	-149.95	28.74	350.63	684.77	663.98	20.79	32.940		
3,200.00	3,154.29	3,103.10	3,088.21	12.88	10.89	-150.30	31.71	360.52	710.39	688.91	21.48	33.072		
3,300.00	3,252.49	3,199.68	3,184.23	13.33	11.25	-150.62	34.67	370.41	736.03	713.86	22.17	33.196		
3,400.00	3,350.69	3,296.25	3,280.26	13.77	11.60	-150.92	37.63	380.30	761.69	738.82	22.86	33.313		
3,500.00	3,448.89	3,392.83	3,376.28	14.22	11.96	-151.20	40.60	390.19	787.37	763.81	23.56	33.424		
3,600.00	3,547.08	3,489.41	3,472.31	14.66	12.31	-151.46	43.56	400.08	813.06	788.81	24.25	33.528		
3,700.00	3,645.28	3,585.99	3,568.33	15.11	12.66	-151.71	46.52	409.96	838.77	813.83	24.94	33.627		
3,800.00	3,743.48	3,682.56	3,664.36	15.55	13.02	-151.94	49.49	419.85	864.49	838.86	25.64	33.722		
3,900.00	3,841.68	3,779.14	3,760.38	16.00	13.37	-152.16	52.45	429.74	890.23	863.90	26.33	33.811		
4,000.00	3,939.88	3,875.72	3,856.41	16.44	13.72	-152.36	55.41	439.63	915.98	888.95	27.02	33.896		
4,100.00	4,038.08	3,972.30	3,952.43	16.88	14.08	-152.56	58.38	449.52	941.74	914.02	27.72	33.977		
4,200.00	4,136.28	4,068.87	4,048.45	17.33	14.43	-152.74	61.34	459.41	967.50	939.09	28.41	34.054		
4,300.00	4,234.47	4,165.45	4,144.48	17.77	14.79	-152.92	64.30	469.30	993.28	964.17	29.10	34.127		
4,400.00	4,332.67	4,262.03	4,240.50	18.22	15.14	-153.08	67.27	479.18	1,019.06	989.26	29.80	34.198		
4,500.00	4,431.12	4,358.93	4,336.85	18.68	15.50	-153.41	70.24	489.11	1,043.66	1,013.22	30.45	34.275		
4,600.00	4,530.11	4,456.56	4,433.92	18.84	15.85	-153.64	73.24	499.10	1,065.25	1,034.20	31.05	34.309		
4,700.00	4,629.54	4,554.82	4,531.62	19.09	16.21	-153.75	76.25	509.16	1,083.77	1,052.12	31.65	34.241		
4,800.00	4,729.27	4,653.59	4,629.82	19.33	16.58	-153.75	79.28	519.28	1,099.21	1,066.96	32.26	34.078		
4,900.00	4,829.20	4,762.91	4,738.53	19.55	16.96	-153.63	82.59	530.31	1,111.47	1,078.56	32.92	33.767		
5,000.00	4,929.20	4,863.59	4,839.00	19.79	22.33	90.00	-751.00	543.03	1,096.09	1,068.39	27.70	39.571		
5,100.00	5,029.20	4,963.59	4,939.00	20.00	22.33	90.00	-751.00	543.03	1,024.82	995.12	29.70	34.510		

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-1902
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-1902	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			
5,200.00	5,129.14	6,371.71	5,735.00	20.20	22.32	94.07	-749.12	543.03	958.73	926.90	31.83	30.117			
5,300.00	5,227.36	6,353.76	5,735.00	20.33	22.20	100.68	-731.17	543.03	899.92	866.04	33.87	26.566			
5,400.00	5,320.35	6,317.40	5,735.00	20.37	21.95	104.24	-694.81	543.03	851.00	815.38	35.62	23.889			
5,500.00	5,404.70	6,263.97	5,735.00	20.34	21.62	105.34	-641.38	543.03	813.34	776.39	36.95	22.010			
5,600.00	5,477.30	6,195.43	5,735.00	20.27	21.22	104.70	-572.84	543.03	786.79	749.01	37.78	20.824			
5,700.00	5,535.50	6,114.29	5,735.00	20.18	20.81	103.12	-491.70	543.03	769.86	731.68	38.17	20.167			
5,800.00	5,577.15	6,009.06	5,732.78	20.10	20.36	100.87	-386.54	543.03	759.99	721.76	38.23	19.881			
5,900.00	5,600.73	5,887.43	5,707.59	20.05	19.93	97.72	-267.83	543.03	752.44	714.20	38.24	19.677			
6,000.00	5,606.00	5,780.34	5,663.16	20.06	19.63	94.39	-170.59	543.03	747.09	708.83	38.26	19.527			
6,100.00	5,606.00	5,692.31	5,612.36	20.18	19.41	90.49	-98.82	543.03	744.39	706.05	38.33	19.418			
6,109.27	5,606.00	5,685.19	5,607.74	20.20	19.39	90.13	-93.41	543.03	744.36	706.02	38.35	19.411 SF			
6,200.00	5,606.00	5,623.68	5,564.81	20.40	19.24	86.83	-49.41	543.03	747.05	708.61	38.44	19.432			
6,300.00	5,606.00	5,570.40	5,523.66	20.74	19.12	83.69	-15.61	543.03	757.52	718.94	38.58	19.634			
6,400.00	5,606.00	5,528.64	5,489.12	21.18	19.01	81.08	7.84	543.03	777.14	738.38	38.76	20.051			
6,500.00	5,606.00	5,500.00	5,464.39	21.71	18.94	79.23	22.29	543.03	806.30	767.32	38.98	20.687			
6,600.00	5,606.00	5,468.59	5,436.41	22.34	18.87	77.17	36.54	543.03	844.62	805.49	39.14	21.580			
6,700.00	5,606.00	5,450.00	5,419.46	23.04	18.82	75.94	44.18	543.03	891.42	852.05	39.37	22.644			
6,800.00	5,606.00	5,428.20	5,399.25	23.82	18.76	74.48	52.35	543.03	945.65	906.13	39.51	23.932			
6,900.00	5,606.00	5,400.00	5,372.63	24.66	18.69	72.60	61.66	543.03	1,006.51	966.93	39.58	25.429			
7,000.00	5,606.00	5,400.00	5,372.63	25.55	18.69	72.60	61.66	543.03	1,072.47	1,032.67	39.80	26.947			
7,100.00	5,606.00	5,400.00	5,372.63	26.50	18.69	72.60	61.66	543.03	1,143.38	1,103.42	39.97	28.608			
7,200.00	5,606.00	5,378.16	5,351.70	27.50	18.64	71.15	67.87	543.03	1,217.83	1,177.84	39.98	30.457			
7,300.00	5,606.00	5,369.45	5,343.28	28.54	18.61	70.57	70.11	543.03	1,295.67	1,255.62	40.05	32.348			
7,400.00	5,606.00	5,350.00	5,324.35	29.61	18.56	69.28	74.58	543.03	1,376.39	1,336.33	40.06	34.360			
7,500.00	5,606.00	5,350.00	5,324.35	30.72	18.56	69.28	74.58	543.03	1,459.11	1,418.97	40.14	36.351			
7,600.00	5,606.00	5,350.00	5,324.35	31.85	18.56	69.28	74.58	543.03	1,543.88	1,503.67	40.21	38.400			



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1902
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-1902	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	HZ	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	108.39	-49.59	149.18	157.20					
100.00	100.00	100.00	100.00	0.13	0.13	108.39	-49.59	149.18	157.20	156.94	0.27	590.224		
200.00	200.00	200.00	200.00	0.47	0.47	108.39	-49.59	149.18	157.20	156.26	0.94	167.124		
300.00	300.00	300.00	300.00	0.81	0.81	108.39	-49.59	149.18	157.20	155.59	1.61	97.344 CC, ES		
400.00	399.98	395.35	395.33	1.11	1.12	-87.38	-49.30	150.74	158.57	156.30	2.27	69.890		
500.00	499.84	490.23	490.09	1.41	1.43	-89.82	-48.41	155.38	162.90	159.94	2.96	55.028		
600.00	599.45	584.18	583.71	1.73	1.75	-93.56	-46.96	163.01	170.78	167.07	3.71	46.055		
700.00	698.70	676.76	675.67	2.07	2.08	-98.12	-44.97	173.48	183.01	178.52	4.49	40.747		
800.00	797.47	767.56	765.48	2.43	2.41	-103.00	-42.48	186.58	200.35	195.06	5.29	37.877		
900.00	895.73	861.85	858.44	2.82	2.76	-108.18	-39.52	202.14	222.22	216.26	5.96	37.287		
1,000.00	993.93	957.26	952.49	3.24	3.13	-112.72	-36.52	217.93	245.91	239.31	6.60	37.255		
1,100.00	1,092.12	1,052.68	1,046.53	3.66	3.51	-116.46	-33.52	233.73	270.84	263.58	7.25	37.335		
1,200.00	1,190.32	1,148.09	1,140.58	4.08	3.89	-119.58	-30.51	249.53	296.69	288.79	7.90	37.533		
1,300.00	1,288.52	1,243.50	1,234.63	4.51	4.27	-122.20	-27.51	265.33	323.25	314.68	8.57	37.709		
1,400.00	1,386.72	1,338.92	1,328.68	4.94	4.66	-124.43	-24.50	281.12	350.36	341.11	9.25	37.895		
1,500.00	1,484.92	1,434.33	1,422.73	5.38	5.04	-126.34	-21.50	296.92	377.89	367.96	9.92	38.076		
1,600.00	1,583.12	1,529.75	1,516.78	5.81	5.43	-128.00	-18.50	312.72	405.76	395.15	10.61	38.247		
1,700.00	1,681.32	1,625.16	1,610.83	6.25	5.82	-129.44	-15.49	328.52	433.91	422.61	11.30	38.407		
1,800.00	1,779.51	1,720.57	1,704.88	6.69	6.20	-130.71	-12.49	344.32	462.28	450.29	11.99	38.555		
1,900.00	1,877.71	1,815.99	1,798.93	7.13	6.59	-131.83	-9.48	360.11	490.84	478.16	12.69	38.692		
2,000.00	1,975.91	1,911.40	1,892.97	7.57	6.98	-132.83	-6.48	375.91	519.56	506.17	13.38	38.818		
2,100.00	2,074.11	2,006.81	1,987.02	8.01	7.37	-133.72	-3.48	391.71	548.40	534.32	14.09	38.935		
2,200.00	2,172.31	2,102.23	2,081.07	8.45	7.76	-134.53	-0.47	407.51	577.36	562.57	14.79	39.042		
2,300.00	2,270.51	2,197.64	2,175.12	8.89	8.15	-135.26	2.53	423.30	606.41	590.92	15.49	39.142		
2,400.00	2,368.70	2,293.06	2,269.17	9.34	8.54	-135.92	5.54	439.10	635.55	619.35	16.20	39.234		
2,500.00	2,466.90	2,388.47	2,363.22	9.78	8.93	-136.53	8.54	454.90	664.75	647.84	16.91	39.320		
2,600.00	2,565.10	2,483.88	2,457.27	10.22	9.33	-137.08	11.54	470.70	694.02	676.40	17.61	39.399		
2,700.00	2,663.30	2,579.30	2,551.32	10.67	9.72	-137.59	14.55	486.49	723.34	705.02	18.32	39.474		
2,800.00	2,761.50	2,674.71	2,645.37	11.11	10.11	-138.06	17.55	502.29	752.71	733.68	19.04	39.543		
2,900.00	2,859.70	2,770.12	2,739.41	11.55	10.50	-138.49	20.56	518.09	782.12	762.38	19.75	39.608		
3,000.00	2,957.89	2,865.54	2,833.46	12.00	10.89	-138.90	23.56	533.89	811.58	791.12	20.46	39.668		
3,100.00	3,056.09	2,960.95	2,927.51	12.44	11.28	-139.27	26.56	549.68	841.06	819.89	21.17	39.725		
3,200.00	3,154.29	3,056.37	3,021.56	12.88	11.68	-139.62	29.57	565.48	870.58	848.69	21.89	39.779		
3,300.00	3,252.49	3,151.78	3,115.61	13.33	12.07	-139.95	32.57	581.28	900.12	877.52	22.60	39.829		
3,400.00	3,350.69	3,247.19	3,209.66	13.77	12.46	-140.26	35.58	597.08	929.69	906.38	23.31	39.877		
3,500.00	3,448.89	3,342.61	3,303.71	14.22	12.85	-140.54	38.58	612.87	959.29	935.26	24.03	39.921		
3,600.00	3,547.08	3,438.02	3,397.76	14.66	13.24	-140.81	41.58	628.67	988.90	964.16	24.74	39.964		
3,700.00	3,645.28	3,533.43	3,491.81	15.11	13.64	-141.07	44.59	644.47	1,018.53	993.07	25.46	40.004		
3,800.00	3,743.48	3,628.85	3,585.85	15.55	14.03	-141.31	47.59	660.27	1,048.18	1,022.00	26.18	40.042		
3,900.00	3,841.68	3,724.26	3,679.90	16.00	14.42	-141.53	50.60	676.07	1,077.85	1,050.95	26.89	40.078		
4,000.00	3,939.88	3,819.67	3,773.95	16.44	14.81	-141.75	53.60	691.86	1,107.53	1,079.92	27.61	40.112		
4,100.00	4,038.08	3,915.09	3,868.00	16.88	15.21	-141.95	56.60	707.66	1,137.22	1,108.89	28.33	40.145		
4,200.00	4,136.28	4,010.50	3,962.05	17.33	15.60	-142.15	59.61	723.46	1,166.93	1,137.88	29.05	40.176		
4,300.00	4,234.47	4,105.92	4,056.10	17.77	15.99	-142.33	62.61	739.26	1,196.64	1,166.88	29.76	40.206		
4,400.00	4,332.67	4,201.33	4,150.15	18.22	16.38	-142.50	65.62	755.05	1,226.37	1,195.89	30.48	40.234		
4,500.00	4,431.12	4,297.08	4,244.53	18.58	16.78	-142.95	68.63	770.91	1,255.06	1,223.91	31.15	40.293		
4,600.00	4,530.11	4,393.63	4,339.70	18.84	17.17	-143.30	71.67	786.89	1,281.09	1,249.34	31.75	40.345		
4,700.00	4,629.54	4,490.86	4,435.53	19.09	17.57	-143.51	74.73	802.99	1,304.41	1,272.05	32.36	40.310		
4,800.00	4,729.27	4,589.86	4,533.12	19.33	17.98	-143.60	77.85	819.38	1,325.00	1,292.02	32.97	40.185		
4,900.00	4,829.20	4,757.66	4,699.27	19.55	18.48	-143.47	82.19	842.22	1,340.20	1,306.35	33.86	39.584		
5,000.00	4,929.20	4,805.82	4,734.00	19.79	23.51	90.00	-751.01	859.14	1,330.22	1,298.34	31.88	41.720		
5,100.00	5,029.20	4,905.82	4,834.00	20.00	23.51	90.00	-751.01	859.14	1,272.21	1,238.65	33.56	37.905		

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-1902
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-1902	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	HZ	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design Sec 30-T10N-R57W - Horsetail #30E-3137 Dropped - HZ - APD												Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
5,200.00	5,129.14	6,403.94	5,734.00	20.20	23.50	92.89	-749.13	859.14	1,219.69	1,184.44	35.24	34.607	
5,300.00	5,227.36	6,385.99	5,734.00	20.33	23.39	97.56	-731.18	859.14	1,174.11	1,137.42	36.70	31.994	
5,400.00	5,320.35	6,349.63	5,734.00	20.37	23.16	100.11	-694.82	859.14	1,137.16	1,099.36	37.80	30.086	
5,500.00	5,404.70	6,296.20	5,734.00	20.34	22.85	100.89	-641.39	859.14	1,109.36	1,070.88	38.48	28.828	
5,600.00	5,477.30	6,227.66	5,734.00	20.27	22.48	100.41	-572.85	859.14	1,090.16	1,051.35	38.81	28.093	
5,700.00	5,535.50	6,146.52	5,734.00	20.18	22.10	99.26	-491.71	859.14	1,078.10	1,039.27	38.83	27.765	
5,800.00	5,577.15	6,041.02	5,731.66	20.10	21.69	97.62	-386.28	859.14	1,071.16	1,032.51	38.65	27.718	
5,900.00	5,600.73	5,919.87	5,706.34	20.05	21.31	95.38	-268.09	859.14	1,065.90	1,027.43	38.47	27.704	
6,000.00	5,606.00	5,813.16	5,661.96	20.06	21.05	93.02	-171.25	859.14	1,062.24	1,023.87	38.37	27.682	
6,100.00	5,606.00	5,725.41	5,611.30	20.18	20.85	90.29	-99.73	859.14	1,060.48	1,022.08	38.41	27.613	
6,105.57	5,606.00	5,721.12	5,608.52	20.19	20.84	90.14	-96.47	859.14	1,060.47	1,022.06	38.41	27.607	
6,200.00	5,606.00	5,656.96	5,563.87	20.40	20.70	87.72	-50.45	859.15	1,062.51	1,023.95	38.55	27.560 SF	
6,300.00	5,606.00	5,600.00	5,519.75	20.74	20.58	85.35	-14.46	859.15	1,070.06	1,031.28	38.79	27.588	
6,400.00	5,606.00	5,562.08	5,488.31	21.18	20.50	83.67	6.73	859.15	1,084.19	1,045.06	39.13	27.704	
6,500.00	5,606.00	5,528.90	5,459.60	21.71	20.42	82.14	23.35	859.15	1,105.42	1,065.90	39.53	27.966	
6,600.00	5,606.00	5,500.00	5,433.78	22.34	20.36	80.78	36.32	859.15	1,133.85	1,093.89	39.96	28.372	
6,700.00	5,606.00	5,480.04	5,415.54	23.04	20.31	79.82	44.43	859.15	1,169.26	1,128.84	40.43	28.924	
6,800.00	5,606.00	5,450.00	5,387.55	23.82	20.25	78.36	55.30	859.15	1,211.39	1,170.56	40.82	29.674	
6,900.00	5,606.00	5,450.00	5,387.55	24.66	20.25	78.36	55.30	859.15	1,259.36	1,218.04	41.32	30.477	
7,000.00	5,606.00	5,432.97	5,371.41	25.55	20.21	77.53	60.75	859.15	1,312.94	1,271.24	41.70	31.488	
7,100.00	5,606.00	5,421.56	5,360.50	26.50	20.18	76.97	64.10	859.15	1,371.46	1,329.41	42.05	32.613	
7,200.00	5,606.00	5,400.00	5,339.70	27.50	20.13	75.91	69.77	859.15	1,434.49	1,392.17	42.32	33.893	
7,300.00	5,606.00	5,400.00	5,339.70	28.54	20.13	75.91	69.77	859.15	1,501.14	1,458.50	42.64	35.205	



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1902
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-1902	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	HZ	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	105.47	-49.60	179.17	185.91					
100.00	100.00	100.00	100.00	0.13	0.13	105.47	-49.60	179.17	185.91	185.64	0.27	697.980		
200.00	200.00	200.00	200.00	0.47	0.47	105.47	-49.60	179.17	185.91	184.97	0.94	197.636		
300.00	300.00	300.00	300.00	0.81	0.81	105.47	-49.60	179.17	185.91	184.29	1.61	115.116 CC, ES		
400.00	399.98	394.28	394.27	1.11	1.11	-90.09	-49.40	180.70	187.42	185.15	2.27	82.610		
500.00	499.84	488.13	487.99	1.41	1.42	-91.99	-48.81	185.29	192.12	189.16	2.96	64.869		
600.00	599.45	581.09	580.64	1.73	1.74	-94.90	-47.84	192.83	200.45	196.74	3.71	54.077		
700.00	698.70	672.78	671.73	2.07	2.06	-98.50	-46.50	203.19	212.98	208.50	4.48	47.522		
800.00	797.47	762.79	760.78	2.43	2.38	-102.44	-44.82	216.16	230.32	225.05	5.27	43.701		
900.00	895.73	850.89	847.51	2.82	2.72	-106.54	-42.84	231.54	252.75	246.69	6.05	41.750		
1,000.00	993.93	937.48	932.23	3.24	3.08	-110.18	-40.56	249.22	279.57	272.76	6.81	41.063		
1,100.00	1,092.12	1,022.50	1,014.87	3.66	3.44	-113.16	-38.00	269.05	310.27	302.74	7.53	41.187		
1,200.00	1,190.32	1,114.73	1,104.11	4.08	3.86	-115.82	-35.01	292.14	343.41	335.25	8.15	42.122		
1,300.00	1,288.52	1,207.94	1,194.30	4.51	4.29	-118.04	-32.00	315.48	377.13	368.36	8.76	43.034		
1,400.00	1,386.72	1,301.15	1,284.48	4.94	4.73	-119.90	-28.98	338.83	411.27	401.87	9.40	43.753		
1,500.00	1,484.92	1,394.35	1,374.66	5.38	5.18	-121.47	-25.97	362.18	445.75	435.70	10.05	44.354		
1,600.00	1,583.12	1,487.56	1,464.85	5.81	5.62	-122.83	-22.95	385.53	480.48	469.77	10.71	44.857		
1,700.00	1,681.32	1,580.76	1,555.03	6.25	6.07	-124.00	-19.94	408.88	515.42	504.04	11.38	45.277		
1,800.00	1,779.51	1,673.97	1,645.21	6.69	6.52	-125.02	-16.92	432.22	550.53	538.46	12.06	45.630		
1,900.00	1,877.71	1,767.17	1,735.40	7.13	6.98	-125.92	-13.91	455.57	585.77	573.02	12.75	45.930		
2,000.00	1,975.91	1,860.38	1,825.58	7.57	7.43	-126.72	-10.89	478.92	621.13	607.68	13.45	46.185		
2,100.00	2,074.11	1,953.59	1,915.77	8.01	7.89	-127.44	-7.88	502.27	656.58	642.43	14.15	46.404		
2,200.00	2,172.31	2,046.79	2,005.95	8.45	8.35	-128.08	-4.86	525.61	692.11	677.26	14.85	46.593		
2,300.00	2,270.51	2,140.00	2,096.13	8.89	8.81	-128.66	-1.85	548.96	727.72	712.15	15.56	46.757		
2,400.00	2,368.70	2,233.20	2,186.32	9.34	9.26	-129.19	1.17	572.31	763.38	747.10	16.28	46.900		
2,500.00	2,466.90	2,326.41	2,276.50	9.78	9.72	-129.66	4.18	595.66	799.09	782.10	16.99	47.026		
2,600.00	2,565.10	2,419.61	2,366.68	10.22	10.18	-130.10	7.20	619.01	834.85	817.14	17.71	47.136		
2,700.00	2,663.30	2,512.82	2,456.87	10.67	10.64	-130.50	10.21	642.35	870.64	852.21	18.43	47.234		
2,800.00	2,761.50	2,606.03	2,547.05	11.11	11.10	-130.87	13.23	665.70	906.48	887.32	19.16	47.321		
2,900.00	2,859.70	2,699.23	2,637.23	11.55	11.57	-131.22	16.24	689.05	942.34	922.46	19.88	47.399		
3,000.00	2,957.89	2,792.44	2,727.42	12.00	12.03	-131.53	19.26	712.40	978.23	957.62	20.61	47.468		
3,100.00	3,056.09	2,885.64	2,817.60	12.44	12.49	-131.83	22.27	735.74	1,014.14	992.80	21.34	47.531		
3,200.00	3,154.29	2,978.85	2,907.79	12.88	12.95	-132.10	25.29	759.09	1,050.07	1,028.01	22.07	47.587		
3,300.00	3,252.49	3,072.05	2,997.97	13.33	13.41	-132.36	28.30	782.44	1,086.03	1,063.23	22.80	47.638		
3,400.00	3,350.69	3,165.26	3,088.15	13.77	13.88	-132.60	31.32	805.79	1,122.00	1,098.47	23.53	47.684		
3,500.00	3,448.89	3,258.47	3,178.34	14.22	14.34	-132.83	34.33	829.14	1,157.99	1,133.73	24.26	47.726		
3,600.00	3,547.08	3,351.67	3,268.52	14.66	14.80	-133.04	37.35	852.48	1,193.99	1,169.00	25.00	47.764		
3,700.00	3,645.28	3,444.88	3,358.70	15.11	15.26	-133.24	40.36	875.83	1,230.01	1,204.28	25.73	47.799		
3,800.00	3,743.48	3,538.08	3,448.89	15.55	15.73	-133.42	43.38	899.18	1,266.04	1,239.57	26.47	47.831		
3,900.00	3,841.68	3,631.29	3,539.07	16.00	16.19	-133.60	46.39	922.53	1,302.08	1,274.87	27.21	47.861		
4,000.00	3,939.88	3,724.49	3,629.26	16.44	16.65	-133.77	49.41	945.87	1,338.13	1,310.19	27.94	47.888		
4,100.00	4,038.08	3,817.70	3,719.44	16.88	17.12	-133.93	52.42	969.22	1,374.19	1,345.51	28.68	47.913		
4,200.00	4,136.28	3,910.91	3,809.62	17.33	17.58	-134.08	55.44	992.57	1,410.26	1,380.84	29.42	47.936		
4,300.00	4,234.47	4,004.11	3,899.81	17.77	18.04	-134.22	58.45	1,015.92	1,446.34	1,416.18	30.16	47.957		
4,400.00	4,332.67	4,097.32	3,989.99	18.22	18.51	-134.36	61.47	1,039.27	1,482.42	1,451.52	30.90	47.976		
4,500.00	4,431.12	4,190.89	4,080.53	18.58	18.97	-134.92	64.49	1,062.71	1,517.61	1,486.02	31.58	48.053		
5,200.00	5,129.14	6,472.49	5,735.00	20.20	25.77	92.34	-752.38	1,207.24	1,532.12	1,494.99	37.13	41.260		
5,300.00	5,227.36	6,454.53	5,735.00	20.33	25.67	95.87	-734.42	1,207.28	1,496.08	1,457.89	38.19	39.176		
5,400.00	5,320.35	6,418.17	5,735.00	20.37	25.47	97.80	-698.06	1,207.36	1,467.29	1,428.39	38.90	37.721		
5,500.00	5,404.70	6,364.74	5,735.00	20.34	25.20	98.39	-644.63	1,207.48	1,445.94	1,406.67	39.27	36.817		
5,600.00	5,477.30	6,296.20	5,735.00	20.27	24.90	98.01	-576.09	1,207.64	1,431.40	1,392.05	39.34	36.383		
5,700.00	5,535.50	6,215.07	5,735.00	20.18	24.58	97.11	-494.96	1,207.83	1,422.42	1,383.21	39.21	36.274		

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-1902
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-1902	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	
5,800.00	5,577.15	6,109.95	5,732.81	20.10	24.24	95.85	-389.91	1,208.07	1,417.40	1,378.45	38.95	36.390	
5,900.00	5,600.73	5,988.27	5,707.69	20.05	23.92	94.12	-271.13	1,208.35	1,413.69	1,374.98	38.71	36.518	
6,000.00	5,606.00	5,881.11	5,663.29	20.06	23.70	92.33	-173.81	1,208.57	1,411.17	1,372.60	38.57	36.584	
6,098.40	5,606.00	5,794.27	5,613.30	20.18	23.54	90.30	-102.93	1,208.74	1,410.07	1,371.47	38.60	36.534	
6,100.00	5,606.00	5,793.03	5,612.50	20.18	23.54	90.26	-101.97	1,208.74	1,410.07	1,371.47	38.60	36.533	
6,200.00	5,606.00	5,724.35	5,564.93	20.40	23.41	88.33	-52.51	1,208.85	1,411.79	1,373.02	38.77	36.411	
6,300.00	5,606.00	5,671.04	5,523.76	20.74	23.32	86.66	-18.68	1,208.93	1,417.67	1,378.59	39.09	36.271	
6,400.00	5,606.00	5,629.25	5,489.20	21.18	23.24	85.27	4.79	1,208.98	1,428.56	1,389.06	39.50	36.164	
6,500.00	5,606.00	5,600.00	5,463.94	21.71	23.19	84.25	19.54	1,209.02	1,444.93	1,404.89	40.05	36.082 SF	
6,600.00	5,606.00	5,569.17	5,436.46	22.34	23.13	83.15	33.52	1,209.05	1,466.96	1,426.33	40.63	36.102	
6,700.00	5,606.00	5,550.00	5,418.99	23.04	23.09	82.45	41.39	1,209.07	1,494.69	1,453.39	41.29	36.196	
6,800.00	5,606.00	5,528.76	5,399.29	23.82	23.05	81.66	49.34	1,209.09	1,527.94	1,485.98	41.96	36.416	



WOG

Anticollision Report

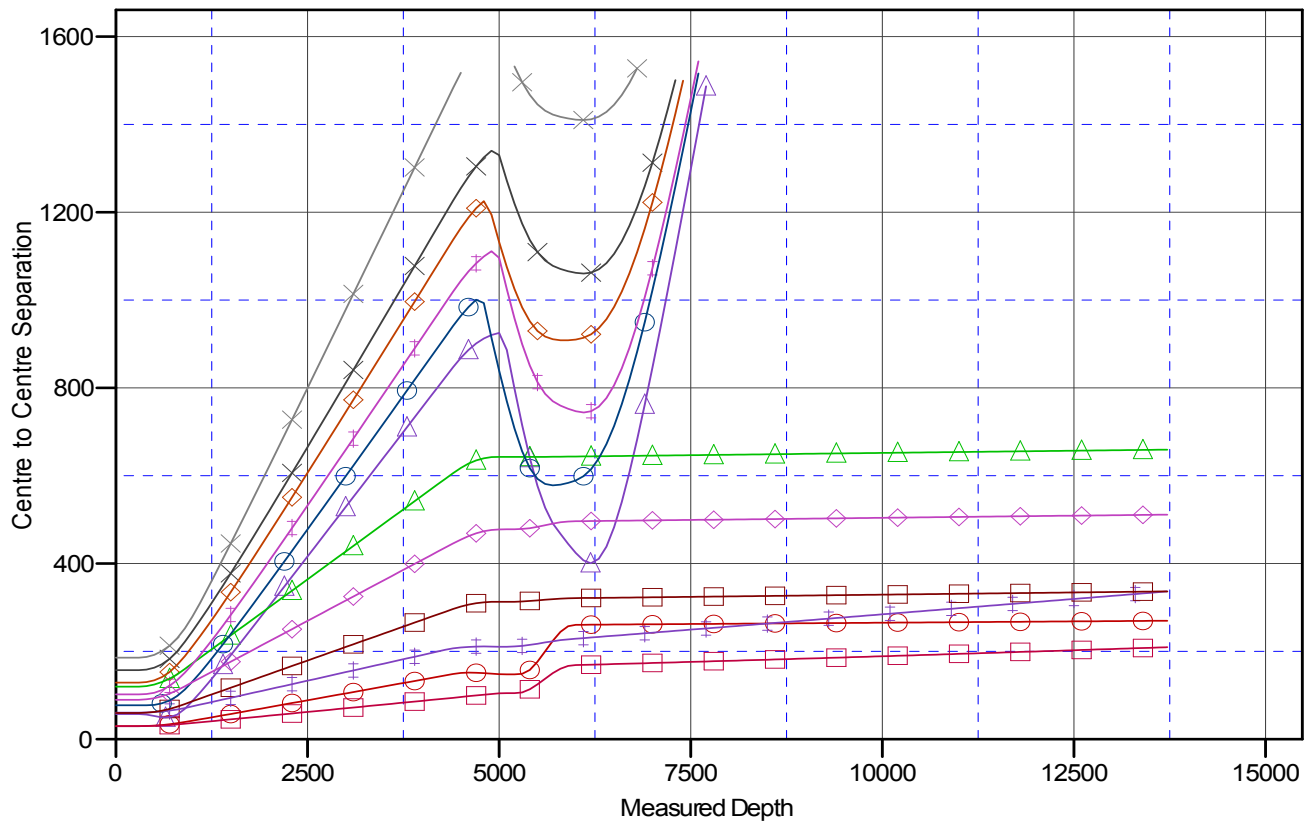
Company: Whiting Petroleum Corp.
Project: Weld County, CO
Reference Site: Sec 30-T10N-R57W
Site Error: 0.00 usft
Reference Well: Horsetail #30E-1902
Well Error: 0.00 usft
Reference Wellbore: Hz
Reference Design: APD

Local Co-ordinate Reference: Well Horsetail #30E-1902
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-1902
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-3138, Hz, APDV0 | ▣ Horsetail #30E-1903, Hz, APDV0 |
| ◇ Horsetail #30E-3104, Hz, APDV0 | △ Horsetail #30E-1904, Hz, APDV0 | ▢ Horsetail #30E-1934, Hz, APDV0 |
| ✕ Horsetail #30E-3137 Dropped, Hz, APDV0 | ✦ Horsetail #30E-3136, Hz, APDV0 | ● Horsetail #30E-3103, Hz, APDV0 |
| △ Horsetail #30E-3135, Hz, APDV0 | ✦ Horsetail #30E-1901, Hz, APDV0 | ◇ Horsetail #30E-1936, Hz, APDV0 |



WOG
Anticollision Report

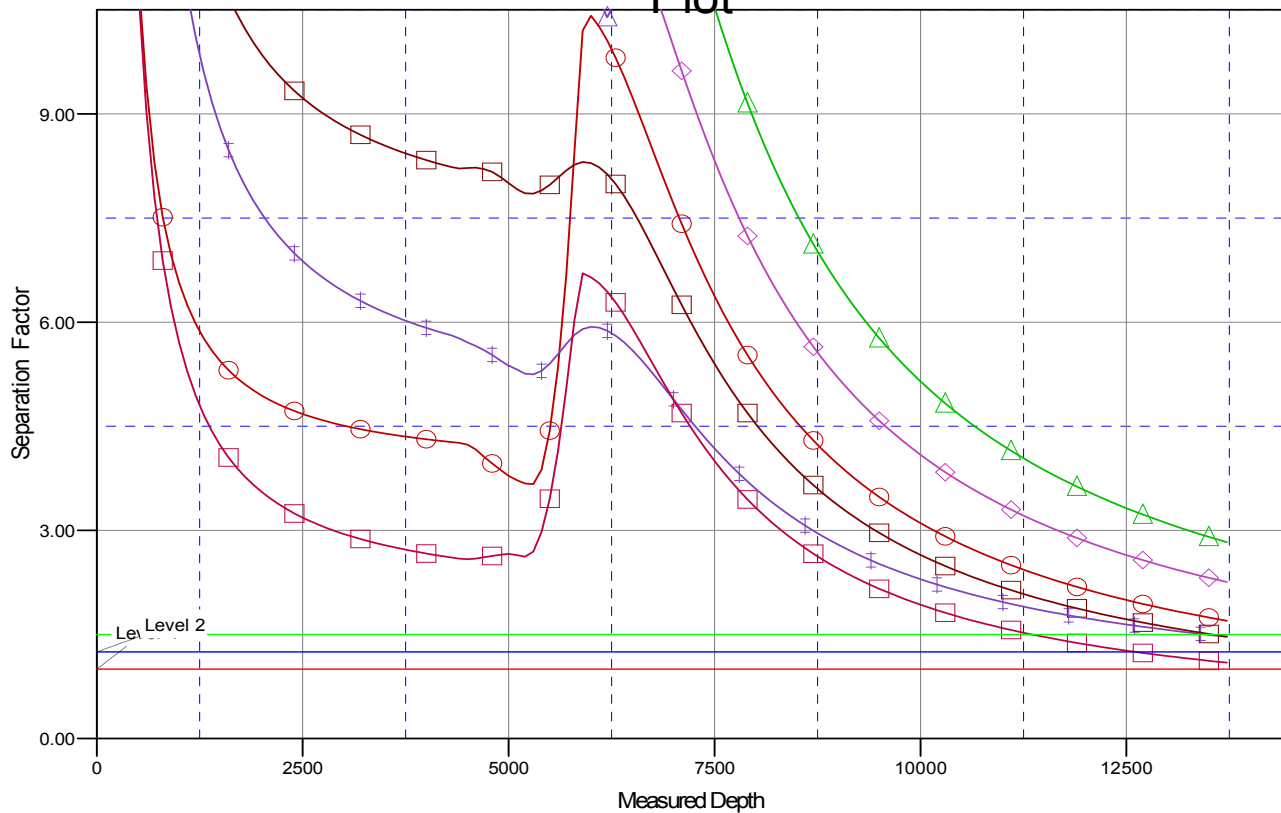
Company: Whiting Petroleum Corp.
Project: Weld County, CO
Reference Site: Sec 30-T10N-R57W
Site Error: 0.00 usft
Reference Well: Horsetail #30E-1902
Well Error: 0.00 usft
Reference Wellbore: Hz
Reference Design: APD

Local Co-ordinate Reference: Well Horsetail #30E-1902
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-1902
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-3138, Hz, APDV0 | ■ Horsetail #30E-1903, Hz, APDV0 |
| ◇ Horsetail #30E-3104, Hz, APDV0 | △ Horsetail #30E-1904, Hz, APDV0 | ▣ Horsetail #30E-1934, Hz, APDV0 |
| ✕ Horsetail #30E-3137 Dropped, Hz, APDV0 | ✱ Horsetail #30E-3136, Hz, APDV0 | ● Horsetail #30E-3103, Hz, APDV0 |
| △ Horsetail #30E-3135, Hz, APDV0 | ✱ Horsetail #30E-1901, Hz, APDV0 | ◇ Horsetail #30E-1936, Hz, APDV0 |