



Whiting Petroleum Corp.

Weld County, CO

Sec 30-T10N-R57W

Horsetail #30E-1901

Hz

APD

Anticollision Report

22 October, 2015



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1901
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-1901	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	13,662.16	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-1902 - Hz - APD	200.00	200.00	60.75	59.81	64.580	CC
Horsetail #30E-1902 - Hz - APD	400.00	400.55	61.03	58.81	27.506	ES
Horsetail #30E-1902 - Hz - APD	13,662.16	13,719.41	336.72	107.38	1.468	Level 3, SF
Horsetail #30E-1903 - Hz - APD	300.00	300.00	120.73	119.11	74.755	CC, ES
Horsetail #30E-1903 - Hz - APD	13,662.16	13,649.74	659.56	426.27	2.827	SF
Horsetail #30E-1904 - Hz - APD	300.00	300.00	180.70	179.09	111.895	CC, ES
Horsetail #30E-1904 - Hz - APD	13,662.16	13,731.31	991.67	759.06	4.263	SF
Horsetail #30E-1934 - Hz - APD	300.00	300.00	30.76	29.14	19.046	CC
Horsetail #30E-1934 - Hz - APD	500.00	500.74	31.30	28.48	11.109	ES
Horsetail #30E-1934 - Hz - APD	13,662.16	13,851.04	256.66	91.27	1.552	SF
Horsetail #30E-1935 - Hz - APD	300.00	300.00	90.74	89.12	56.185	CC
Horsetail #30E-1935 - Hz - APD	400.00	400.34	91.28	89.07	41.225	ES
Horsetail #30E-1935 - Hz - APD	13,662.16	13,925.28	569.07	361.21	2.738	SF
Horsetail #30E-1936 - Hz - APD	300.00	300.00	150.71	149.10	93.325	CC, ES
Horsetail #30E-1936 - Hz - APD	13,662.16	13,848.49	848.03	620.09	3.720	SF
Horsetail #30E-3103 - Hz - APD	300.00	300.00	129.80	128.19	80.376	CC, ES
Horsetail #30E-3103 - Hz - APD	5,600.00	5,943.82	797.60	758.70	20.502	SF
Horsetail #30E-3104 - Hz - APD	300.00	300.00	186.65	185.03	115.575	CC, ES
Horsetail #30E-3104 - Hz - APD	5,600.00	6,038.09	1,133.65	1,094.72	29.120	SF
Horsetail #30E-3135 - Hz - APD	300.00	300.00	102.73	101.11	63.612	CC
Horsetail #30E-3135 - Hz - APD	400.00	398.57	103.31	101.06	45.903	ES
Horsetail #30E-3135 - Hz - APD	6,200.00	5,542.23	623.56	585.23	16.266	SF
Horsetail #30E-3136 - Hz - APD	300.00	300.00	157.94	156.32	97.797	CC, ES
Horsetail #30E-3136 - Hz - APD	6,200.00	5,544.18	969.14	930.93	25.362	SF
Horsetail #30E-3138 - Hz - APD	300.00	300.00	244.99	243.37	151.700	CC, ES
Horsetail #30E-3138 - Hz - APD	1,100.00	1,004.63	385.13	377.67	51.669	SF

Offset Design	Sec 30-T10N-R57W - Horsetail #30E-1902 - Hz - APD											Offset Site Error:	0.00 usft
Survey Program:	0-MWD+IFR1+MS+sag											Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance		Minimum Separation		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)	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	

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



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Reference Site:	Sec 30-T10N-R57W	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Horsetail #30E-1901	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
200.00	200.00	200.00	200.00	0.47	0.47	90.00	0.00	60.75	60.75	59.81	0.94	64.580	CC	
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		
400.00	399.98	400.55	400.53	1.11	1.11	-114.91	-1.70	60.29	61.03	58.81	2.22	27.506	ES	
500.00	499.84	501.09	500.92	1.41	1.41	-114.57	-6.81	58.93	61.89	59.09	2.81	22.043		
600.00	599.45	601.62	601.06	1.74	1.74	-114.04	-15.32	56.67	63.33	59.88	3.45	18.341		
700.00	698.70	702.13	700.81	2.07	2.07	-113.33	-27.22	53.50	65.35	61.20	4.15	15.761		
800.00	797.47	802.61	800.04	2.44	2.44	-112.48	-42.49	49.43	67.95	63.06	4.89	13.899		
900.00	895.62	902.77	898.45	2.84	2.84	-112.00	-60.49	44.64	71.27	65.59	5.68	12.553		
1,000.00	993.47	1,002.69	996.57	3.26	3.25	-112.53	-78.73	39.78	75.13	68.63	6.49	11.570		
1,100.00	1,091.31	1,102.61	1,094.69	3.69	3.67	-113.01	-96.98	34.92	78.99	71.67	7.33	10.784		
1,200.00	1,189.15	1,202.54	1,192.81	4.13	4.09	-113.44	-115.23	30.06	82.86	74.70	8.17	10.145		
1,300.00	1,286.99	1,302.46	1,290.94	4.58	4.52	-113.84	-133.47	25.20	86.74	77.72	9.02	9.619		
1,400.00	1,384.83	1,402.38	1,389.06	5.02	4.95	-114.20	-151.72	20.34	90.62	80.75	9.87	9.179		
1,500.00	1,482.67	1,502.31	1,487.18	5.47	5.39	-114.53	-169.96	15.48	94.50	83.77	10.73	8.806		
1,600.00	1,580.51	1,602.23	1,585.31	5.92	5.82	-114.84	-188.21	10.62	98.39	86.80	11.59	8.487		
1,700.00	1,678.35	1,702.15	1,683.43	6.38	6.26	-115.12	-206.46	5.77	102.28	89.82	12.46	8.210		
1,800.00	1,776.20	1,802.08	1,781.55	6.83	6.70	-115.39	-224.70	0.91	106.17	92.85	13.32	7.969		
1,900.00	1,874.04	1,902.00	1,879.68	7.29	7.14	-115.63	-242.95	-3.95	110.06	95.87	14.19	7.757		
2,000.00	1,971.88	2,001.92	1,977.80	7.75	7.58	-115.86	-261.19	-8.81	113.96	98.90	15.06	7.568		
2,100.00	2,069.72	2,101.85	2,075.92	8.20	8.02	-116.07	-279.44	-13.67	117.85	101.93	15.93	7.400		
2,200.00	2,167.56	2,201.77	2,174.04	8.66	8.46	-116.27	-297.68	-18.53	121.75	104.96	16.79	7.250		
2,300.00	2,265.40	2,301.69	2,272.17	9.12	8.90	-116.45	-315.93	-23.39	125.65	107.99	17.66	7.114		
2,400.00	2,363.24	2,401.62	2,370.29	9.58	9.34	-116.63	-334.18	-28.25	129.55	111.02	18.53	6.990		
2,500.00	2,461.09	2,501.54	2,468.41	10.04	9.79	-116.79	-352.42	-33.11	133.45	114.05	19.40	6.878		
2,600.00	2,558.93	2,601.46	2,566.54	10.50	10.23	-116.95	-370.67	-37.97	137.35	117.08	20.27	6.775		
2,700.00	2,656.77	2,701.38	2,664.66	10.96	10.67	-117.10	-388.91	-42.83	141.26	120.11	21.14	6.681		
2,800.00	2,754.61	2,801.31	2,762.78	11.42	11.11	-117.23	-407.16	-47.68	145.16	123.15	22.01	6.594		
2,900.00	2,852.45	2,901.23	2,860.90	11.88	11.56	-117.37	-425.41	-52.54	149.07	126.18	22.89	6.514		
3,000.00	2,950.29	3,001.15	2,959.03	12.34	12.00	-117.49	-443.65	-57.40	152.97	129.22	23.76	6.439		
3,100.00	3,048.13	3,101.08	3,057.15	12.80	12.44	-117.61	-461.90	-62.26	156.88	132.25	24.63	6.370		
3,200.00	3,145.98	3,201.00	3,155.27	13.26	12.89	-117.72	-480.14	-67.12	160.79	135.29	25.50	6.306		
3,300.00	3,243.82	3,300.92	3,253.40	13.72	13.33	-117.83	-498.39	-71.98	164.70	138.33	26.37	6.246		
3,400.00	3,341.66	3,400.85	3,351.52	14.18	13.78	-117.93	-516.64	-76.84	168.60	141.36	27.24	6.189		
3,500.00	3,439.50	3,500.77	3,449.64	14.65	14.22	-118.03	-534.88	-81.70	172.51	144.40	28.11	6.137		
3,600.00	3,537.34	3,600.69	3,547.77	15.11	14.66	-118.12	-553.13	-86.56	176.42	147.44	28.98	6.087		
3,700.00	3,635.18	3,700.62	3,645.89	15.57	15.11	-118.21	-571.37	-91.42	180.33	150.48	29.85	6.041		
3,800.00	3,733.02	3,800.54	3,744.01	16.03	15.55	-118.30	-589.62	-96.27	184.24	153.52	30.73	5.997		
3,900.00	3,830.87	3,900.46	3,842.13	16.49	16.00	-118.38	-607.86	-101.13	188.15	156.56	31.60	5.955		
4,000.00	3,928.71	4,000.39	3,940.26	16.95	16.44	-118.46	-626.11	-105.99	192.07	159.60	32.47	5.916		
4,100.00	4,026.55	4,100.31	4,038.38	17.42	16.89	-118.54	-644.36	-110.85	195.98	162.64	33.34	5.878		
4,200.00	4,124.39	4,200.23	4,136.50	17.88	17.33	-118.61	-662.60	-115.71	199.89	165.68	34.21	5.843		
4,299.99	4,222.22	4,300.15	4,234.62	18.34	17.78	-118.68	-680.85	-120.57	203.80	168.72	35.08	5.810		
4,400.00	4,320.39	4,400.09	4,332.76	18.71	18.22	-118.40	-699.10	-125.43	206.93	171.02	35.90	5.764		
4,500.00	4,419.16	4,498.08	4,429.22	18.98	18.58	-117.63	-715.74	-129.86	208.84	172.26	36.58	5.710		
4,600.00	4,518.42	4,595.91	4,526.06	19.23	18.83	-116.91	-729.18	-133.44	210.21	173.07	37.14	5.660		
4,700.00	4,618.03	4,693.83	4,623.39	19.47	19.08	-116.22	-739.43	-136.17	211.02	173.35	37.67	5.602		
4,800.00	4,717.89	4,791.83	4,721.12	19.69	19.31	-115.57	-746.46	-138.04	211.27	173.10	38.17	5.536		
4,899.99	4,817.86	4,889.90	4,819.11	19.93	19.52	90.07	-750.26	-139.06	210.95	172.28	38.67	5.456		
5,000.00	4,917.87	4,988.68	4,917.87	20.17	19.76	90.27	-751.00	-139.25	210.75	171.59	39.16	5.382		
5,066.37	4,984.24	5,055.05	4,984.24	20.31	19.90	91.22	-751.00	-139.25	210.75	171.31	39.44	5.343		
5,099.99	5,017.86	5,088.67	5,017.86	20.38	19.97	91.21	-751.00	-139.25	210.75	171.17	39.58	5.324		
5,200.00	5,117.24	5,188.71	5,117.88	20.54	20.18	93.54	-749.96	-139.25	211.13	171.01	40.12	5.263		

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Reference Well:	Horsetail #30E-1901	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		
5,300.00	5,212.93	5,291.15	5,218.83	20.62	20.32	96.92	-733.51	-139.29	212.54	172.01	40.53	5.244		
5,400.00	5,301.43	5,396.29	5,317.04	20.61	20.37	100.02	-696.47	-139.36	214.84	174.22	40.62	5.289		
5,500.00	5,379.47	5,504.10	5,407.93	20.54	20.34	102.71	-638.85	-139.48	217.75	177.37	40.38	5.392		
5,600.00	5,444.21	5,614.40	5,486.63	20.44	20.26	104.85	-561.87	-139.64	220.92	181.06	39.86	5.542		
5,700.00	5,493.25	5,726.81	5,548.37	20.31	20.15	106.38	-468.18	-139.83	223.95	184.72	39.23	5.708		
5,800.00	5,524.80	5,840.79	5,589.02	20.19	20.07	107.22	-361.94	-140.04	226.51	187.79	38.72	5.850		
5,900.00	5,537.71	5,955.63	5,605.67	20.10	20.05	107.36	-248.56	-140.27	228.36	189.82	38.54	5.926		
6,000.00	5,538.00	6,058.04	5,606.00	20.09	20.13	107.22	-146.15	-140.48	229.73	190.97	38.76	5.927		
6,100.00	5,538.00	6,158.03	5,606.00	20.18	20.31	107.11	-46.16	-140.68	231.11	191.91	39.20	5.895		
6,200.00	5,538.00	6,258.02	5,606.00	20.39	20.60	107.01	53.83	-140.89	232.48	192.64	39.84	5.835		
6,300.00	5,538.00	6,358.01	5,606.00	20.74	20.99	106.91	153.82	-141.09	233.86	193.20	40.67	5.751		
6,400.00	5,538.00	6,458.00	5,606.00	21.21	21.49	106.80	253.81	-141.29	235.24	193.57	41.67	5.645		
6,500.00	5,538.00	6,557.99	5,606.00	21.79	22.07	106.70	353.80	-141.50	236.62	193.78	42.84	5.524		
6,600.00	5,538.00	6,657.98	5,606.00	22.46	22.74	106.60	453.79	-141.70	238.00	193.84	44.16	5.390		
6,700.00	5,538.00	6,757.97	5,606.00	23.21	23.49	106.50	553.78	-141.90	239.38	193.76	45.62	5.247		
6,800.00	5,538.00	6,857.96	5,606.00	24.03	24.30	106.41	653.77	-142.11	240.76	193.55	47.21	5.100		
6,900.00	5,538.00	6,957.95	5,606.00	24.91	25.18	106.31	753.76	-142.31	242.14	193.23	48.92	4.950		
7,000.00	5,538.00	7,057.94	5,606.00	25.85	26.10	106.22	853.75	-142.51	243.53	192.80	50.73	4.801		
7,100.00	5,538.00	7,157.93	5,606.00	26.84	27.08	106.12	953.74	-142.72	244.91	192.28	52.63	4.653		
7,200.00	5,538.00	7,257.91	5,606.00	27.87	28.10	106.03	1,053.73	-142.92	246.29	191.68	54.62	4.509		
7,300.00	5,538.00	7,357.90	5,606.00	28.93	29.16	105.94	1,153.72	-143.12	247.68	191.00	56.68	4.370		
7,400.00	5,538.00	7,457.89	5,606.00	30.04	30.25	105.85	1,253.70	-143.32	249.06	190.25	58.81	4.235		
7,500.00	5,538.00	7,557.88	5,606.00	31.17	31.37	105.76	1,353.69	-143.53	250.45	189.44	61.00	4.105		
7,600.00	5,538.00	7,657.87	5,606.00	32.33	32.53	105.67	1,453.68	-143.73	251.83	188.58	63.25	3.981		
7,700.00	5,538.00	7,757.86	5,606.00	33.51	33.70	105.58	1,553.67	-143.93	253.22	187.67	65.55	3.863		
7,800.00	5,538.00	7,857.85	5,606.00	34.72	34.90	105.49	1,653.66	-144.14	254.61	186.72	67.89	3.750		
7,900.00	5,538.00	7,957.84	5,606.00	35.95	36.12	105.41	1,753.65	-144.34	256.00	185.72	70.27	3.643		
8,000.00	5,538.00	8,057.83	5,606.00	37.19	37.36	105.32	1,853.64	-144.54	257.38	184.69	72.69	3.541		
8,100.00	5,538.00	8,157.82	5,606.00	38.45	38.61	105.24	1,953.63	-144.75	258.77	183.63	75.14	3.444		
8,200.00	5,538.00	8,257.81	5,606.00	39.73	39.88	105.15	2,053.62	-144.95	260.16	182.54	77.63	3.351		
8,300.00	5,538.00	8,357.80	5,606.00	41.02	41.16	105.07	2,153.61	-145.15	261.55	181.42	80.14	3.264		
8,400.00	5,538.00	8,457.79	5,606.00	42.32	42.46	104.99	2,253.60	-145.36	262.95	180.27	82.67	3.181		
8,500.00	5,538.00	8,557.78	5,606.00	43.63	43.76	104.91	2,353.59	-145.56	264.34	179.11	85.23	3.101		
8,600.00	5,538.00	8,657.77	5,606.00	44.95	45.08	104.83	2,453.58	-145.76	265.73	177.92	87.81	3.026		
8,700.00	5,538.00	8,757.76	5,606.00	46.28	46.40	104.75	2,553.57	-145.97	267.12	176.71	90.41	2.955		
8,800.00	5,538.00	8,857.75	5,606.00	47.62	47.74	104.67	2,653.56	-146.17	268.51	175.49	93.03	2.886		
8,900.00	5,538.00	8,957.74	5,606.00	48.97	49.08	104.59	2,753.55	-146.37	269.91	174.25	95.66	2.822		
9,000.00	5,538.00	9,057.73	5,606.00	50.32	50.43	104.52	2,853.54	-146.58	271.30	172.99	98.31	2.760		
9,100.00	5,538.00	9,157.72	5,606.00	51.68	51.78	104.44	2,953.52	-146.78	272.70	171.72	100.97	2.701		
9,200.00	5,538.00	9,257.71	5,606.00	53.05	53.14	104.37	3,053.51	-146.98	274.09	170.44	103.65	2.644		
9,300.00	5,538.00	9,357.70	5,606.00	54.42	54.51	104.29	3,153.50	-147.19	275.49	169.15	106.34	2.591		
9,400.00	5,538.00	9,457.69	5,606.00	55.80	55.88	104.22	3,253.49	-147.39	276.88	167.84	109.04	2.539		
9,500.00	5,538.00	9,557.68	5,606.00	57.18	57.26	104.15	3,353.48	-147.59	278.28	166.53	111.75	2.490		
9,600.00	5,538.00	9,657.67	5,606.00	58.57	58.64	104.07	3,453.47	-147.79	279.67	165.20	114.47	2.443		
9,700.00	5,538.00	9,757.66	5,606.00	59.96	60.03	104.00	3,553.46	-148.00	281.07	163.87	117.20	2.398		
9,800.00	5,538.00	9,857.65	5,606.00	61.35	61.42	103.93	3,653.45	-148.20	282.47	162.53	119.94	2.355		
9,900.00	5,538.00	9,957.64	5,606.00	62.75	62.81	103.86	3,753.44	-148.40	283.87	161.18	122.69	2.314		
10,000.00	5,538.00	10,057.62	5,606.00	64.15	64.21	103.79	3,853.43	-148.61	285.27	159.82	125.44	2.274		
10,100.00	5,538.00	10,157.61	5,606.00	65.56	65.61	103.72	3,953.42	-148.81	286.66	158.46	128.21	2.236		
10,200.00	5,538.00	10,257.60	5,606.00	66.97	67.02	103.66	4,053.41	-149.01	288.06	157.09	130.98	2.199		
10,300.00	5,538.00	10,357.59	5,606.00	68.38	68.42	103.59	4,153.40	-149.22	289.46	155.71	133.75	2.164		
10,400.00	5,538.00	10,457.58	5,606.00	69.79	69.83	103.52	4,253.39	-149.42	290.86	154.33	136.54	2.130		

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



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1901
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-1901	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		
10,500.00	5,538.00	10,557.57	5,606.00	71.21	71.24	103.46	4,353.38	-149.62	292.26	152.94	139.32	2.098		
10,600.00	5,538.00	10,657.56	5,606.00	72.62	72.66	103.39	4,453.37	-149.83	293.66	151.55	142.12	2.066		
10,700.00	5,538.00	10,757.55	5,606.00	74.04	74.07	103.33	4,553.36	-150.03	295.07	150.15	144.92	2.036		
10,800.00	5,538.00	10,857.54	5,606.00	75.47	75.49	103.26	4,653.35	-150.23	296.47	148.75	147.72	2.007		
10,900.00	5,538.00	10,957.53	5,606.00	76.89	76.91	103.20	4,753.33	-150.44	297.87	147.34	150.53	1.979		
11,000.00	5,538.00	11,057.52	5,606.00	78.32	78.34	103.13	4,853.32	-150.64	299.27	145.93	153.34	1.952		
11,100.00	5,538.00	11,157.51	5,606.00	79.75	79.76	103.07	4,953.31	-150.84	300.67	144.51	156.16	1.925		
11,200.00	5,538.00	11,257.50	5,606.00	81.18	81.19	103.01	5,053.30	-151.05	302.08	143.10	158.98	1.900		
11,300.00	5,538.00	11,357.49	5,606.00	82.61	82.61	102.95	5,153.29	-151.25	303.48	141.67	161.81	1.876		
11,400.00	5,538.00	11,457.48	5,606.00	84.04	84.04	102.89	5,253.28	-151.45	304.88	140.25	164.64	1.852		
11,500.00	5,538.00	11,557.47	5,606.00	85.48	85.47	102.83	5,353.27	-151.66	306.29	138.82	167.47	1.829		
11,600.00	5,538.00	11,657.46	5,606.00	86.91	86.91	102.77	5,453.26	-151.86	307.69	137.39	170.31	1.807		
11,700.00	5,538.00	11,757.45	5,606.00	88.35	88.34	102.71	5,553.25	-152.06	309.10	135.95	173.15	1.785		
11,800.00	5,538.00	11,857.44	5,606.00	89.79	89.77	102.65	5,653.24	-152.27	310.50	134.51	175.99	1.764		
11,900.00	5,538.00	11,957.43	5,606.00	91.23	91.21	102.59	5,753.23	-152.47	311.91	133.07	178.83	1.744		
12,000.00	5,538.00	12,057.42	5,606.00	92.67	92.65	102.54	5,853.22	-152.67	313.31	131.63	181.68	1.725		
12,100.00	5,538.00	12,157.41	5,606.00	94.11	94.09	102.48	5,953.21	-152.87	314.72	130.18	184.53	1.705		
12,200.00	5,538.00	12,257.40	5,606.00	95.55	95.52	102.42	6,053.20	-153.08	316.12	128.74	187.39	1.687		
12,300.00	5,538.00	12,357.39	5,606.00	97.00	96.96	102.37	6,153.19	-153.28	317.53	127.29	190.24	1.669		
12,400.00	5,538.00	12,457.38	5,606.00	98.44	98.41	102.31	6,253.18	-153.48	318.94	125.83	193.10	1.652		
12,500.00	5,538.00	12,557.37	5,606.00	99.89	99.85	102.26	6,353.17	-153.69	320.35	124.38	195.96	1.635		
12,600.00	5,538.00	12,657.36	5,606.00	101.33	101.29	102.20	6,453.15	-153.89	321.75	122.92	198.83	1.618		
12,700.00	5,538.00	12,757.34	5,606.00	102.78	102.73	102.15	6,553.14	-154.09	323.16	121.47	201.69	1.602		
12,800.00	5,538.00	12,857.33	5,606.00	104.23	104.18	102.09	6,653.13	-154.30	324.57	120.01	204.56	1.587		
12,900.00	5,538.00	12,957.32	5,606.00	105.68	105.62	102.04	6,753.12	-154.50	325.98	118.54	207.43	1.571		
13,000.00	5,538.00	13,057.31	5,606.00	107.13	107.07	101.99	6,853.11	-154.70	327.39	117.08	210.30	1.557		
13,100.00	5,538.00	13,157.30	5,606.00	108.58	108.51	101.94	6,953.10	-154.91	328.79	115.61	213.18	1.542		
13,200.00	5,538.00	13,257.29	5,606.00	110.03	109.96	101.89	7,053.09	-155.11	330.20	114.15	216.05	1.528		
13,300.00	5,538.00	13,357.28	5,606.00	111.48	111.41	101.83	7,153.08	-155.31	331.61	112.68	218.93	1.515		
13,400.00	5,538.00	13,457.27	5,606.00	112.93	112.86	101.78	7,253.07	-155.52	333.02	111.21	221.81	1.501		
13,500.00	5,538.00	13,557.26	5,606.00	114.38	114.31	101.73	7,353.06	-155.72	334.43	109.74	224.69	1.488	Level 3	
13,600.00	5,538.00	13,657.25	5,606.00	115.84	115.76	101.68	7,453.05	-155.92	335.84	108.27	227.58	1.476	Level 3	
13,662.16	5,538.00	13,719.41	5,606.00	116.74	116.63	101.65	7,515.21	-156.05	336.72	107.38	229.34	1.468	Level 3, SF	



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1901
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-1901	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-1903 - Hz - APD		Offset Site Error: 0.00 usft	
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error: 0.00 usft			
Reference		Offset		Semi Major Axis		Distance								Warning		
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre	Between Centres	Between Ellipses	Minimum Separation	Separation Factor					
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(°)	+N/-S (usft)	+E/-W (usft)	(usft)	(usft)	(usft)					
0.00	0.00	0.00	0.00	0.00	0.00	90.00	0.00	120.73	120.73							
100.00	100.00	100.00	100.00	0.13	0.13	90.00	0.00	120.73	120.73	120.46	0.27	453.262				
200.00	200.00	200.00	200.00	0.47	0.47	90.00	0.00	120.73	120.73	119.78	0.94	128.343				
300.00	300.00	300.00	300.00	0.81	0.81	90.00	0.00	120.73	120.73	119.11	1.61	74.755 CC, ES				
400.00	399.98	399.70	399.68	1.11	1.11	-114.93	-1.73	120.85	121.59	119.37	2.21	54.959				
500.00	499.84	499.35	499.19	1.41	1.41	-114.67	-6.91	121.21	124.17	121.37	2.79	44.463				
600.00	599.45	598.91	598.37	1.74	1.73	-114.27	-15.54	121.82	128.47	125.04	3.43	37.457				
700.00	698.70	698.34	697.06	2.07	2.06	-113.73	-27.58	122.67	134.49	130.37	4.12	32.667				
800.00	797.47	797.59	795.09	2.44	2.42	-113.11	-42.99	123.75	142.22	137.37	4.85	29.297				
900.00	895.62	896.95	892.76	2.84	2.81	-112.67	-61.20	125.04	151.60	145.96	5.64	26.869				
1,000.00	993.47	996.44	990.51	3.26	3.22	-112.86	-79.70	126.34	161.64	155.18	6.45	25.044				
1,100.00	1,091.31	1,095.93	1,088.26	3.69	3.63	-113.02	-98.21	127.64	171.67	164.39	7.28	23.570				
1,200.00	1,189.15	1,195.43	1,186.01	4.13	4.05	-113.17	-116.71	128.95	181.70	173.58	8.13	22.363				
1,300.00	1,286.99	1,294.92	1,283.76	4.58	4.48	-113.30	-135.21	130.25	191.74	182.76	8.98	21.362				
1,400.00	1,384.83	1,394.42	1,381.51	5.02	4.91	-113.42	-153.71	131.55	201.78	191.94	9.83	20.521				
1,500.00	1,482.67	1,493.91	1,479.26	5.47	5.34	-113.53	-172.22	132.86	211.82	201.12	10.69	19.806				
1,600.00	1,580.51	1,593.41	1,577.01	5.92	5.77	-113.63	-190.72	134.16	221.85	210.29	11.56	19.191				
1,700.00	1,678.35	1,692.90	1,674.76	6.38	6.20	-113.72	-209.22	135.46	231.89	219.46	12.43	18.658				
1,800.00	1,776.20	1,792.39	1,772.51	6.83	6.63	-113.80	-227.72	136.77	241.93	228.63	13.30	18.191				
1,900.00	1,874.04	1,891.89	1,870.26	7.29	7.07	-113.88	-246.22	138.07	251.97	237.80	14.17	17.779				
2,000.00	1,971.88	1,991.38	1,968.01	7.75	7.51	-113.95	-264.73	139.37	262.01	246.97	15.05	17.413				
2,100.00	2,069.72	2,090.88	2,065.76	8.20	7.94	-114.01	-283.23	140.68	272.05	256.13	15.92	17.086				
2,200.00	2,167.56	2,190.37	2,163.51	8.66	8.38	-114.07	-301.73	141.98	282.10	265.30	16.80	16.792				
2,300.00	2,265.40	2,289.86	2,261.26	9.12	8.82	-114.13	-320.23	143.28	292.14	274.46	17.68	16.526				
2,400.00	2,363.24	2,389.36	2,359.01	9.58	9.25	-114.18	-338.74	144.59	302.18	283.62	18.56	16.285				
2,500.00	2,461.09	2,488.85	2,456.76	10.04	9.69	-114.23	-357.24	145.89	312.22	292.79	19.43	16.065				
2,600.00	2,558.93	2,588.35	2,554.51	10.50	10.13	-114.28	-375.74	147.19	322.26	301.95	20.31	15.864				
2,700.00	2,656.77	2,687.84	2,652.26	10.96	10.57	-114.32	-394.24	148.50	332.31	311.11	21.19	15.679				
2,800.00	2,754.61	2,787.34	2,750.01	11.42	11.01	-114.36	-412.74	149.80	342.35	320.27	22.08	15.508				
2,900.00	2,852.45	2,886.83	2,847.76	11.88	11.45	-114.40	-431.25	151.10	352.39	329.43	22.96	15.350				
3,000.00	2,950.29	2,986.32	2,945.51	12.34	11.89	-114.44	-449.75	152.41	362.43	338.60	23.84	15.204				
3,100.00	3,048.13	3,085.82	3,043.26	12.80	12.33	-114.47	-468.25	153.71	372.48	347.76	24.72	15.068				
3,200.00	3,145.98	3,185.31	3,141.01	13.26	12.77	-114.50	-486.75	155.01	382.52	356.92	25.60	14.941				
3,300.00	3,243.82	3,284.81	3,238.76	13.72	13.21	-114.53	-505.26	156.32	392.56	366.08	26.48	14.822				
3,400.00	3,341.66	3,384.30	3,336.51	14.18	13.65	-114.56	-523.76	157.62	402.61	375.24	27.37	14.711				
3,500.00	3,439.50	3,483.79	3,434.26	14.65	14.09	-114.59	-542.26	158.92	412.65	384.40	28.25	14.607				
3,600.00	3,537.34	3,583.29	3,532.01	15.11	14.53	-114.62	-560.76	160.23	422.69	393.56	29.13	14.509				
3,700.00	3,635.18	3,682.78	3,629.76	15.57	14.97	-114.64	-579.26	161.53	432.74	402.72	30.02	14.417				
3,800.00	3,733.02	3,782.28	3,727.51	16.03	15.41	-114.67	-597.77	162.83	442.78	411.88	30.90	14.330				
3,900.00	3,830.87	3,881.77	3,825.26	16.49	15.85	-114.69	-616.27	164.14	452.83	421.04	31.78	14.248				
4,000.00	3,928.71	3,981.27	3,923.01	16.95	16.29	-114.71	-634.77	165.44	462.87	430.20	32.67	14.170				
4,100.00	4,026.55	4,080.76	4,020.76	17.42	16.73	-114.73	-653.27	166.74	472.91	439.36	33.55	14.096				
4,200.00	4,124.39	4,180.25	4,118.51	17.88	17.17	-114.75	-671.77	168.05	482.96	448.52	34.43	14.026				
4,299.99	4,222.22	4,279.74	4,216.25	18.34	17.61	-114.77	-690.28	169.35	493.00	457.68	35.32	13.959				
4,400.00	4,320.39	4,379.67	4,314.46	18.71	18.02	-114.80	-708.68	170.65	502.35	466.25	36.10	13.917				
4,500.00	4,419.16	4,480.59	4,414.11	18.98	18.31	-114.76	-724.59	171.77	510.06	473.40	36.66	13.915				
4,600.00	4,518.42	4,581.70	4,514.44	19.23	18.57	-114.73	-737.01	172.64	516.06	478.89	37.17	13.882				
4,700.00	4,618.03	4,682.96	4,615.30	19.47	18.81	-114.71	-745.90	173.27	520.36	482.69	37.67	13.815				
4,800.00	4,717.89	4,784.31	4,716.51	19.69	19.04	-114.69	-751.24	173.65	522.93	484.80	38.13	13.715				
4,899.99	4,817.86	4,885.69	4,817.86	19.93	19.29	90.33	-753.00	173.77	523.78	485.15	38.63	13.559				
5,000.00	4,917.87	4,985.70	4,917.87	20.17	19.51	90.33	-753.00	173.77	523.78	484.69	39.09	13.400				
5,066.37	4,984.24	5,052.07	4,984.24	20.31	19.65	91.27	-753.00	173.77	523.78	484.41	39.37	13.305				

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-1901
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-1901	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,099.99	5,017.86	5,085.69	5,017.87	20.38	19.72	91.27	-752.99	173.77	523.78	484.27	39.51	13.257		
5,200.00	5,117.24	5,186.28	5,117.81	20.54	19.88	91.25	-743.15	173.77	523.94	484.10	39.84	13.151		
5,300.00	5,212.93	5,286.83	5,213.98	20.62	19.96	91.18	-714.32	173.77	524.40	484.42	39.98	13.115		
5,400.00	5,301.43	5,387.34	5,302.80	20.61	19.95	91.06	-667.61	173.77	525.16	485.19	39.97	13.139		
5,500.00	5,379.47	5,487.78	5,380.96	20.54	19.90	90.91	-604.78	173.77	526.18	486.34	39.84	13.207		
5,600.00	5,444.21	5,588.14	5,445.60	20.44	19.82	90.72	-528.21	173.77	527.43	487.77	39.66	13.297		
5,700.00	5,493.25	5,688.41	5,494.34	20.31	19.75	90.51	-440.76	173.77	528.86	489.36	39.50	13.388		
5,800.00	5,524.80	5,788.57	5,525.44	20.19	19.72	90.28	-345.71	173.77	530.41	491.00	39.41	13.457		
5,900.00	5,537.71	5,888.63	5,537.80	20.10	19.74	90.04	-246.58	173.77	532.04	492.60	39.44	13.490		
6,000.00	5,538.00	5,988.61	5,538.00	20.09	19.85	90.00	-146.59	173.77	533.68	494.04	39.64	13.463		
6,100.00	5,538.00	6,088.60	5,538.00	20.18	20.07	90.00	-46.60	173.77	535.33	495.27	40.06	13.364		
6,200.00	5,538.00	6,188.59	5,538.00	20.39	20.39	90.00	53.38	173.77	536.97	496.29	40.68	13.199		
6,300.00	5,538.00	6,288.57	5,538.00	20.74	20.81	90.00	153.37	173.77	538.61	497.10	41.51	12.976		
6,400.00	5,538.00	6,388.56	5,538.00	21.21	21.33	90.00	253.36	173.76	540.25	497.73	42.52	12.705		
6,500.00	5,538.00	6,488.55	5,538.00	21.79	21.93	90.00	353.34	173.76	541.90	498.18	43.71	12.396		
6,600.00	5,538.00	6,588.53	5,538.00	22.46	22.61	90.00	453.33	173.76	543.54	498.47	45.07	12.061		
6,700.00	5,538.00	6,688.52	5,538.00	23.21	23.37	90.00	553.31	173.76	545.18	498.62	46.57	11.708		
6,800.00	5,538.00	6,788.51	5,538.00	24.03	24.19	90.00	653.30	173.76	546.83	498.63	48.20	11.345		
6,900.00	5,538.00	6,888.49	5,538.00	24.91	25.07	90.00	753.29	173.76	548.47	498.52	49.95	10.980		
7,000.00	5,538.00	6,988.48	5,538.00	25.85	26.00	90.00	853.27	173.76	550.11	498.30	51.81	10.617		
7,100.00	5,538.00	7,088.47	5,538.00	26.84	26.98	90.00	953.26	173.76	551.75	497.98	53.77	10.261		
7,200.00	5,538.00	7,188.45	5,538.00	27.87	28.01	90.00	1,053.25	173.76	553.40	497.58	55.82	9.914		
7,300.00	5,538.00	7,288.44	5,538.00	28.93	29.07	90.00	1,153.23	173.76	555.04	497.10	57.94	9.579		
7,400.00	5,538.00	7,388.43	5,538.00	30.04	30.17	90.00	1,253.22	173.76	556.68	496.55	60.13	9.257		
7,500.00	5,538.00	7,488.41	5,538.00	31.17	31.29	90.00	1,353.21	173.76	558.33	495.94	62.39	8.949		
7,600.00	5,538.00	7,588.40	5,538.00	32.33	32.45	90.00	1,453.19	173.76	559.97	495.27	64.70	8.655		
7,700.00	5,538.00	7,688.39	5,538.00	33.51	33.63	90.00	1,553.18	173.76	561.61	494.55	67.06	8.375		
7,800.00	5,538.00	7,788.37	5,538.00	34.72	34.83	90.00	1,653.17	173.76	563.25	493.79	69.47	8.108		
7,900.00	5,538.00	7,888.36	5,538.00	35.95	36.06	90.00	1,753.15	173.76	564.90	492.98	71.91	7.855		
8,000.00	5,538.00	7,988.35	5,538.00	37.19	37.30	90.00	1,853.14	173.76	566.54	492.15	74.39	7.615		
8,100.00	5,538.00	8,088.33	5,538.00	38.45	38.55	90.00	1,953.13	173.76	568.18	491.27	76.91	7.388		
8,200.00	5,538.00	8,188.32	5,538.00	39.73	39.82	90.00	2,053.11	173.76	569.83	490.37	79.45	7.172		
8,300.00	5,538.00	8,288.30	5,538.00	41.02	41.11	90.00	2,153.10	173.76	571.47	489.44	82.03	6.967		
8,400.00	5,538.00	8,388.29	5,538.00	42.32	42.41	90.00	2,253.09	173.76	573.11	488.49	84.62	6.773		
8,500.00	5,538.00	8,488.28	5,538.00	43.63	43.71	90.00	2,353.07	173.75	574.75	487.52	87.24	6.588		
8,600.00	5,538.00	8,588.26	5,538.00	44.95	45.03	90.00	2,453.06	173.75	576.40	486.52	89.88	6.413		
8,700.00	5,538.00	8,688.25	5,538.00	46.28	46.36	90.00	2,553.05	173.75	578.04	485.51	92.53	6.247		
8,800.00	5,538.00	8,788.24	5,538.00	47.62	47.69	90.00	2,653.03	173.75	579.68	484.47	95.21	6.089		
8,900.00	5,538.00	8,888.22	5,538.00	48.97	49.04	90.00	2,753.02	173.75	581.33	483.43	97.90	5.938		
9,000.00	5,538.00	8,988.21	5,538.00	50.32	50.39	90.00	2,853.00	173.75	582.97	482.37	100.60	5.795		
9,100.00	5,538.00	9,088.20	5,538.00	51.68	51.75	90.00	2,952.99	173.75	584.61	481.29	103.32	5.658		
9,200.00	5,538.00	9,188.18	5,538.00	53.05	53.11	90.00	3,052.98	173.75	586.25	480.20	106.05	5.528		
9,300.00	5,538.00	9,288.17	5,538.00	54.42	54.48	90.00	3,152.96	173.75	587.90	479.11	108.79	5.404		
9,400.00	5,538.00	9,388.16	5,538.00	55.80	55.85	90.00	3,252.95	173.75	589.54	478.00	111.54	5.285		
9,500.00	5,538.00	9,488.14	5,538.00	57.18	57.23	90.00	3,352.94	173.75	591.18	476.88	114.30	5.172		
9,600.00	5,538.00	9,588.13	5,538.00	58.57	58.61	90.00	3,452.92	173.75	592.83	475.75	117.07	5.064		
9,700.00	5,538.00	9,688.12	5,538.00	59.96	60.00	90.00	3,552.91	173.75	594.47	474.62	119.85	4.960		
9,800.00	5,538.00	9,788.10	5,538.00	61.35	61.39	90.00	3,652.90	173.75	596.11	473.47	122.64	4.861		
9,900.00	5,538.00	9,888.09	5,538.00	62.75	62.79	90.00	3,752.88	173.75	597.75	472.32	125.43	4.766		
10,000.00	5,538.00	9,988.08	5,538.00	64.15	64.19	90.00	3,852.87	173.75	599.40	471.16	128.23	4.674		
10,100.00	5,538.00	10,088.06	5,538.00	65.56	65.59	90.00	3,952.86	173.75	601.04	470.00	131.04	4.587		
10,200.00	5,538.00	10,188.05	5,538.00	66.97	66.99	90.00	4,052.84	173.75	602.68	468.83	133.85	4.503		

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-1901
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-1901	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	5,538.00	10,288.03	5,538.00	68.38	68.40	90.00	4,152.83	173.75	604.33	467.65	136.67	4.422		
10,400.00	5,538.00	10,388.02	5,538.00	69.79	69.81	90.00	4,252.82	173.75	605.97	466.47	139.50	4.344		
10,500.00	5,538.00	10,488.01	5,538.00	71.21	71.23	90.00	4,352.80	173.75	607.61	465.29	142.33	4.269		
10,600.00	5,538.00	10,587.99	5,538.00	72.62	72.64	90.00	4,452.79	173.74	609.25	464.09	145.16	4.197		
10,700.00	5,538.00	10,687.98	5,538.00	74.04	74.06	90.00	4,552.78	173.74	610.90	462.90	148.00	4.128		
10,800.00	5,538.00	10,787.97	5,538.00	75.47	75.48	90.00	4,652.76	173.74	612.54	461.70	150.84	4.061		
10,900.00	5,538.00	10,887.95	5,538.00	76.89	76.90	90.00	4,752.75	173.74	614.18	460.50	153.69	3.996		
11,000.00	5,538.00	10,987.94	5,538.00	78.32	78.32	90.00	4,852.73	173.74	615.82	459.29	156.54	3.934		
11,100.00	5,538.00	11,087.93	5,538.00	79.75	79.75	90.00	4,952.72	173.74	617.47	458.08	159.39	3.874		
11,200.00	5,538.00	11,187.91	5,538.00	81.18	81.17	90.00	5,052.71	173.74	619.11	456.86	162.25	3.816		
11,300.00	5,538.00	11,287.90	5,538.00	82.61	82.60	90.00	5,152.69	173.74	620.75	455.65	165.11	3.760		
11,400.00	5,538.00	11,387.89	5,538.00	84.04	84.03	90.00	5,252.68	173.74	622.40	454.43	167.97	3.705		
11,500.00	5,538.00	11,487.87	5,538.00	85.48	85.46	90.00	5,352.67	173.74	624.04	453.20	170.83	3.653		
11,600.00	5,538.00	11,587.86	5,538.00	86.91	86.89	90.00	5,452.65	173.74	625.68	451.98	173.70	3.602		
11,700.00	5,538.00	11,687.85	5,538.00	88.35	88.33	90.00	5,552.64	173.74	627.32	450.75	176.57	3.553		
11,800.00	5,538.00	11,787.83	5,538.00	89.79	89.76	90.00	5,652.63	173.74	628.97	449.52	179.45	3.505		
11,900.00	5,538.00	11,887.82	5,538.00	91.23	91.20	90.00	5,752.61	173.74	630.61	448.29	182.32	3.459		
12,000.00	5,538.00	11,987.81	5,538.00	92.67	92.64	90.00	5,852.60	173.74	632.25	447.05	185.20	3.414		
12,100.00	5,538.00	12,087.79	5,538.00	94.11	94.07	90.00	5,952.59	173.74	633.90	445.82	188.08	3.370		
12,200.00	5,538.00	12,187.78	5,538.00	95.55	95.51	90.00	6,052.57	173.74	635.54	444.58	190.96	3.328		
12,300.00	5,538.00	12,287.76	5,538.00	97.00	96.95	90.00	6,152.56	173.74	637.18	443.33	193.85	3.287		
12,400.00	5,538.00	12,387.75	5,538.00	98.44	98.40	90.00	6,252.55	173.74	638.82	442.09	196.73	3.247		
12,500.00	5,538.00	12,487.74	5,538.00	99.89	99.84	90.00	6,352.53	173.74	640.47	440.85	199.62	3.208		
12,600.00	5,538.00	12,587.72	5,538.00	101.33	101.28	90.00	6,452.52	173.74	642.11	439.60	202.51	3.171		
12,700.00	5,538.00	12,687.71	5,538.00	102.78	102.72	90.00	6,552.51	173.73	643.75	438.35	205.40	3.134		
12,800.00	5,538.00	12,787.70	5,538.00	104.23	104.17	90.00	6,652.49	173.73	645.40	437.10	208.29	3.098		
12,900.00	5,538.00	12,887.68	5,538.00	105.68	105.61	90.00	6,752.48	173.73	647.04	435.85	211.19	3.064		
13,000.00	5,538.00	12,987.67	5,538.00	107.13	107.06	90.00	6,852.46	173.73	648.68	434.60	214.08	3.030		
13,100.00	5,538.00	13,087.66	5,538.00	108.58	108.51	90.00	6,952.45	173.73	650.32	433.34	216.98	2.997		
13,200.00	5,538.00	13,187.64	5,538.00	110.03	109.95	90.00	7,052.44	173.73	651.97	432.09	219.88	2.965		
13,300.00	5,538.00	13,287.63	5,538.00	111.48	111.40	90.00	7,152.42	173.73	653.61	430.83	222.78	2.934		
13,400.00	5,538.00	13,387.62	5,538.00	112.93	112.85	90.00	7,252.41	173.73	655.25	429.57	225.68	2.903		
13,500.00	5,538.00	13,487.60	5,538.00	114.38	114.30	90.00	7,352.40	173.73	656.90	428.31	228.58	2.874		
13,600.00	5,538.00	13,587.59	5,538.00	115.84	115.75	90.00	7,452.38	173.73	658.54	427.05	231.48	2.845		
13,662.16	5,538.00	13,649.74	5,538.00	116.74	116.65	90.00	7,514.54	173.73	659.56	426.27	233.29	2.827 SF		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1901
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-1901	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	-0.02	180.70	180.70					
100.00	100.00	100.00	100.00	0.13	0.13	90.00	-0.02	180.70	180.70	180.44	0.27	678.450		
200.00	200.00	200.00	200.00	0.47	0.47	90.00	-0.02	180.70	180.70	179.76	0.94	192.106		
300.00	300.00	300.00	300.00	0.81	0.81	90.00	-0.02	180.70	180.70	179.09	1.61	111.895 CC, ES		
400.00	399.98	397.56	397.54	1.11	1.10	-114.99	-1.54	181.36	182.11	179.89	2.22	82.090		
500.00	499.84	495.01	494.86	1.41	1.40	-114.93	-6.12	183.31	186.33	183.51	2.82	66.142		
600.00	599.45	592.23	591.72	1.74	1.71	-114.83	-13.71	186.56	193.35	189.88	3.47	55.721		
700.00	698.70	689.12	687.92	2.07	2.03	-114.69	-24.28	191.08	203.16	198.99	4.17	48.761		
800.00	797.47	785.57	783.25	2.44	2.38	-114.53	-37.76	196.85	215.73	210.82	4.90	43.994		
900.00	895.62	881.53	877.55	2.84	2.76	-114.34	-54.10	203.83	231.03	225.34	5.68	40.649		
1,000.00	993.47	980.15	974.15	3.26	3.17	-114.41	-72.32	211.62	247.61	241.14	6.47	38.297		
1,100.00	1,091.31	1,078.76	1,070.75	3.69	3.59	-114.48	-90.53	219.41	264.19	256.92	7.27	36.337		
1,200.00	1,189.15	1,177.38	1,167.36	4.13	4.02	-114.54	-108.75	227.20	280.77	272.68	8.09	34.705		
1,300.00	1,286.99	1,275.99	1,263.96	4.58	4.45	-114.59	-126.97	234.99	297.35	288.43	8.92	33.320		
1,400.00	1,384.83	1,374.61	1,360.57	5.02	4.89	-114.64	-145.19	242.79	313.94	304.17	9.77	32.146		
1,500.00	1,482.67	1,473.22	1,457.17	5.47	5.33	-114.68	-163.41	250.58	330.52	319.90	10.61	31.138		
1,600.00	1,580.51	1,571.84	1,553.78	5.92	5.77	-114.72	-181.63	258.37	347.10	335.63	11.47	30.266		
1,700.00	1,678.35	1,670.45	1,650.38	6.38	6.21	-114.75	-199.84	266.16	363.68	351.36	12.33	29.505		
1,800.00	1,776.20	1,769.07	1,746.98	6.83	6.66	-114.78	-218.06	273.95	380.27	367.08	13.19	28.836		
1,900.00	1,874.04	1,867.68	1,843.59	7.29	7.10	-114.81	-236.28	281.74	396.85	382.80	14.05	28.243		
2,000.00	1,971.88	1,966.30	1,940.19	7.75	7.55	-114.84	-254.50	289.53	413.43	398.51	14.92	27.715		
2,100.00	2,069.72	2,064.91	2,036.80	8.20	7.99	-114.86	-272.72	297.32	430.01	414.23	15.79	27.242		
2,200.00	2,167.56	2,163.53	2,133.40	8.66	8.44	-114.89	-290.93	305.11	446.60	429.94	16.65	26.815		
2,300.00	2,265.40	2,262.15	2,230.01	9.12	8.89	-114.91	-309.15	312.90	463.18	445.66	17.53	26.429		
2,400.00	2,363.24	2,360.76	2,326.61	9.58	9.33	-114.93	-327.37	320.69	479.76	461.37	18.40	26.078		
2,500.00	2,461.09	2,459.38	2,423.21	10.04	9.78	-114.95	-345.59	328.48	496.35	477.08	19.27	25.757		
2,600.00	2,558.93	2,557.99	2,519.82	10.50	10.23	-114.96	-363.81	336.28	512.93	492.79	20.14	25.463		
2,700.00	2,656.77	2,656.61	2,616.42	10.96	10.68	-114.98	-382.03	344.07	529.51	508.50	21.02	25.193		
2,800.00	2,754.61	2,755.22	2,713.03	11.42	11.13	-114.99	-400.24	351.86	546.10	524.20	21.89	24.943		
2,900.00	2,852.45	2,853.84	2,809.63	11.88	11.58	-115.01	-418.46	359.65	562.68	539.91	22.77	24.712		
3,000.00	2,950.29	2,952.45	2,906.23	12.34	12.03	-115.02	-436.68	367.44	579.26	555.62	23.65	24.497		
3,100.00	3,048.13	3,051.07	3,002.84	12.80	12.47	-115.03	-454.90	375.23	595.85	571.33	24.52	24.298		
3,200.00	3,145.98	3,149.68	3,099.44	13.26	12.92	-115.05	-473.12	383.02	612.43	587.03	25.40	24.112		
3,300.00	3,243.82	3,248.30	3,196.05	13.72	13.37	-115.06	-491.33	390.81	629.01	602.74	26.28	23.938		
3,400.00	3,341.66	3,346.91	3,292.65	14.18	13.82	-115.07	-509.55	398.60	645.60	618.44	27.16	23.774		
3,500.00	3,439.50	3,445.53	3,389.26	14.65	14.27	-115.08	-527.77	406.39	662.18	634.15	28.03	23.621		
3,600.00	3,537.34	3,544.14	3,485.86	15.11	14.72	-115.09	-545.99	414.18	678.77	649.85	28.91	23.477		
3,700.00	3,635.18	3,642.76	3,582.46	15.57	15.17	-115.10	-564.21	421.97	695.35	665.56	29.79	23.341		
3,800.00	3,733.02	3,741.37	3,679.07	16.03	15.62	-115.11	-582.43	429.76	711.93	681.26	30.67	23.213		
3,900.00	3,830.87	3,839.99	3,775.67	16.49	16.07	-115.11	-600.64	437.56	728.52	696.97	31.55	23.092		
4,000.00	3,928.71	3,938.61	3,872.28	16.95	16.53	-115.12	-618.86	445.35	745.10	712.67	32.43	22.977		
4,100.00	4,026.55	4,037.22	3,968.88	17.42	16.98	-115.13	-637.08	453.14	761.68	728.38	33.31	22.868		
4,200.00	4,124.39	4,135.84	4,065.49	17.88	17.43	-115.14	-655.30	460.93	778.27	744.08	34.19	22.765		
4,299.99	4,222.22	4,234.44	4,162.08	18.34	17.88	-115.14	-673.51	468.72	794.85	759.78	35.07	22.666		
4,400.00	4,320.39	4,333.17	4,258.79	18.71	18.33	-115.33	-691.75	476.52	810.74	774.88	35.86	22.607		
4,500.00	4,419.16	4,437.86	4,361.45	18.98	18.73	-115.28	-710.65	484.60	825.00	788.47	36.53	22.582		
4,600.00	4,518.42	4,549.59	4,471.66	19.23	19.04	-115.17	-727.45	491.78	836.54	799.41	37.12	22.533		
4,700.00	4,618.03	4,662.00	4,583.19	19.47	19.33	-115.04	-740.35	497.30	845.10	807.42	37.68	22.428		
4,800.00	4,717.89	4,774.94	4,695.70	19.69	19.60	-114.90	-749.26	501.11	850.67	812.47	38.20	22.268		
4,899.99	4,817.86	4,888.21	4,808.84	19.93	19.86	90.27	-754.08	503.17	853.23	814.51	38.72	22.036		
5,000.00	4,917.87	4,997.25	4,917.87	20.17	20.12	90.34	-755.01	503.57	853.58	814.35	39.23	21.759		
5,066.37	4,984.24	5,063.62	4,984.24	20.31	20.26	91.28	-755.01	503.57	853.59	814.07	39.51	21.603		

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-1901
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-1901	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,099.99	5,017.86	5,097.24	5,017.86	20.38	20.33	91.28	-755.01	503.57	853.58	813.93	39.66	21.525		
5,200.00	5,117.24	5,197.51	5,118.12	20.54	20.54	91.84	-753.96	503.57	853.84	813.81	40.03	21.329		
5,300.00	5,212.93	5,300.69	5,219.77	20.62	20.68	92.63	-737.28	503.57	854.61	814.36	40.24	21.237		
5,400.00	5,301.43	5,406.58	5,318.58	20.61	20.73	93.34	-699.72	503.57	855.81	815.55	40.27	21.253		
5,500.00	5,379.47	5,515.12	5,409.85	20.54	20.69	93.92	-641.34	503.57	857.37	817.22	40.15	21.355		
5,600.00	5,444.21	5,626.07	5,488.60	20.44	20.60	94.35	-563.48	503.57	859.14	819.20	39.94	21.509		
5,700.00	5,493.25	5,739.01	5,550.02	20.31	20.48	94.61	-468.96	503.57	861.01	821.27	39.73	21.669		
5,800.00	5,524.80	5,853.34	5,590.01	20.19	20.37	94.68	-362.11	503.57	862.84	823.24	39.60	21.788		
5,900.00	5,537.71	5,968.31	5,605.80	20.10	20.30	94.55	-248.46	503.57	864.53	824.92	39.61	21.829		
6,000.00	5,538.00	6,070.18	5,606.00	20.09	20.32	94.50	-146.59	503.57	866.16	826.36	39.80	21.764		
6,100.00	5,538.00	6,170.17	5,606.00	20.18	20.45	94.49	-46.60	503.56	867.79	827.59	40.20	21.588		
6,200.00	5,538.00	6,270.16	5,606.00	20.39	20.70	94.49	53.39	503.56	869.43	828.62	40.81	21.305		
6,300.00	5,538.00	6,370.14	5,606.00	20.74	21.07	94.48	153.37	503.56	871.07	829.45	41.62	20.931		
6,400.00	5,538.00	6,470.13	5,606.00	21.21	21.54	94.47	253.36	503.56	872.71	830.09	42.61	20.480		
6,500.00	5,538.00	6,570.12	5,606.00	21.79	22.12	94.46	353.35	503.56	874.34	830.56	43.78	19.970		
6,600.00	5,538.00	6,670.10	5,606.00	22.46	22.78	94.45	453.33	503.56	875.98	830.87	45.12	19.417		
6,700.00	5,538.00	6,770.09	5,606.00	23.21	23.52	94.44	553.32	503.56	877.62	831.02	46.59	18.835		
6,800.00	5,538.00	6,870.08	5,606.00	24.03	24.33	94.44	653.31	503.56	879.26	831.05	48.21	18.239		
6,900.00	5,538.00	6,970.06	5,606.00	24.91	25.20	94.43	753.29	503.56	880.89	830.95	49.94	17.638		
7,000.00	5,538.00	7,070.05	5,606.00	25.85	26.12	94.42	853.28	503.56	882.53	830.75	51.79	17.042		
7,100.00	5,538.00	7,170.04	5,606.00	26.84	27.10	94.41	953.26	503.56	884.17	830.44	53.73	16.457		
7,200.00	5,538.00	7,270.02	5,606.00	27.87	28.11	94.40	1,053.25	503.56	885.81	830.05	55.76	15.887		
7,300.00	5,538.00	7,370.01	5,606.00	28.93	29.17	94.40	1,153.24	503.56	887.44	829.58	57.86	15.337		
7,400.00	5,538.00	7,470.00	5,606.00	30.04	30.26	94.39	1,253.22	503.56	889.08	829.04	60.04	14.808		
7,500.00	5,538.00	7,569.98	5,606.00	31.17	31.38	94.38	1,353.21	503.55	890.72	828.44	62.28	14.302		
7,600.00	5,538.00	7,669.97	5,606.00	32.33	32.53	94.37	1,453.20	503.55	892.36	827.78	64.57	13.819		
7,700.00	5,538.00	7,769.95	5,606.00	33.51	33.70	94.36	1,553.18	503.55	894.00	827.08	66.92	13.359		
7,800.00	5,538.00	7,869.94	5,606.00	34.72	34.90	94.35	1,653.17	503.55	895.63	826.32	69.31	12.922		
7,900.00	5,538.00	7,969.93	5,606.00	35.95	36.11	94.35	1,753.16	503.55	897.27	825.53	71.74	12.507		
8,000.00	5,538.00	8,069.91	5,606.00	37.19	37.35	94.34	1,853.14	503.55	898.91	824.70	74.21	12.113		
8,100.00	5,538.00	8,169.90	5,606.00	38.45	38.60	94.33	1,953.13	503.55	900.55	823.83	76.71	11.739		
8,200.00	5,538.00	8,269.89	5,606.00	39.73	39.86	94.32	2,053.12	503.55	902.19	822.94	79.25	11.385		
8,300.00	5,538.00	8,369.87	5,606.00	41.02	41.14	94.32	2,153.10	503.55	903.82	822.02	81.81	11.048		
8,400.00	5,538.00	8,469.86	5,606.00	42.32	42.43	94.31	2,253.09	503.55	905.46	821.07	84.39	10.730		
8,500.00	5,538.00	8,569.85	5,606.00	43.63	43.74	94.30	2,353.08	503.55	907.10	820.10	87.00	10.427		
8,600.00	5,538.00	8,669.83	5,606.00	44.95	45.05	94.29	2,453.06	503.55	908.74	819.11	89.62	10.139		
8,700.00	5,538.00	8,769.82	5,606.00	46.28	46.37	94.28	2,553.05	503.55	910.38	818.10	92.27	9.866		
8,800.00	5,538.00	8,869.81	5,606.00	47.62	47.70	94.28	2,653.04	503.54	912.01	817.08	94.93	9.607		
8,900.00	5,538.00	8,969.79	5,606.00	48.97	49.04	94.27	2,753.02	503.54	913.65	816.04	97.61	9.360		
9,000.00	5,538.00	9,069.78	5,606.00	50.32	50.39	94.26	2,853.01	503.54	915.29	814.98	100.31	9.125		
9,100.00	5,538.00	9,169.77	5,606.00	51.68	51.74	94.25	2,952.99	503.54	916.93	813.91	103.02	8.901		
9,200.00	5,538.00	9,269.75	5,606.00	53.05	53.10	94.25	3,052.98	503.54	918.57	812.83	105.74	8.687		
9,300.00	5,538.00	9,369.74	5,606.00	54.42	54.47	94.24	3,152.97	503.54	920.20	811.74	108.47	8.484		
9,400.00	5,538.00	9,469.73	5,606.00	55.80	55.84	94.23	3,252.95	503.54	921.84	810.63	111.21	8.289		
9,500.00	5,538.00	9,569.71	5,606.00	57.18	57.21	94.22	3,352.94	503.54	923.48	809.52	113.96	8.103		
9,600.00	5,538.00	9,669.70	5,606.00	58.57	58.59	94.22	3,452.93	503.54	925.12	808.39	116.72	7.926		
9,700.00	5,538.00	9,769.68	5,606.00	59.96	59.98	94.21	3,552.91	503.54	926.76	807.26	119.49	7.756		
9,800.00	5,538.00	9,869.67	5,606.00	61.35	61.37	94.20	3,652.90	503.54	928.39	806.12	122.27	7.593		
9,900.00	5,538.00	9,969.66	5,606.00	62.75	62.76	94.19	3,752.89	503.54	930.03	804.98	125.06	7.437		
10,000.00	5,538.00	10,069.64	5,606.00	64.15	64.16	94.19	3,852.87	503.54	931.67	803.82	127.85	7.287		
10,100.00	5,538.00	10,169.63	5,606.00	65.56	65.55	94.18	3,952.86	503.54	933.31	802.66	130.65	7.144		
10,200.00	5,538.00	10,269.62	5,606.00	66.97	66.96	94.17	4,052.85	503.53	934.95	801.49	133.45	7.006		

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-1901
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-1901	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	5,538.00	10,369.60	5,606.00	68.38	68.36	94.16	4,152.83	503.53	936.58	800.32	136.26	6.873		
10,400.00	5,538.00	10,469.59	5,606.00	69.79	69.77	94.16	4,252.82	503.53	938.22	799.14	139.08	6.746		
10,500.00	5,538.00	10,569.58	5,606.00	71.21	71.18	94.15	4,352.81	503.53	939.86	797.96	141.90	6.623		
10,600.00	5,538.00	10,669.56	5,606.00	72.62	72.59	94.14	4,452.79	503.53	941.50	796.77	144.73	6.505		
10,700.00	5,538.00	10,769.55	5,606.00	74.04	74.01	94.14	4,552.78	503.53	943.14	795.58	147.56	6.392		
10,800.00	5,538.00	10,869.54	5,606.00	75.47	75.42	94.13	4,652.77	503.53	944.78	794.38	150.39	6.282		
10,900.00	5,538.00	10,969.52	5,606.00	76.89	76.84	94.12	4,752.75	503.53	946.41	793.18	153.23	6.176		
11,000.00	5,538.00	11,069.51	5,606.00	78.32	78.27	94.11	4,852.74	503.53	948.05	791.98	156.07	6.074		
11,100.00	5,538.00	11,169.50	5,606.00	79.75	79.69	94.11	4,952.73	503.53	949.69	790.77	158.92	5.976		
11,200.00	5,538.00	11,269.48	5,606.00	81.18	81.11	94.10	5,052.71	503.53	951.33	789.56	161.77	5.881		
11,300.00	5,538.00	11,369.47	5,606.00	82.61	82.54	94.09	5,152.70	503.53	952.97	788.34	164.62	5.789		
11,400.00	5,538.00	11,469.46	5,606.00	84.04	83.97	94.09	5,252.68	503.53	954.61	787.13	167.48	5.700		
11,500.00	5,538.00	11,569.44	5,606.00	85.48	85.40	94.08	5,352.67	503.53	956.24	785.91	170.34	5.614		
11,600.00	5,538.00	11,669.43	5,606.00	86.91	86.83	94.07	5,452.66	503.52	957.88	784.68	173.20	5.531		
11,700.00	5,538.00	11,769.42	5,606.00	88.35	88.26	94.06	5,552.64	503.52	959.52	783.46	176.06	5.450		
11,800.00	5,538.00	11,869.40	5,606.00	89.79	89.69	94.06	5,652.63	503.52	961.16	782.23	178.93	5.372		
11,900.00	5,538.00	11,969.39	5,606.00	91.23	91.13	94.05	5,752.62	503.52	962.80	781.00	181.80	5.296		
12,000.00	5,538.00	12,069.37	5,606.00	92.67	92.56	94.04	5,852.60	503.52	964.44	779.77	184.67	5.222		
12,100.00	5,538.00	12,169.36	5,606.00	94.11	94.00	94.04	5,952.59	503.52	966.08	778.53	187.55	5.151		
12,200.00	5,538.00	12,269.35	5,606.00	95.55	95.44	94.03	6,052.58	503.52	967.71	777.29	190.42	5.082		
12,300.00	5,538.00	12,369.33	5,606.00	97.00	96.88	94.02	6,152.56	503.52	969.35	776.05	193.30	5.015		
12,400.00	5,538.00	12,469.32	5,606.00	98.44	98.32	94.02	6,252.55	503.52	970.99	774.81	196.18	4.950		
12,500.00	5,538.00	12,569.31	5,606.00	99.89	99.76	94.01	6,352.54	503.52	972.63	773.57	199.06	4.886		
12,600.00	5,538.00	12,669.29	5,606.00	101.33	101.20	94.00	6,452.52	503.52	974.27	772.32	201.94	4.824		
12,700.00	5,538.00	12,769.28	5,606.00	102.78	102.64	94.00	6,552.51	503.52	975.91	771.08	204.83	4.764		
12,800.00	5,538.00	12,869.27	5,606.00	104.23	104.08	93.99	6,652.50	503.52	977.55	769.83	207.72	4.706		
12,900.00	5,538.00	12,969.25	5,606.00	105.68	105.53	93.98	6,752.48	503.52	979.18	768.58	210.60	4.649		
13,000.00	5,538.00	13,069.24	5,606.00	107.13	106.97	93.98	6,852.47	503.51	980.82	767.33	213.49	4.594		
13,100.00	5,538.00	13,169.23	5,606.00	108.58	108.42	93.97	6,952.46	503.51	982.46	766.08	216.39	4.540		
13,200.00	5,538.00	13,269.21	5,606.00	110.03	109.87	93.96	7,052.44	503.51	984.10	764.82	219.28	4.488		
13,300.00	5,538.00	13,369.20	5,606.00	111.48	111.31	93.96	7,152.43	503.51	985.74	763.57	222.17	4.437		
13,400.00	5,538.00	13,469.19	5,606.00	112.93	112.76	93.95	7,252.41	503.51	987.38	762.31	225.07	4.387		
13,500.00	5,538.00	13,569.17	5,606.00	114.38	114.21	93.94	7,352.40	503.51	989.02	761.05	227.96	4.338		
13,600.00	5,538.00	13,669.16	5,606.00	115.84	115.66	93.94	7,452.39	503.51	990.65	759.79	230.86	4.291		
13,662.16	5,538.00	13,731.31	5,606.00	116.74	116.51	93.93	7,514.54	503.51	991.67	759.06	232.61	4.263 SF		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1901
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-1901	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	HZ	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Sec 30-T10N-R57W - Horsetail #30E-1934 - Hz - APD		Offset Site Error:		0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:		0.00 usft		
Reference		Offset		Semi Major Axis		Distance								Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor					
0.00	0.00	0.00	0.00	0.00	0.00	90.01	0.00	30.76	30.76								
100.00	100.00	100.00	100.00	0.13	0.13	90.01	0.00	30.76	30.76	30.49	0.27	115.481					
200.00	200.00	200.00	200.00	0.47	0.47	90.01	0.00	30.76	30.76	29.82	0.94	32.699					
300.00	300.00	300.00	300.00	0.81	0.81	90.01	0.00	30.76	30.76	29.14	1.61	19.046 CC					
400.00	399.98	400.37	400.35	1.11	1.11	-114.89	-1.65	30.15	30.89	28.67	2.22	13.901					
500.00	499.84	500.74	500.57	1.41	1.41	-114.53	-6.61	28.34	31.30	28.48	2.82	11.109 ES					
600.00	599.45	601.10	600.55	1.74	1.74	-113.96	-14.85	25.32	31.98	28.52	3.47	9.221					
700.00	698.70	701.46	700.15	2.07	2.07	-113.20	-26.38	21.10	32.94	28.78	4.17	7.907					
800.00	797.47	801.81	799.25	2.44	2.44	-112.29	-41.17	15.68	34.18	29.27	4.91	6.960					
900.00	895.62	901.94	897.64	2.84	2.84	-112.19	-58.61	9.30	35.88	30.18	5.70	6.299					
1,000.00	993.47	1,001.91	995.82	3.26	3.25	-113.97	-76.29	2.82	38.12	31.61	6.51	5.859					
1,100.00	1,091.31	1,101.88	1,094.00	3.69	3.67	-115.54	-93.98	-3.65	40.39	33.06	7.33	5.513					
1,200.00	1,189.15	1,201.85	1,192.18	4.13	4.09	-116.95	-111.66	-10.13	42.69	34.54	8.15	5.236					
1,300.00	1,286.99	1,301.82	1,290.36	4.58	4.52	-118.21	-129.35	-16.60	45.01	36.03	8.98	5.012					
1,400.00	1,384.83	1,401.79	1,388.54	5.02	4.95	-119.35	-147.03	-23.08	47.35	37.54	9.81	4.827					
1,500.00	1,482.67	1,501.75	1,486.72	5.47	5.39	-120.38	-164.71	-29.55	49.71	39.07	10.64	4.673					
1,600.00	1,580.51	1,601.72	1,584.89	5.92	5.82	-121.32	-182.40	-36.03	52.08	40.62	11.47	4.543					
1,700.00	1,678.35	1,701.69	1,683.07	6.38	6.26	-122.17	-200.08	-42.51	54.47	42.18	12.29	4.431					
1,800.00	1,776.20	1,801.66	1,781.25	6.83	6.70	-122.96	-217.76	-48.98	56.87	43.75	13.12	4.334					
1,900.00	1,874.04	1,901.63	1,879.43	7.29	7.14	-123.68	-235.45	-55.46	59.28	45.33	13.95	4.251					
2,000.00	1,971.88	2,001.60	1,977.61	7.75	7.58	-124.34	-253.13	-61.93	61.69	46.92	14.77	4.177					
2,100.00	2,069.72	2,101.57	2,075.79	8.20	8.02	-124.95	-270.82	-68.41	64.11	48.52	15.59	4.112					
2,200.00	2,167.56	2,201.53	2,173.96	8.66	8.46	-125.52	-288.50	-74.88	66.54	50.13	16.42	4.054					
2,300.00	2,265.40	2,301.50	2,272.14	9.12	8.90	-126.05	-306.18	-81.36	68.98	51.74	17.24	4.002					
2,400.00	2,363.24	2,401.47	2,370.32	9.58	9.34	-126.54	-323.87	-87.83	71.42	53.37	18.06	3.955					
2,500.00	2,461.09	2,501.44	2,468.50	10.04	9.78	-127.00	-341.55	-94.31	73.87	54.99	18.88	3.913					
2,600.00	2,558.93	2,601.41	2,566.68	10.50	10.23	-127.43	-359.24	-100.78	76.32	56.63	19.69	3.875					
2,700.00	2,656.77	2,701.38	2,664.86	10.96	10.67	-127.83	-376.92	-107.26	78.78	58.26	20.51	3.840					
2,800.00	2,754.61	2,801.34	2,763.04	11.42	11.11	-128.21	-394.60	-113.74	81.23	59.90	21.33	3.808					
2,900.00	2,852.45	2,901.31	2,861.21	11.88	11.56	-128.57	-412.29	-120.21	83.70	61.55	22.15	3.779					
3,000.00	2,950.29	3,001.28	2,959.39	12.34	12.00	-128.91	-429.97	-126.69	86.16	63.20	22.96	3.752					
3,100.00	3,048.13	3,101.25	3,057.57	12.80	12.44	-129.22	-447.65	-133.16	88.63	64.85	23.78	3.727					
3,200.00	3,145.98	3,201.22	3,155.75	13.26	12.89	-129.53	-465.34	-139.64	91.10	66.51	24.59	3.704					
3,300.00	3,243.82	3,301.19	3,253.93	13.72	13.33	-129.81	-483.02	-146.11	93.57	68.17	25.41	3.683					
3,400.00	3,341.66	3,401.15	3,352.11	14.18	13.77	-130.08	-500.71	-152.59	96.05	69.83	26.22	3.663					
3,500.00	3,439.50	3,501.12	3,450.29	14.65	14.22	-130.34	-518.39	-159.06	98.53	71.49	27.03	3.644					
3,600.00	3,537.34	3,601.09	3,548.46	15.11	14.66	-130.58	-536.07	-165.54	101.00	73.16	27.85	3.627					
3,700.00	3,635.18	3,701.06	3,646.64	15.57	15.10	-130.81	-553.76	-172.01	103.49	74.83	28.66	3.611					
3,800.00	3,733.02	3,801.03	3,744.82	16.03	15.55	-131.03	-571.44	-178.49	105.97	76.50	29.47	3.596					
3,900.00	3,830.87	3,901.00	3,843.00	16.49	15.99	-131.24	-589.13	-184.96	108.45	78.17	30.28	3.581					
4,000.00	3,928.71	4,000.96	3,941.18	16.95	16.44	-131.45	-606.81	-191.44	110.94	79.84	31.10	3.568					
4,100.00	4,026.55	4,100.93	4,039.36	17.42	16.88	-131.64	-624.49	-197.92	113.42	81.52	31.91	3.555					
4,200.00	4,124.39	4,200.90	4,137.54	17.88	17.33	-131.82	-642.18	-204.39	115.91	83.19	32.72	3.543					
4,299.99	4,222.22	4,300.86	4,235.71	18.34	17.77	-132.00	-659.86	-210.87	118.40	84.87	33.53	3.531					
4,400.00	4,320.39	4,400.85	4,333.91	18.71	18.21	-131.60	-677.55	-217.34	119.79	85.46	34.33	3.489					
4,500.00	4,419.16	4,500.78	4,432.05	18.98	18.66	-129.92	-695.22	-223.82	118.92	83.71	35.21	3.377					
4,600.00	4,518.42	4,599.34	4,528.94	19.23	19.05	-127.11	-712.16	-230.02	116.31	80.15	36.16	3.217					
4,700.00	4,618.03	4,697.11	4,625.56	19.47	19.31	-124.09	-726.16	-235.14	113.55	76.57	36.98	3.071					
4,800.00	4,717.89	4,795.10	4,722.85	19.69	19.55	-120.97	-737.08	-239.14	110.83	73.06	37.77	2.935					
4,899.99	4,817.86	4,893.30	4,820.70	19.93	19.79	87.28	-744.87	-242.00	108.16	69.62	38.55	2.806					
5,000.00	4,917.87	4,991.83	4,919.10	20.17	20.01	89.75	-749.53	-243.70	106.31	67.09	39.21	2.711					
5,099.55	5,017.42	5,090.17	5,017.42	20.38	20.25	91.53	-751.00	-244.24	105.77	66.04	39.72	2.663					

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



WOG

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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-1901	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,099.99	5,017.86	5,090.61	5,017.86	20.38	20.25	91.49	-751.00	-244.24	105.76	66.04	39.72	2.663		
5,100.12	5,017.99	5,090.74	5,017.99	20.38	20.25	91.49	-751.00	-244.24	105.76	66.04	39.72	2.663		
5,200.00	5,117.24	5,189.99	5,117.24	20.54	20.46	96.61	-751.00	-244.24	106.46	65.99	40.48	2.630		
5,300.00	5,212.93	5,285.68	5,212.93	20.62	20.67	109.76	-751.00	-244.24	113.40	72.13	41.26	2.748		
5,400.00	5,301.43	5,390.19	5,316.77	20.61	20.84	124.56	-740.77	-244.34	131.75	90.98	40.77	3.232		
5,500.00	5,379.47	5,504.68	5,425.63	20.54	20.93	135.32	-706.09	-244.66	155.93	117.42	38.51	4.049		
5,600.00	5,444.21	5,630.94	5,533.69	20.44	20.91	142.68	-641.39	-245.26	181.07	146.46	34.61	5.232		
5,700.00	5,493.25	5,770.08	5,630.92	20.31	20.80	147.45	-542.45	-246.19	203.10	173.64	29.46	6.895		
5,800.00	5,524.80	5,921.18	5,702.86	20.19	20.65	150.14	-410.17	-247.42	218.65	194.19	24.47	8.937		
5,900.00	5,537.71	6,080.16	5,734.40	20.10	20.56	150.98	-254.99	-248.87	225.23	202.68	22.56	9.986		
6,000.00	5,538.00	6,189.60	5,735.00	20.09	20.59	150.81	-145.57	-249.89	225.65	202.54	23.10	9.767		
6,100.00	5,538.00	6,289.60	5,735.00	20.18	20.74	150.66	-45.57	-250.82	226.00	202.32	23.68	9.544		
6,200.00	5,538.00	6,389.59	5,735.00	20.39	21.00	150.50	54.42	-251.75	226.34	201.98	24.36	9.290		
6,300.00	5,538.00	6,489.59	5,735.00	20.74	21.37	150.34	154.41	-252.68	226.70	201.54	25.15	9.012		
6,400.00	5,538.00	6,589.59	5,735.00	21.21	21.84	150.19	254.41	-253.62	227.05	201.01	26.04	8.719		
6,500.00	5,538.00	6,689.59	5,735.00	21.79	22.41	150.03	354.40	-254.55	227.40	200.39	27.01	8.418		
6,600.00	5,538.00	6,789.58	5,735.00	22.46	23.07	149.88	454.39	-255.48	227.76	199.69	28.07	8.114		
6,700.00	5,538.00	6,889.58	5,735.00	23.21	23.81	149.72	554.38	-256.41	228.12	198.92	29.20	7.813		
6,800.00	5,538.00	6,989.58	5,735.00	24.03	24.61	149.57	654.38	-257.35	228.47	198.08	30.39	7.517		
6,900.00	5,538.00	7,089.58	5,735.00	24.91	25.48	149.42	754.37	-258.28	228.84	197.18	31.65	7.230		
7,000.00	5,538.00	7,189.57	5,735.00	25.85	26.40	149.26	854.36	-259.21	229.20	196.23	32.97	6.952		
7,100.00	5,538.00	7,289.57	5,735.00	26.84	27.37	149.11	954.36	-260.14	229.56	195.23	34.33	6.686		
7,200.00	5,538.00	7,389.57	5,735.00	27.87	28.38	148.96	1,054.35	-261.08	229.93	194.18	35.75	6.432		
7,300.00	5,538.00	7,489.57	5,735.00	28.93	29.43	148.81	1,154.34	-262.01	230.30	193.09	37.20	6.190		
7,400.00	5,538.00	7,589.56	5,735.00	30.04	30.52	148.66	1,254.34	-262.94	230.66	191.97	38.70	5.961		
7,500.00	5,538.00	7,689.56	5,735.00	31.17	31.63	148.51	1,354.33	-263.87	231.04	190.81	40.23	5.743		
7,600.00	5,538.00	7,789.56	5,735.00	32.33	32.78	148.36	1,454.32	-264.80	231.41	189.61	41.79	5.537		
7,700.00	5,538.00	7,889.55	5,735.00	33.51	33.95	148.21	1,554.32	-265.74	231.78	188.39	43.39	5.342		
7,800.00	5,538.00	7,989.55	5,735.00	34.72	35.14	148.06	1,654.31	-266.67	232.16	187.14	45.01	5.157		
7,900.00	5,538.00	8,089.55	5,735.00	35.95	36.36	147.91	1,754.30	-267.60	232.53	185.87	46.67	4.983		
8,000.00	5,538.00	8,189.55	5,735.00	37.19	37.59	147.76	1,854.30	-268.53	232.91	184.57	48.34	4.818		
8,100.00	5,538.00	8,289.54	5,735.00	38.45	38.84	147.61	1,954.29	-269.47	233.29	183.25	50.05	4.662		
8,200.00	5,538.00	8,389.54	5,735.00	39.73	40.10	147.46	2,054.28	-270.40	233.67	181.90	51.77	4.514		
8,300.00	5,538.00	8,489.54	5,735.00	41.02	41.38	147.32	2,154.27	-271.33	234.06	180.54	53.51	4.374		
8,400.00	5,538.00	8,589.54	5,735.00	42.32	42.67	147.17	2,254.27	-272.26	234.44	179.16	55.28	4.241		
8,500.00	5,538.00	8,689.53	5,735.00	43.63	43.97	147.03	2,354.26	-273.20	234.83	177.76	57.06	4.115		
8,600.00	5,538.00	8,789.53	5,735.00	44.95	45.28	146.88	2,454.25	-274.13	235.22	176.35	58.87	3.996		
8,700.00	5,538.00	8,889.53	5,735.00	46.28	46.60	146.74	2,554.25	-275.06	235.60	174.92	60.69	3.882		
8,800.00	5,538.00	8,989.53	5,735.00	47.62	47.94	146.59	2,654.24	-275.99	236.00	173.47	62.52	3.774		
8,900.00	5,538.00	9,089.52	5,735.00	48.97	49.27	146.45	2,754.23	-276.93	236.39	172.01	64.38	3.672		
9,000.00	5,538.00	9,189.52	5,735.00	50.32	50.62	146.30	2,854.23	-277.86	236.78	170.54	66.25	3.574		
9,100.00	5,538.00	9,289.52	5,735.00	51.68	51.97	146.16	2,954.22	-278.79	237.18	169.05	68.13	3.481		
9,200.00	5,538.00	9,389.52	5,735.00	53.05	53.33	146.02	3,054.21	-279.72	237.57	167.55	70.03	3.393		
9,300.00	5,538.00	9,489.51	5,735.00	54.42	54.70	145.88	3,154.21	-280.66	237.97	166.03	71.94	3.308		
9,400.00	5,538.00	9,589.51	5,735.00	55.80	56.07	145.74	3,254.20	-281.59	238.37	164.51	73.87	3.227		
9,500.00	5,538.00	9,689.51	5,735.00	57.18	57.44	145.59	3,354.19	-282.52	238.77	162.97	75.80	3.150		
9,600.00	5,538.00	9,789.51	5,735.00	58.57	58.83	145.45	3,454.19	-283.45	239.17	161.42	77.76	3.076		
9,700.00	5,538.00	9,889.50	5,735.00	59.96	60.21	145.31	3,554.18	-284.39	239.58	159.86	79.72	3.005		
9,800.00	5,538.00	9,989.50	5,735.00	61.35	61.60	145.17	3,654.17	-285.32	239.98	158.29	81.70	2.938		
9,900.00	5,538.00	10,089.50	5,735.00	62.75	62.99	145.04	3,754.16	-286.25	240.39	156.71	83.68	2.873		
10,000.00	5,538.00	10,189.50	5,735.00	64.15	64.39	144.90	3,854.16	-287.18	240.80	155.11	85.68	2.810		
10,100.00	5,538.00	10,289.49	5,735.00	65.56	65.79	144.76	3,954.15	-288.12	241.21	153.51	87.70	2.751		

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WOG

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Offset Design												Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag												Offset Well Error:	0.00 usft
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10,200.00	5,538.00	10,389.49	5,735.00	66.97	67.19	144.62	4,054.14	-289.05	241.62	151.90	89.72	2.693	
10,300.00	5,538.00	10,489.49	5,735.00	68.38	68.60	144.48	4,154.14	-289.98	242.03	150.28	91.75	2.638	
10,400.00	5,538.00	10,589.49	5,735.00	69.79	70.01	144.35	4,254.13	-290.91	242.44	148.65	93.79	2.585	
10,500.00	5,538.00	10,689.48	5,735.00	71.21	71.42	144.21	4,354.12	-291.84	242.86	147.01	95.85	2.534	
10,600.00	5,538.00	10,789.48	5,735.00	72.62	72.83	144.08	4,454.12	-292.78	243.28	145.36	97.91	2.485	
10,700.00	5,538.00	10,889.48	5,735.00	74.04	74.25	143.94	4,554.11	-293.71	243.69	143.71	99.99	2.437	
10,800.00	5,538.00	10,989.48	5,735.00	75.47	75.67	143.80	4,654.10	-294.64	244.11	142.04	102.07	2.392	
10,900.00	5,538.00	11,089.47	5,735.00	76.89	77.09	143.67	4,754.10	-295.57	244.53	140.37	104.17	2.348	
11,000.00	5,538.00	11,189.47	5,735.00	78.32	78.51	143.54	4,854.09	-296.51	244.96	138.68	106.27	2.305	
11,100.00	5,538.00	11,289.47	5,735.00	79.75	79.93	143.40	4,954.08	-297.44	245.38	136.99	108.38	2.264	
11,200.00	5,538.00	11,389.47	5,735.00	81.18	81.36	143.27	5,054.08	-298.37	245.80	135.30	110.51	2.224	
11,300.00	5,538.00	11,489.46	5,735.00	82.61	82.79	143.14	5,154.07	-299.30	246.23	133.59	112.64	2.186	
11,400.00	5,538.00	11,589.46	5,735.00	84.04	84.21	143.01	5,254.06	-300.24	246.66	131.88	114.78	2.149	
11,500.00	5,538.00	11,689.46	5,735.00	85.48	85.65	142.87	5,354.05	-301.17	247.08	130.15	116.93	2.113	
11,600.00	5,538.00	11,789.46	5,735.00	86.91	87.08	142.74	5,454.05	-302.10	247.51	128.42	119.09	2.078	
11,700.00	5,538.00	11,889.45	5,735.00	88.35	88.51	142.61	5,554.04	-303.03	247.95	126.69	121.26	2.045	
11,800.00	5,538.00	11,989.45	5,735.00	89.79	89.95	142.48	5,654.03	-303.97	248.38	124.94	123.43	2.012	
11,900.00	5,538.00	12,089.45	5,735.00	91.23	91.38	142.35	5,754.03	-304.90	248.81	123.19	125.62	1.981	
12,000.00	5,538.00	12,189.45	5,735.00	92.67	92.82	142.22	5,854.02	-305.83	249.25	121.43	127.81	1.950	
12,100.00	5,538.00	12,289.44	5,735.00	94.11	94.26	142.09	5,954.01	-306.76	249.68	119.67	130.01	1.920	
12,200.00	5,538.00	12,389.44	5,735.00	95.55	95.70	141.96	6,054.01	-307.70	250.12	117.90	132.22	1.892	
12,300.00	5,538.00	12,489.44	5,735.00	97.00	97.14	141.84	6,154.00	-308.63	250.56	116.12	134.44	1.864	
12,400.00	5,538.00	12,589.44	5,735.00	98.44	98.58	141.71	6,253.99	-309.56	251.00	114.33	136.66	1.837	
12,500.00	5,538.00	12,689.43	5,735.00	99.89	100.02	141.58	6,353.99	-310.49	251.44	112.54	138.90	1.810	
12,600.00	5,538.00	12,789.43	5,735.00	101.33	101.46	141.46	6,453.98	-311.43	251.88	110.74	141.14	1.785	
12,700.00	5,538.00	12,889.43	5,735.00	102.78	102.91	141.33	6,553.97	-312.36	252.33	108.94	143.39	1.760	
12,800.00	5,538.00	12,989.43	5,735.00	104.23	104.35	141.20	6,653.97	-313.29	252.77	107.13	145.65	1.736	
12,900.00	5,538.00	13,089.42	5,735.00	105.68	105.80	141.08	6,753.96	-314.22	253.22	105.31	147.91	1.712	
13,000.00	5,538.00	13,189.42	5,735.00	107.13	107.24	140.95	6,853.95	-315.15	253.66	103.48	150.18	1.689	
13,100.00	5,538.00	13,289.42	5,735.00	108.58	108.69	140.83	6,953.94	-316.09	254.11	101.65	152.46	1.667	
13,200.00	5,538.00	13,389.42	5,735.00	110.03	110.14	140.70	7,053.94	-317.02	254.56	99.82	154.75	1.645	
13,300.00	5,538.00	13,489.41	5,735.00	111.48	111.59	140.58	7,153.93	-317.95	255.01	97.97	157.04	1.624	
13,400.00	5,538.00	13,589.41	5,735.00	112.93	113.04	140.46	7,253.92	-318.88	255.46	96.12	159.34	1.603	
13,500.00	5,538.00	13,689.41	5,735.00	114.38	114.49	140.33	7,353.92	-319.82	255.92	94.27	161.65	1.583	
13,600.00	5,538.00	13,789.41	5,735.00	115.84	115.94	140.21	7,453.91	-320.75	256.37	92.41	163.96	1.564	
13,662.16	5,538.00	13,851.04	5,735.00	116.74	116.83	140.14	7,515.55	-321.32	256.66	91.27	165.38	1.552 SF	



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1901
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-1901	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	HZ	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Sec 30-T10N-R57W - Horsetail #30E-1935 - Hz - APD		Offset Site Error:		0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:		0.00 usft		
Reference		Offset		Semi Major Axis		Distance								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	90.74	90.74								
100.00	100.00	100.00	100.00	0.13	0.13	90.00	0.00	90.74	90.74	90.47	0.27	340.669					
200.00	200.00	200.00	200.00	0.47	0.47	90.00	0.00	90.74	90.74	89.80	0.94	96.462					
300.00	300.00	300.00	300.00	0.81	0.81	90.00	0.00	90.74	90.74	89.12	1.61	56.185 CC					
400.00	399.98	400.34	400.32	1.11	1.11	-114.90	-1.75	90.55	91.28	89.07	2.21	41.225 ES					
500.00	499.84	500.67	500.50	1.41	1.41	-114.58	-6.99	89.97	92.93	90.13	2.80	33.239					
600.00	599.45	600.95	600.39	1.74	1.73	-114.07	-15.70	89.02	95.67	92.24	3.43	27.860					
700.00	698.70	701.17	699.86	2.07	2.07	-113.39	-27.88	87.68	99.51	95.39	4.12	24.141					
800.00	797.47	801.31	798.75	2.44	2.43	-112.60	-43.49	85.97	104.47	99.60	4.86	21.489					
900.00	895.62	901.11	897.05	2.84	2.82	-112.67	-60.66	84.09	110.65	105.00	5.65	19.593					
1,000.00	993.47	1,000.86	995.30	3.26	3.22	-113.57	-77.82	82.21	117.46	111.01	6.45	18.198					
1,100.00	1,091.31	1,100.61	1,093.54	3.69	3.63	-114.37	-94.98	80.33	124.31	117.03	7.28	17.084					
1,200.00	1,189.15	1,200.37	1,191.79	4.13	4.04	-115.09	-112.15	78.46	131.17	123.07	8.11	16.180					
1,300.00	1,286.99	1,300.12	1,290.04	4.58	4.46	-115.73	-129.31	76.58	138.06	129.11	8.94	15.436					
1,400.00	1,384.83	1,399.87	1,388.28	5.02	4.88	-116.31	-146.47	74.70	144.96	135.17	9.78	14.815					
1,500.00	1,482.67	1,499.62	1,486.53	5.47	5.30	-116.84	-163.63	72.82	151.87	141.24	10.63	14.289					
1,600.00	1,580.51	1,599.37	1,584.77	5.92	5.72	-117.33	-180.79	70.94	158.80	147.32	11.47	13.839					
1,700.00	1,678.35	1,699.12	1,683.02	6.38	6.14	-117.77	-197.95	69.06	165.73	153.41	12.32	13.450					
1,800.00	1,776.20	1,798.87	1,781.27	6.83	6.57	-118.18	-215.11	67.18	172.68	159.51	13.17	13.110					
1,900.00	1,874.04	1,898.63	1,879.51	7.29	6.99	-118.55	-232.27	65.30	179.63	165.61	14.02	12.812					
2,000.00	1,971.88	1,998.38	1,977.76	7.75	7.42	-118.90	-249.43	63.42	186.59	171.72	14.87	12.548					
2,100.00	2,069.72	2,098.13	2,076.00	8.20	7.84	-119.23	-266.60	61.54	193.56	177.83	15.72	12.312					
2,200.00	2,167.56	2,197.88	2,174.25	8.66	8.27	-119.53	-283.76	59.66	200.53	183.96	16.57	12.101					
2,300.00	2,265.40	2,297.63	2,272.50	9.12	8.69	-119.81	-300.92	57.78	207.50	190.08	17.42	11.910					
2,400.00	2,363.24	2,397.38	2,370.74	9.58	9.12	-120.07	-318.08	55.90	214.49	196.21	18.27	11.738					
2,500.00	2,461.09	2,497.13	2,468.99	10.04	9.55	-120.31	-335.24	54.02	221.47	202.35	19.12	11.581					
2,600.00	2,558.93	2,596.88	2,567.23	10.50	9.98	-120.55	-352.40	52.14	228.46	208.49	19.98	11.437					
2,700.00	2,656.77	2,696.64	2,665.48	10.96	10.40	-120.76	-369.56	50.26	235.45	214.63	20.83	11.306					
2,800.00	2,754.61	2,796.39	2,763.73	11.42	10.83	-120.97	-386.72	48.38	242.45	220.77	21.68	11.185					
2,900.00	2,852.45	2,896.14	2,861.97	11.88	11.26	-121.16	-403.88	46.50	249.45	226.92	22.53	11.073					
3,000.00	2,950.29	2,995.89	2,960.22	12.34	11.69	-121.34	-421.04	44.63	256.45	233.07	23.38	10.969					
3,100.00	3,048.13	3,095.64	3,058.47	12.80	12.12	-121.51	-438.21	42.75	263.46	239.23	24.23	10.873					
3,200.00	3,145.98	3,195.39	3,156.71	13.26	12.55	-121.68	-455.37	40.87	270.46	245.38	25.08	10.784					
3,300.00	3,243.82	3,295.14	3,254.96	13.72	12.98	-121.83	-472.53	38.99	277.47	251.54	25.93	10.700					
3,400.00	3,341.66	3,394.90	3,353.20	14.18	13.40	-121.98	-489.69	37.11	284.48	257.70	26.78	10.622					
3,500.00	3,439.50	3,494.65	3,451.45	14.65	13.83	-122.12	-506.85	35.23	291.49	263.86	27.63	10.549					
3,600.00	3,537.34	3,594.40	3,549.70	15.11	14.26	-122.26	-524.01	33.35	298.51	270.02	28.48	10.480					
3,700.00	3,635.18	3,694.15	3,647.94	15.57	14.69	-122.38	-541.17	31.47	305.52	276.19	29.33	10.415					
3,800.00	3,733.02	3,793.90	3,746.19	16.03	15.12	-122.51	-558.33	29.59	312.54	282.36	30.18	10.354					
3,900.00	3,830.87	3,893.65	3,844.43	16.49	15.55	-122.62	-575.49	27.71	319.56	288.52	31.04	10.297					
4,000.00	3,928.71	3,993.40	3,942.68	16.95	15.98	-122.74	-592.66	25.83	326.58	294.69	31.89	10.242					
4,100.00	4,026.55	4,093.15	4,040.93	17.42	16.41	-122.84	-609.82	23.95	333.60	300.86	32.74	10.191					
4,200.00	4,124.39	4,192.91	4,139.17	17.88	16.84	-122.95	-626.98	22.07	340.62	307.04	33.59	10.142					
4,299.99	4,222.22	4,292.65	4,237.41	18.34	17.27	-123.04	-644.14	20.19	347.64	313.21	34.44	10.095					
4,400.00	4,320.39	4,392.46	4,335.72	18.71	17.70	-123.01	-661.31	18.31	353.77	318.55	35.22	10.044					
4,500.00	4,419.16	4,492.30	4,434.05	18.98	18.13	-122.49	-678.48	16.43	358.02	322.06	35.96	9.957					
4,600.00	4,518.42	4,592.05	4,532.29	19.23	18.56	-121.48	-695.65	14.55	360.47	323.75	36.72	9.817					
4,700.00	4,618.03	4,690.92	4,629.69	19.47	18.96	-120.02	-712.53	12.70	361.32	323.85	37.47	9.643					
4,800.00	4,717.89	4,788.17	4,725.88	19.69	19.22	-118.49	-726.75	11.15	361.16	323.10	38.06	9.488					
4,899.99	4,817.86	4,885.76	4,822.84	19.93	19.47	88.05	-737.74	9.94	360.18	321.53	38.65	9.318					
5,000.00	4,917.87	4,983.83	4,920.59	20.17	19.70	89.28	-745.48	9.09	359.13	319.93	39.20	9.161					
5,099.99	5,017.86	5,082.30	5,018.96	20.38	19.92	90.92	-749.89	8.61	358.61	318.94	39.68	9.038					

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-1901
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-1901	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		
5,136.57	5,054.41	5,118.33	5,054.98	20.44	20.01	91.27	-750.67	8.53	358.55	318.71	39.84	9.000		
5,200.00	5,117.24	5,180.60	5,117.24	20.54	20.17	92.61	-751.00	8.49	358.81	318.63	40.18	8.931		
5,300.00	5,212.93	5,276.29	5,212.93	20.62	20.37	96.66	-751.00	8.49	361.26	320.60	40.65	8.887		
5,400.00	5,301.43	5,365.25	5,301.90	20.61	20.56	102.10	-751.00	8.49	369.89	328.90	40.99	9.024		
5,500.00	5,379.47	5,472.99	5,408.80	20.54	20.74	108.84	-739.30	8.49	386.80	345.86	40.94	9.447		
5,600.00	5,444.21	5,599.10	5,527.69	20.44	20.83	115.28	-698.13	8.49	409.05	369.01	40.04	10.217		
5,700.00	5,493.25	5,750.91	5,652.52	20.31	20.79	121.14	-612.71	8.49	432.76	394.84	37.92	11.412		
5,800.00	5,524.80	5,934.28	5,762.79	20.19	20.68	125.66	-467.37	8.49	452.54	417.56	34.98	12.937		
5,900.00	5,537.71	6,144.63	5,818.75	20.10	20.65	127.56	-266.08	8.49	462.47	429.14	33.33	13.874		
6,000.00	5,538.00	6,264.15	5,820.00	20.09	20.77	127.44	-146.59	8.49	463.95	430.30	33.65	13.788		
6,100.00	5,538.00	6,364.14	5,820.00	20.18	20.98	127.31	-46.61	8.49	465.25	431.13	34.13	13.633		
6,200.00	5,538.00	6,464.12	5,820.00	20.39	21.29	127.19	53.38	8.49	466.56	431.79	34.77	13.419		
6,300.00	5,538.00	6,564.11	5,820.00	20.74	21.69	127.07	153.37	8.49	467.87	432.30	35.57	13.154		
6,400.00	5,538.00	6,664.10	5,820.00	21.21	22.19	126.95	253.35	8.49	469.18	432.67	36.52	12.849		
6,500.00	5,538.00	6,764.08	5,820.00	21.79	22.77	126.83	353.34	8.48	470.49	432.89	37.60	12.513		
6,600.00	5,538.00	6,864.07	5,820.00	22.46	23.43	126.71	453.33	8.48	471.81	433.00	38.81	12.156		
6,700.00	5,538.00	6,964.05	5,820.00	23.21	24.16	126.59	553.31	8.48	473.13	432.99	40.14	11.786		
6,800.00	5,538.00	7,064.04	5,820.00	24.03	24.96	126.47	653.30	8.48	474.45	432.87	41.58	11.411		
6,900.00	5,538.00	7,164.03	5,820.00	24.91	25.82	126.35	753.29	8.48	475.77	432.66	43.11	11.036		
7,000.00	5,538.00	7,264.01	5,820.00	25.85	26.73	126.24	853.27	8.48	477.10	432.36	44.73	10.665		
7,100.00	5,538.00	7,364.00	5,820.00	26.84	27.69	126.12	953.26	8.48	478.42	431.99	46.44	10.303		
7,200.00	5,538.00	7,463.99	5,820.00	27.87	28.69	126.01	1,053.25	8.48	479.75	431.54	48.21	9.952		
7,300.00	5,538.00	7,563.97	5,820.00	28.93	29.73	125.89	1,153.23	8.48	481.08	431.03	50.05	9.613		
7,400.00	5,538.00	7,663.96	5,820.00	30.04	30.81	125.78	1,253.22	8.48	482.41	430.47	51.94	9.287		
7,500.00	5,538.00	7,763.95	5,820.00	31.17	31.92	125.66	1,353.21	8.48	483.75	429.85	53.90	8.976		
7,600.00	5,538.00	7,863.93	5,820.00	32.33	33.06	125.55	1,453.19	8.48	485.08	429.19	55.90	8.678		
7,700.00	5,538.00	7,963.92	5,820.00	33.51	34.22	125.44	1,553.18	8.48	486.42	428.48	57.94	8.395		
7,800.00	5,538.00	8,063.91	5,820.00	34.72	35.40	125.32	1,653.17	8.48	487.76	427.74	60.02	8.126		
7,900.00	5,538.00	8,163.89	5,820.00	35.95	36.61	125.21	1,753.15	8.48	489.10	426.96	62.15	7.870		
8,000.00	5,538.00	8,263.88	5,820.00	37.19	37.83	125.10	1,853.14	8.48	490.44	426.14	64.30	7.627		
8,100.00	5,538.00	8,363.87	5,820.00	38.45	39.08	124.99	1,953.12	8.48	491.79	425.30	66.49	7.397		
8,200.00	5,538.00	8,463.85	5,820.00	39.73	40.33	124.88	2,053.11	8.48	493.14	424.43	68.70	7.178		
8,300.00	5,538.00	8,563.84	5,820.00	41.02	41.61	124.77	2,153.10	8.48	494.48	423.54	70.94	6.970		
8,400.00	5,538.00	8,663.83	5,820.00	42.32	42.89	124.67	2,253.08	8.48	495.83	422.63	73.21	6.773		
8,500.00	5,538.00	8,763.81	5,820.00	43.63	44.19	124.56	2,353.07	8.48	497.19	421.69	75.50	6.586		
8,600.00	5,538.00	8,863.80	5,820.00	44.95	45.49	124.45	2,453.06	8.48	498.54	420.74	77.81	6.408		
8,700.00	5,538.00	8,963.78	5,820.00	46.28	46.81	124.34	2,553.04	8.48	499.90	419.76	80.13	6.238		
8,800.00	5,538.00	9,063.77	5,820.00	47.62	48.13	124.24	2,653.03	8.48	501.25	418.77	82.48	6.077		
8,900.00	5,538.00	9,163.76	5,820.00	48.97	49.47	124.13	2,753.02	8.48	502.61	417.77	84.85	5.924		
9,000.00	5,538.00	9,263.74	5,820.00	50.32	50.81	124.03	2,853.00	8.47	503.97	416.75	87.23	5.778		
9,100.00	5,538.00	9,363.73	5,820.00	51.68	52.16	123.92	2,952.99	8.47	505.34	415.71	89.62	5.638		
9,200.00	5,538.00	9,463.72	5,820.00	53.05	53.51	123.82	3,052.98	8.47	506.70	414.67	92.03	5.506		
9,300.00	5,538.00	9,563.70	5,820.00	54.42	54.87	123.72	3,152.96	8.47	508.07	413.61	94.46	5.379		
9,400.00	5,538.00	9,663.69	5,820.00	55.80	56.24	123.61	3,252.95	8.47	509.43	412.54	96.89	5.258		
9,500.00	5,538.00	9,763.68	5,820.00	57.18	57.61	123.51	3,352.94	8.47	510.80	411.46	99.34	5.142		
9,600.00	5,538.00	9,863.66	5,820.00	58.57	58.99	123.41	3,452.92	8.47	512.17	410.37	101.80	5.031		
9,700.00	5,538.00	9,963.65	5,820.00	59.96	60.37	123.31	3,552.91	8.47	513.55	409.27	104.28	4.925		
9,800.00	5,538.00	10,063.64	5,820.00	61.35	61.75	123.21	3,652.90	8.47	514.92	408.16	106.76	4.823		
9,900.00	5,538.00	10,163.62	5,820.00	62.75	63.14	123.11	3,752.88	8.47	516.29	407.04	109.25	4.726		
10,000.00	5,538.00	10,263.61	5,820.00	64.15	64.54	123.01	3,852.87	8.47	517.67	405.92	111.75	4.632		
10,100.00	5,538.00	10,363.60	5,820.00	65.56	65.93	122.91	3,952.86	8.47	519.05	404.78	114.27	4.542		
10,200.00	5,538.00	10,463.58	5,820.00	66.97	67.33	122.81	4,052.84	8.47	520.43	403.64	116.79	4.456		

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-1901
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-1901	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	5,538.00	10,563.57	5,820.00	68.38	68.73	122.72	4,152.83	8.47	521.81	402.50	119.32	4.373	
10,400.00	5,538.00	10,663.56	5,820.00	69.79	70.14	122.62	4,252.81	8.47	523.19	401.34	121.85	4.294	
10,500.00	5,538.00	10,763.54	5,820.00	71.21	71.55	122.52	4,352.80	8.47	524.58	400.18	124.40	4.217	
10,600.00	5,538.00	10,863.53	5,820.00	72.62	72.96	122.43	4,452.79	8.47	525.97	399.01	126.95	4.143	
10,700.00	5,538.00	10,963.52	5,820.00	74.04	74.37	122.33	4,552.77	8.47	527.35	397.84	129.51	4.072	
10,800.00	5,538.00	11,063.50	5,820.00	75.47	75.78	122.23	4,652.76	8.47	528.74	396.66	132.08	4.003	
10,900.00	5,538.00	11,163.49	5,820.00	76.89	77.20	122.14	4,752.75	8.47	530.13	395.48	134.65	3.937	
11,000.00	5,538.00	11,263.47	5,820.00	78.32	78.62	122.05	4,852.73	8.47	531.52	394.29	137.23	3.873	
11,100.00	5,538.00	11,363.46	5,820.00	79.75	80.04	121.95	4,952.72	8.47	532.92	393.10	139.82	3.811	
11,200.00	5,538.00	11,463.45	5,820.00	81.18	81.46	121.86	5,052.71	8.47	534.31	391.90	142.41	3.752	
11,300.00	5,538.00	11,563.43	5,820.00	82.61	82.89	121.77	5,152.69	8.47	535.71	390.69	145.01	3.694	
11,400.00	5,538.00	11,663.42	5,820.00	84.04	84.31	121.67	5,252.68	8.47	537.11	389.49	147.62	3.638	
11,500.00	5,538.00	11,763.41	5,820.00	85.48	85.74	121.58	5,352.67	8.46	538.51	388.27	150.23	3.585	
11,600.00	5,538.00	11,863.39	5,820.00	86.91	87.17	121.49	5,452.65	8.46	539.91	387.06	152.85	3.532	
11,700.00	5,538.00	11,963.38	5,820.00	88.35	88.60	121.40	5,552.64	8.46	541.31	385.84	155.47	3.482	
11,800.00	5,538.00	12,063.37	5,820.00	89.79	90.03	121.31	5,652.63	8.46	542.71	384.61	158.10	3.433	
11,900.00	5,538.00	12,163.35	5,820.00	91.23	91.47	121.22	5,752.61	8.46	544.11	383.38	160.73	3.385	
12,000.00	5,538.00	12,263.34	5,820.00	92.67	92.90	121.13	5,852.60	8.46	545.52	382.15	163.37	3.339	
12,100.00	5,538.00	12,363.33	5,820.00	94.11	94.34	121.04	5,952.59	8.46	546.93	380.92	166.01	3.295	
12,200.00	5,538.00	12,463.31	5,820.00	95.55	95.77	120.95	6,052.57	8.46	548.34	379.68	168.66	3.251	
12,300.00	5,538.00	12,563.30	5,820.00	97.00	97.21	120.86	6,152.56	8.46	549.75	378.43	171.31	3.209	
12,400.00	5,538.00	12,663.29	5,820.00	98.44	98.65	120.78	6,252.54	8.46	551.16	377.19	173.97	3.168	
12,500.00	5,538.00	12,763.27	5,820.00	99.89	100.09	120.69	6,352.53	8.46	552.57	375.94	176.63	3.128	
12,600.00	5,538.00	12,863.26	5,820.00	101.33	101.53	120.60	6,452.52	8.46	553.98	374.69	179.30	3.090	
12,700.00	5,538.00	12,963.25	5,820.00	102.78	102.97	120.52	6,552.50	8.46	555.40	373.43	181.97	3.052	
12,800.00	5,538.00	13,063.23	5,820.00	104.23	104.41	120.43	6,652.49	8.46	556.81	372.17	184.64	3.016	
12,900.00	5,538.00	13,163.22	5,820.00	105.68	105.85	120.35	6,752.48	8.46	558.23	370.91	187.32	2.980	
13,000.00	5,538.00	13,263.20	5,820.00	107.13	107.30	120.26	6,852.46	8.46	559.65	369.65	190.00	2.946	
13,100.00	5,538.00	13,363.19	5,820.00	108.58	108.74	120.18	6,952.45	8.46	561.07	368.38	192.69	2.912	
13,200.00	5,538.00	13,463.18	5,820.00	110.03	110.19	120.09	7,052.44	8.46	562.49	367.11	195.38	2.879	
13,300.00	5,538.00	13,563.16	5,820.00	111.48	111.63	120.01	7,152.42	8.46	563.91	365.84	198.07	2.847	
13,400.00	5,538.00	13,663.15	5,820.00	112.93	113.08	119.93	7,252.41	8.46	565.33	364.57	200.77	2.816	
13,500.00	5,538.00	13,763.14	5,820.00	114.38	114.53	119.84	7,352.40	8.46	566.76	363.29	203.47	2.785	
13,600.00	5,538.00	13,863.12	5,820.00	115.84	115.97	119.76	7,452.38	8.46	568.18	362.01	206.17	2.756	
13,662.16	5,538.00	13,925.28	5,820.00	116.74	116.87	119.71	7,514.54	8.46	569.07	361.21	207.86	2.738 SF	



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1901
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-1901	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	150.71	150.71					
100.00	100.00	100.00	100.00	0.13	0.13	90.00	0.00	150.71	150.71	150.45	0.27	565.856		
200.00	200.00	200.00	200.00	0.47	0.47	90.00	0.00	150.71	150.71	149.77	0.94	160.225		
300.00	300.00	300.00	300.00	0.81	0.81	90.00	0.00	150.71	150.71	149.10	1.61	93.325 CC, ES		
400.00	399.98	398.73	398.71	1.11	1.10	-114.96	-1.65	151.13	151.87	149.66	2.21	68.591		
500.00	499.84	497.38	497.22	1.41	1.40	-114.80	-6.60	152.36	155.34	152.53	2.80	55.452		
600.00	599.45	595.87	595.35	1.74	1.72	-114.55	-14.81	154.41	161.10	157.66	3.44	46.774		
700.00	698.70	694.14	692.89	2.07	2.05	-114.22	-26.27	157.28	169.17	165.03	4.13	40.912		
800.00	797.47	792.09	789.68	2.44	2.40	-113.82	-40.91	160.93	179.51	174.64	4.87	36.845		
900.00	895.62	890.77	886.74	2.84	2.79	-113.61	-58.19	165.25	191.93	186.28	5.65	33.976		
1,000.00	993.47	989.90	984.20	3.26	3.19	-113.97	-75.74	169.63	205.06	198.61	6.44	31.823		
1,100.00	1,091.31	1,089.03	1,081.66	3.69	3.60	-114.29	-93.30	174.02	218.18	210.93	7.26	30.065		
1,200.00	1,189.15	1,188.16	1,179.12	4.13	4.02	-114.58	-110.85	178.40	231.32	223.24	8.08	28.616		
1,300.00	1,286.99	1,287.28	1,276.59	4.58	4.44	-114.83	-128.40	182.79	244.46	235.54	8.92	27.406		
1,400.00	1,384.83	1,386.41	1,374.05	5.02	4.86	-115.06	-145.95	187.17	257.60	247.84	9.76	26.385		
1,500.00	1,482.67	1,485.54	1,471.51	5.47	5.29	-115.26	-163.50	191.56	270.75	260.14	10.61	25.515		
1,600.00	1,580.51	1,584.67	1,568.97	5.92	5.72	-115.45	-181.06	195.94	283.90	272.44	11.46	24.765		
1,700.00	1,678.35	1,683.79	1,666.44	6.38	6.14	-115.62	-198.61	200.33	297.06	284.74	12.32	24.113		
1,800.00	1,776.20	1,782.92	1,763.90	6.83	6.57	-115.78	-216.16	204.71	310.21	297.04	13.18	23.541		
1,900.00	1,874.04	1,882.05	1,861.36	7.29	7.00	-115.92	-233.71	209.09	323.37	309.33	14.04	23.036		
2,000.00	1,971.88	1,981.18	1,958.82	7.75	7.43	-116.05	-251.27	213.48	336.53	321.63	14.90	22.587		
2,100.00	2,069.72	2,080.30	2,056.29	8.20	7.87	-116.17	-268.82	217.86	349.69	333.93	15.76	22.185		
2,200.00	2,167.56	2,179.43	2,153.75	8.66	8.30	-116.29	-286.37	222.25	362.86	346.23	16.63	21.824		
2,300.00	2,265.40	2,278.56	2,251.21	9.12	8.73	-116.39	-303.92	226.63	376.02	358.53	17.49	21.497		
2,400.00	2,363.24	2,377.69	2,348.67	9.58	9.16	-116.49	-321.48	231.02	389.18	370.83	18.36	21.200		
2,500.00	2,461.09	2,476.81	2,446.14	10.04	9.60	-116.58	-339.03	235.40	402.35	383.13	19.22	20.929		
2,600.00	2,558.93	2,575.94	2,543.60	10.50	10.03	-116.67	-356.58	239.79	415.52	395.43	20.09	20.681		
2,700.00	2,656.77	2,675.07	2,641.06	10.96	10.46	-116.75	-374.13	244.17	428.69	407.73	20.96	20.453		
2,800.00	2,754.61	2,774.19	2,738.52	11.42	10.90	-116.82	-391.68	248.55	441.86	420.03	21.83	20.243		
2,900.00	2,852.45	2,873.32	2,835.99	11.88	11.33	-116.90	-409.24	252.94	455.03	432.33	22.70	20.048		
3,000.00	2,950.29	2,972.45	2,933.45	12.34	11.77	-116.96	-426.79	257.32	468.20	444.63	23.57	19.868		
3,100.00	3,048.13	3,071.58	3,030.91	12.80	12.20	-117.03	-444.34	261.71	481.37	456.93	24.43	19.700		
3,200.00	3,145.98	3,170.70	3,128.37	13.26	12.64	-117.09	-461.89	266.09	494.54	469.23	25.30	19.543		
3,300.00	3,243.82	3,269.83	3,225.84	13.72	13.07	-117.15	-479.45	270.48	507.71	481.54	26.17	19.397		
3,400.00	3,341.66	3,368.96	3,323.30	14.18	13.50	-117.20	-497.00	274.86	520.88	493.84	27.04	19.260		
3,500.00	3,439.50	3,468.09	3,420.76	14.65	13.94	-117.25	-514.55	279.25	534.06	506.14	27.91	19.132		
3,600.00	3,537.34	3,567.21	3,518.22	15.11	14.37	-117.30	-532.10	283.63	547.23	518.45	28.79	19.011		
3,700.00	3,635.18	3,666.34	3,615.69	15.57	14.81	-117.35	-549.66	288.01	560.40	530.75	29.66	18.897		
3,800.00	3,733.02	3,765.47	3,713.15	16.03	15.25	-117.39	-567.21	292.40	573.58	543.05	30.53	18.789		
3,900.00	3,830.87	3,864.60	3,810.61	16.49	15.68	-117.43	-584.76	296.78	586.75	555.36	31.40	18.688		
4,000.00	3,928.71	3,963.72	3,908.07	16.95	16.12	-117.48	-602.31	301.17	599.93	567.66	32.27	18.591		
4,100.00	4,026.55	4,062.85	4,005.54	17.42	16.55	-117.51	-619.86	305.55	613.10	579.96	33.14	18.500		
4,200.00	4,124.39	4,161.98	4,103.00	17.88	16.99	-117.55	-637.42	309.94	626.28	592.27	34.01	18.414		
4,299.99	4,222.22	4,261.10	4,200.45	18.34	17.42	-117.59	-654.97	314.32	639.45	604.57	34.88	18.331		
4,400.00	4,320.39	4,360.32	4,298.01	18.71	17.86	-117.71	-672.54	318.71	651.87	616.20	35.67	18.273		
4,500.00	4,419.16	4,459.64	4,395.66	18.98	18.29	-117.54	-690.12	323.10	662.69	626.31	36.38	18.215		
4,600.00	4,518.42	4,559.06	4,493.41	19.23	18.73	-117.09	-707.73	327.50	671.96	634.87	37.08	18.119		
4,700.00	4,618.03	4,663.65	4,596.58	19.47	19.04	-116.49	-724.34	331.65	679.34	641.67	37.67	18.032		
4,800.00	4,717.89	4,768.77	4,700.84	19.69	19.31	-115.89	-737.35	334.90	684.48	646.27	38.20	17.917		
4,899.99	4,817.86	4,874.35	4,805.97	19.93	19.57	89.72	-746.66	337.23	687.34	648.60	38.73	17.745		
5,000.00	4,917.87	4,980.38	4,911.84	20.17	19.82	90.19	-752.23	338.62	688.65	649.41	39.24	17.549		
5,099.99	5,017.86	5,086.42	5,017.86	20.38	20.08	91.27	-754.00	339.06	689.07	649.35	39.72	17.347		

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-1901
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-1901	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,200.00	5,117.24	5,185.80	5,117.24	20.54	20.29	92.04	-754.00	339.06	689.36	649.24	40.12	17.183		
5,300.00	5,212.93	5,281.49	5,212.93	20.62	20.49	94.12	-754.00	339.06	690.98	650.55	40.43	17.092		
5,400.00	5,301.43	5,386.47	5,317.22	20.61	20.67	96.92	-743.67	339.06	695.04	654.44	40.59	17.122		
5,500.00	5,379.47	5,501.53	5,426.58	20.54	20.75	99.60	-708.66	339.06	701.04	660.53	40.52	17.303		
5,600.00	5,444.21	5,628.45	5,535.04	20.44	20.74	102.05	-643.34	339.06	708.23	668.08	40.15	17.639		
5,700.00	5,493.25	5,768.26	5,632.35	20.31	20.65	104.08	-543.53	339.06	715.44	675.87	39.57	18.080		
5,800.00	5,524.80	5,919.91	5,703.86	20.19	20.54	105.42	-410.42	339.06	721.30	682.28	39.01	18.488		
5,900.00	5,537.71	6,079.12	5,734.54	20.10	20.51	105.81	-254.82	339.06	724.63	685.78	38.84	18.655		
6,000.00	5,538.00	6,187.36	5,735.00	20.09	20.60	105.74	-146.59	339.06	726.20	687.14	39.06	18.592		
6,100.00	5,538.00	6,287.34	5,735.00	20.18	20.79	105.71	-46.60	339.05	727.78	688.31	39.48	18.435		
6,200.00	5,538.00	6,387.33	5,735.00	20.39	21.09	105.67	53.38	339.05	729.37	689.27	40.10	18.191		
6,300.00	5,538.00	6,487.32	5,735.00	20.74	21.49	105.64	153.37	339.05	730.95	690.05	40.90	17.871		
6,400.00	5,538.00	6,587.30	5,735.00	21.21	21.98	105.60	253.36	339.05	732.53	690.64	41.89	17.488		
6,500.00	5,538.00	6,687.29	5,735.00	21.79	22.57	105.57	353.34	339.05	734.11	691.07	43.04	17.056		
6,600.00	5,538.00	6,787.28	5,735.00	22.46	23.23	105.53	453.33	339.05	735.69	691.35	44.35	16.589		
6,700.00	5,538.00	6,887.26	5,735.00	23.21	23.97	105.50	553.32	339.05	737.28	691.48	45.80	16.099		
6,800.00	5,538.00	6,987.25	5,735.00	24.03	24.77	105.47	653.30	339.05	738.86	691.49	47.37	15.597		
6,900.00	5,538.00	7,087.24	5,735.00	24.91	25.63	105.43	753.29	339.05	740.44	691.38	49.07	15.091		
7,000.00	5,538.00	7,187.22	5,735.00	25.85	26.55	105.40	853.28	339.05	742.03	691.16	50.86	14.589		
7,100.00	5,538.00	7,287.21	5,735.00	26.84	27.51	105.36	953.26	339.05	743.61	690.86	52.75	14.096		
7,200.00	5,538.00	7,387.20	5,735.00	27.87	28.52	105.33	1,053.25	339.05	745.20	690.47	54.73	13.616		
7,300.00	5,538.00	7,487.18	5,735.00	28.93	29.57	105.30	1,153.24	339.05	746.78	690.00	56.78	13.152		
7,400.00	5,538.00	7,587.17	5,735.00	30.04	30.65	105.26	1,253.22	339.05	748.36	689.46	58.90	12.706		
7,500.00	5,538.00	7,687.15	5,735.00	31.17	31.76	105.23	1,353.21	339.05	749.95	688.87	61.08	12.278		
7,600.00	5,538.00	7,787.14	5,735.00	32.33	32.90	105.20	1,453.20	339.04	751.53	688.22	63.32	11.870		
7,700.00	5,538.00	7,887.13	5,735.00	33.51	34.07	105.17	1,553.18	339.04	753.12	687.52	65.60	11.480		
7,800.00	5,538.00	7,987.11	5,735.00	34.72	35.26	105.13	1,653.17	339.04	754.70	686.78	67.93	11.110		
7,900.00	5,538.00	8,087.10	5,735.00	35.95	36.47	105.10	1,753.16	339.04	756.29	685.99	70.30	10.758		
8,000.00	5,538.00	8,187.09	5,735.00	37.19	37.69	105.07	1,853.14	339.04	757.88	685.17	72.70	10.424		
8,100.00	5,538.00	8,287.07	5,735.00	38.45	38.94	105.04	1,953.13	339.04	759.46	684.32	75.14	10.107		
8,200.00	5,538.00	8,387.06	5,735.00	39.73	40.20	105.00	2,053.11	339.04	761.05	683.44	77.61	9.806		
8,300.00	5,538.00	8,487.05	5,735.00	41.02	41.47	104.97	2,153.10	339.04	762.64	682.53	80.10	9.521		
8,400.00	5,538.00	8,587.03	5,735.00	42.32	42.76	104.94	2,253.09	339.04	764.22	681.60	82.62	9.250		
8,500.00	5,538.00	8,687.02	5,735.00	43.63	44.06	104.91	2,353.07	339.04	765.81	680.65	85.16	8.992		
8,600.00	5,538.00	8,787.01	5,735.00	44.95	45.37	104.88	2,453.06	339.04	767.40	679.67	87.73	8.748		
8,700.00	5,538.00	8,886.99	5,735.00	46.28	46.69	104.85	2,553.05	339.04	768.99	678.68	90.31	8.515		
8,800.00	5,538.00	8,986.98	5,735.00	47.62	48.01	104.81	2,653.03	339.04	770.57	677.67	92.91	8.294		
8,900.00	5,538.00	9,086.97	5,735.00	48.97	49.35	104.78	2,753.02	339.04	772.16	676.64	95.52	8.084		
9,000.00	5,538.00	9,186.95	5,735.00	50.32	50.69	104.75	2,853.01	339.04	773.75	675.60	98.15	7.883		
9,100.00	5,538.00	9,286.94	5,735.00	51.68	52.04	104.72	2,952.99	339.03	775.34	674.54	100.80	7.692		
9,200.00	5,538.00	9,386.93	5,735.00	53.05	53.40	104.69	3,052.98	339.03	776.93	673.48	103.45	7.510		
9,300.00	5,538.00	9,486.91	5,735.00	54.42	54.76	104.66	3,152.97	339.03	778.52	672.40	106.12	7.336		
9,400.00	5,538.00	9,586.90	5,735.00	55.80	56.13	104.63	3,252.95	339.03	780.11	671.31	108.80	7.170		
9,500.00	5,538.00	9,686.89	5,735.00	57.18	57.50	104.60	3,352.94	339.03	781.70	670.21	111.49	7.011		
9,600.00	5,538.00	9,786.87	5,735.00	58.57	58.88	104.57	3,452.93	339.03	783.29	669.10	114.19	6.860		
9,700.00	5,538.00	9,886.86	5,735.00	59.96	60.26	104.54	3,552.91	339.03	784.88	667.98	116.90	6.714		
9,800.00	5,538.00	9,986.84	5,735.00	61.35	61.65	104.51	3,652.90	339.03	786.47	666.85	119.61	6.575		
9,900.00	5,538.00	10,086.83	5,735.00	62.75	63.04	104.48	3,752.89	339.03	788.06	665.72	122.34	6.442		
10,000.00	5,538.00	10,186.82	5,735.00	64.15	64.43	104.45	3,852.87	339.03	789.65	664.58	125.07	6.314		
10,100.00	5,538.00	10,286.80	5,735.00	65.56	65.83	104.42	3,952.86	339.03	791.24	663.43	127.81	6.191		
10,200.00	5,538.00	10,386.79	5,735.00	66.97	67.23	104.39	4,052.84	339.03	792.83	662.28	130.55	6.073		
10,300.00	5,538.00	10,486.78	5,735.00	68.38	68.63	104.36	4,152.83	339.03	794.42	661.12	133.30	5.960		

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-1901
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-1901	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
10,400.00	5,538.00	10,586.76	5,735.00	69.79	70.04	104.33	4,252.82	339.03	796.01	659.95	136.06	5.850		
10,500.00	5,538.00	10,686.75	5,735.00	71.21	71.45	104.30	4,352.80	339.03	797.60	658.78	138.82	5.746		
10,600.00	5,538.00	10,786.74	5,735.00	72.62	72.86	104.27	4,452.79	339.02	799.19	657.60	141.59	5.644		
10,700.00	5,538.00	10,886.72	5,735.00	74.04	74.27	104.24	4,552.78	339.02	800.79	656.42	144.36	5.547		
10,800.00	5,538.00	10,986.71	5,735.00	75.47	75.69	104.21	4,652.76	339.02	802.38	655.24	147.14	5.453		
10,900.00	5,538.00	11,086.70	5,735.00	76.89	77.11	104.19	4,752.75	339.02	803.97	654.05	149.92	5.363		
11,000.00	5,538.00	11,186.68	5,735.00	78.32	78.53	104.16	4,852.74	339.02	805.56	652.86	152.71	5.275		
11,100.00	5,538.00	11,286.67	5,735.00	79.75	79.95	104.13	4,952.72	339.02	807.16	651.66	155.50	5.191		
11,200.00	5,538.00	11,386.66	5,735.00	81.18	81.37	104.10	5,052.71	339.02	808.75	650.46	158.29	5.109		
11,300.00	5,538.00	11,486.64	5,735.00	82.61	82.80	104.07	5,152.70	339.02	810.34	649.25	161.09	5.030		
11,400.00	5,538.00	11,586.63	5,735.00	84.04	84.22	104.04	5,252.68	339.02	811.94	648.05	163.89	4.954		
11,500.00	5,538.00	11,686.62	5,735.00	85.48	85.65	104.02	5,352.67	339.02	813.53	646.84	166.69	4.880		
11,600.00	5,538.00	11,786.60	5,735.00	86.91	87.08	103.99	5,452.66	339.02	815.12	645.62	169.50	4.809		
11,700.00	5,538.00	11,886.59	5,735.00	88.35	88.51	103.96	5,552.64	339.02	816.72	644.40	172.31	4.740		
11,800.00	5,538.00	11,986.57	5,735.00	89.79	89.94	103.93	5,652.63	339.02	818.31	643.19	175.13	4.673		
11,900.00	5,538.00	12,086.56	5,735.00	91.23	91.38	103.90	5,752.62	339.02	819.91	641.96	177.94	4.608		
12,000.00	5,538.00	12,186.55	5,735.00	92.67	92.81	103.88	5,852.60	339.02	821.50	640.74	180.76	4.545		
12,100.00	5,538.00	12,286.53	5,735.00	94.11	94.25	103.85	5,952.59	339.01	823.10	639.51	183.58	4.483		
12,200.00	5,538.00	12,386.52	5,735.00	95.55	95.68	103.82	6,052.58	339.01	824.69	638.28	186.41	4.424		
12,300.00	5,538.00	12,486.51	5,735.00	97.00	97.12	103.79	6,152.56	339.01	826.29	637.05	189.24	4.366		
12,400.00	5,538.00	12,586.49	5,735.00	98.44	98.56	103.77	6,252.55	339.01	827.88	635.82	192.06	4.310		
12,500.00	5,538.00	12,686.48	5,735.00	99.89	100.00	103.74	6,352.53	339.01	829.48	634.58	194.90	4.256		
12,600.00	5,538.00	12,786.47	5,735.00	101.33	101.44	103.71	6,452.52	339.01	831.07	633.34	197.73	4.203		
12,700.00	5,538.00	12,886.45	5,735.00	102.78	102.88	103.69	6,552.51	339.01	832.67	632.10	200.56	4.152		
12,800.00	5,538.00	12,986.44	5,735.00	104.23	104.33	103.66	6,652.49	339.01	834.26	630.86	203.40	4.102		
12,900.00	5,538.00	13,086.43	5,735.00	105.68	105.77	103.63	6,752.48	339.01	835.86	629.62	206.24	4.053		
13,000.00	5,538.00	13,186.41	5,735.00	107.13	107.21	103.61	6,852.47	339.01	837.46	628.37	209.08	4.005		
13,100.00	5,538.00	13,286.40	5,735.00	108.58	108.66	103.58	6,952.45	339.01	839.05	627.13	211.93	3.959		
13,200.00	5,538.00	13,386.39	5,735.00	110.03	110.10	103.55	7,052.44	339.01	840.65	625.88	214.77	3.914		
13,300.00	5,538.00	13,486.37	5,735.00	111.48	111.55	103.53	7,152.43	339.01	842.25	624.63	217.62	3.870		
13,400.00	5,538.00	13,586.36	5,735.00	112.93	113.00	103.50	7,252.41	339.01	843.84	623.38	220.47	3.828		
13,500.00	5,538.00	13,686.35	5,735.00	114.38	114.44	103.48	7,352.40	339.01	845.44	622.13	223.32	3.786		
13,600.00	5,538.00	13,786.33	5,735.00	115.84	115.89	103.45	7,452.39	339.00	847.04	620.87	226.17	3.745		
13,662.16	5,538.00	13,848.49	5,735.00	116.74	116.79	103.43	7,514.54	339.00	848.03	620.09	227.94	3.720 SF		



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1901
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-1901	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	112.46	-49.59	119.96	129.80					
100.00	100.00	100.00	100.00	0.13	0.13	112.46	-49.59	119.96	129.80	129.54	0.27	487.344		
200.00	200.00	200.00	200.00	0.47	0.47	112.46	-49.59	119.96	129.80	128.86	0.94	137.994		
300.00	300.00	300.00	300.00	0.81	0.81	112.46	-49.59	119.96	129.80	128.19	1.61	80.376 CC, ES		
400.00	399.98	396.84	396.82	1.11	1.13	-93.78	-48.94	121.46	131.09	128.83	2.26	57.924		
500.00	499.84	493.09	492.95	1.41	1.45	-97.28	-47.00	125.93	135.32	132.38	2.94	45.998		
600.00	599.45	590.49	590.04	1.74	1.78	-102.52	-43.98	132.90	142.99	139.37	3.62	39.536		
700.00	698.70	688.67	687.91	2.07	2.11	-108.46	-40.83	140.18	153.14	148.86	4.28	35.782		
800.00	797.47	786.17	785.09	2.44	2.44	-114.60	-37.70	147.40	166.27	161.31	4.96	33.502		
900.00	895.62	882.86	881.46	2.84	2.78	-120.63	-34.60	154.56	182.93	177.26	5.67	32.288		
1,000.00	993.47	979.13	977.42	3.26	3.11	-126.23	-31.51	161.69	202.38	196.03	6.35	31.866		
1,100.00	1,091.31	1,075.40	1,073.38	3.69	3.45	-130.84	-28.41	168.82	223.42	216.40	7.03	31.790		
1,200.00	1,189.15	1,171.68	1,169.34	4.13	3.79	-134.66	-25.32	175.95	245.64	237.94	7.70	31.891		
1,300.00	1,286.99	1,267.95	1,265.30	4.58	4.12	-137.85	-22.23	183.08	268.75	260.37	8.37	32.093		
1,400.00	1,384.83	1,364.23	1,361.26	5.02	4.46	-140.54	-19.14	190.21	292.53	283.48	9.04	32.345		
1,500.00	1,482.67	1,460.50	1,457.22	5.47	4.80	-142.82	-16.05	197.34	316.83	307.12	9.71	32.619		
1,600.00	1,580.51	1,556.77	1,553.17	5.92	5.14	-144.78	-12.96	204.47	341.55	331.17	10.38	32.898		
1,700.00	1,678.35	1,653.05	1,649.13	6.38	5.48	-146.48	-9.87	211.61	366.59	355.54	11.05	33.172		
1,800.00	1,776.20	1,749.32	1,745.09	6.83	5.81	-147.96	-6.78	218.74	391.90	380.18	11.72	33.437		
1,900.00	1,874.04	1,845.59	1,841.05	7.29	6.15	-149.26	-3.69	225.87	417.43	405.04	12.39	33.689		
2,000.00	1,971.88	1,941.87	1,937.01	7.75	6.49	-150.41	-0.60	233.00	443.14	430.08	13.06	33.929		
2,100.00	2,069.72	2,038.14	2,032.97	8.20	6.83	-151.44	2.49	240.13	469.00	455.27	13.73	34.154		
2,200.00	2,167.56	2,134.41	2,128.93	8.66	7.17	-152.36	5.58	247.26	494.98	480.58	14.40	34.367		
2,300.00	2,265.40	2,230.69	2,224.89	9.12	7.51	-153.19	8.67	254.39	521.08	506.00	15.07	34.566		
2,400.00	2,363.24	2,326.96	2,320.85	9.58	7.85	-153.94	11.76	261.52	547.26	531.52	15.75	34.753		
2,500.00	2,461.09	2,423.24	2,416.81	10.04	8.19	-154.62	14.85	268.65	573.53	557.11	16.42	34.929		
2,600.00	2,558.93	2,519.51	2,512.77	10.50	8.53	-155.24	17.94	275.78	599.86	582.77	17.09	35.095		
2,700.00	2,656.77	2,615.78	2,608.73	10.96	8.87	-155.81	21.03	282.91	626.26	608.49	17.77	35.250		
2,800.00	2,754.61	2,712.06	2,704.69	11.42	9.21	-156.34	24.12	290.04	652.71	634.27	18.44	35.397		
2,900.00	2,852.45	2,808.33	2,800.65	11.88	9.54	-156.82	27.21	297.18	679.20	660.09	19.11	35.534		
3,000.00	2,950.29	2,904.60	2,896.61	12.34	9.88	-157.27	30.30	304.31	705.74	685.95	19.79	35.665		
3,100.00	3,048.13	3,000.88	2,992.57	12.80	10.22	-157.68	33.39	311.44	732.31	711.85	20.46	35.787		
3,200.00	3,145.98	3,097.15	3,088.53	13.26	10.56	-158.07	36.48	318.57	758.92	737.78	21.14	35.904		
3,300.00	3,243.82	3,193.43	3,184.49	13.72	10.90	-158.43	39.57	325.70	785.55	763.74	21.81	36.013		
3,400.00	3,341.66	3,289.70	3,280.45	14.18	11.24	-158.76	42.66	332.83	812.22	789.73	22.49	36.118		
3,500.00	3,439.50	3,385.97	3,376.41	14.65	11.58	-159.08	45.75	339.96	838.91	815.74	23.16	36.216		
3,600.00	3,537.34	3,482.25	3,472.36	15.11	11.92	-159.37	48.84	347.09	865.62	841.78	23.84	36.310		
3,700.00	3,635.18	3,578.52	3,568.32	15.57	12.26	-159.65	51.93	354.22	892.35	867.83	24.52	36.399		
3,800.00	3,733.02	3,674.79	3,664.28	16.03	12.60	-159.91	55.02	361.35	919.09	893.90	25.19	36.484		
3,900.00	3,830.87	3,771.07	3,760.24	16.49	12.94	-160.16	58.11	368.48	945.86	919.99	25.87	36.565		
4,000.00	3,928.71	3,867.34	3,856.20	16.95	13.28	-160.39	61.20	375.62	972.64	946.10	26.54	36.642		
4,100.00	4,026.55	3,963.62	3,952.16	17.42	13.62	-160.61	64.29	382.75	999.43	972.21	27.22	36.715		
4,200.00	4,124.39	4,059.89	4,048.12	17.88	13.96	-160.82	67.38	389.88	1,026.24	998.34	27.90	36.786		
4,299.99	4,222.22	4,156.15	4,144.07	18.34	14.30	-161.02	70.47	397.01	1,053.06	1,024.49	28.57	36.853		
4,400.00	4,320.39	4,252.86	4,240.46	18.71	14.64	-161.34	73.57	404.17	1,078.39	1,049.18	29.21	36.921		
4,500.00	4,419.16	4,350.36	4,337.64	18.98	14.98	-161.58	76.70	411.39	1,100.50	1,070.71	29.80	36.933		
4,600.00	4,518.42	4,448.55	4,435.52	19.23	15.33	-161.73	79.86	418.66	1,119.38	1,088.99	30.39	36.832		
4,700.00	4,618.03	4,547.32	4,533.96	19.47	15.68	-161.81	83.03	425.98	1,134.99	1,104.01	30.99	36.627		
4,800.00	4,717.89	4,645.02	4,631.00	19.69	16.00	-161.85	-748.44	438.41	1,137.11	1,108.98	28.13	40.422		
4,899.99	4,817.86	4,745.00	4,731.00	19.93	16.31	90.00	-750.00	438.41	1,067.80	1,037.77	30.03	35.557		
5,000.00	4,917.87	4,845.00	4,831.00	20.17	16.61	90.00	-750.00	438.41	1,003.07	971.04	32.03	31.320		
5,099.99	5,017.86	4,945.00	4,931.00	20.38	16.91	91.00	-750.00	438.41	944.53	910.46	34.07	27.722		

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-1901
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-1901	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Sec 30-T10N-R57W - Horsetail #30E-3103 - Hz - APD		Offset Site Error:		0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag															Offset Well Error:		0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor					
5,200.00	5,117.24	6,156.84	5,538.00	20.54	21.24	96.77	-740.26	438.41	893.80	857.80	36.00	24.829	20.502 SF				
5,300.00	5,212.93	6,128.33	5,538.00	20.62	21.04	99.66	-711.75	438.41	853.38	815.85	37.53	22.742					
5,400.00	5,301.43	6,082.09	5,538.00	20.61	20.72	100.05	-665.52	438.41	824.47	785.95	38.52	21.406					
5,500.00	5,379.47	6,019.83	5,538.00	20.54	20.33	98.60	-603.25	438.41	806.55	767.61	38.94	20.711					
5,600.00	5,444.21	5,943.82	5,538.00	20.44	19.91	96.08	-527.25	438.41	797.60	758.70	38.90	20.605					
5,700.00	5,493.25	5,856.86	5,538.00	20.31	19.48	93.33	-440.29	438.41	794.76	756.19	38.57	20.605					
5,734.08	5,506.04	5,823.75	5,537.38	20.27	19.34	92.41	-407.18	438.41	794.64	756.20	38.43	20.675					
5,800.00	5,524.80	5,760.74	5,530.51	20.19	19.09	90.60	-344.59	438.41	795.08	756.92	38.16	20.836					
5,900.00	5,537.71	5,670.40	5,507.63	20.10	18.78	87.90	-257.32	438.41	797.32	759.52	37.80	21.093					
6,000.00	5,538.00	5,587.61	5,473.71	20.09	18.54	85.39	-181.88	438.41	801.69	764.14	37.54	21.355					
6,100.00	5,538.00	5,516.96	5,435.63	20.18	18.35	82.70	-122.44	438.41	810.05	772.66	37.39	21.665					
6,200.00	5,538.00	5,458.09	5,397.99	20.39	18.20	80.07	-77.22	438.41	824.16	786.84	37.32	22.082					
6,300.00	5,538.00	5,409.43	5,363.19	20.74	18.08	77.67	-43.24	438.41	845.24	807.91	37.33	22.644					
6,400.00	5,538.00	5,369.21	5,332.13	21.21	17.98	75.57	-17.70	438.41	873.91	836.51	37.40	23.368					
6,500.00	5,538.00	5,335.77	5,304.87	21.79	17.90	73.77	1.66	438.41	910.24	872.72	37.51	24.264					
6,600.00	5,538.00	5,300.00	5,274.40	22.46	17.81	71.78	20.39	438.41	953.98	916.40	37.59	25.382					
6,700.00	5,538.00	5,284.06	5,260.42	23.21	17.77	70.89	28.05	438.41	1,004.38	966.56	37.81	26.561					
6,800.00	5,538.00	5,250.00	5,229.81	24.03	17.68	68.96	42.97	438.41	1,061.12	1,023.26	37.86	28.031					
6,900.00	5,538.00	5,250.00	5,229.81	24.91	17.68	68.96	42.97	438.41	1,122.80	1,084.65	38.15	29.427					
7,000.00	5,538.00	5,231.34	5,212.65	25.85	17.63	67.91	50.28	438.41	1,189.32	1,151.05	38.26	31.082					
7,100.00	5,538.00	5,218.13	5,200.34	26.84	17.60	67.16	55.09	438.41	1,259.86	1,221.47	38.39	32.819					
7,200.00	5,538.00	5,200.00	5,183.26	27.87	17.55	66.13	61.17	438.41	1,333.88	1,295.43	38.46	34.684					
7,300.00	5,538.00	5,200.00	5,183.26	28.93	17.55	66.13	61.17	438.41	1,410.79	1,372.17	38.62	36.531					
7,400.00	5,538.00	5,200.00	5,183.26	30.04	17.55	66.13	61.17	438.41	1,490.44	1,451.69	38.75	38.463					



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1901
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-1901	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	105.41	-49.61	179.94	186.65					
100.00	100.00	100.00	100.00	0.13	0.13	105.41	-49.61	179.94	186.65	186.38	0.27	700.767		
200.00	200.00	200.00	200.00	0.47	0.47	105.41	-49.61	179.94	186.65	185.71	0.94	198.425		
300.00	300.00	300.00	300.00	0.81	0.81	105.41	-49.61	179.94	186.65	185.03	1.61	115.575 CC, ES		
400.00	399.98	394.49	394.48	1.11	1.12	-100.29	-49.25	181.45	188.41	186.14	2.27	83.039		
500.00	499.84	488.47	488.33	1.41	1.43	-102.25	-48.21	185.97	193.85	190.89	2.96	65.447		
600.00	599.45	581.41	580.96	1.74	1.74	-105.24	-46.50	193.39	203.46	199.75	3.71	54.882		
700.00	698.70	672.85	671.80	2.07	2.06	-108.89	-44.15	203.54	217.83	213.34	4.48	48.594		
800.00	797.47	766.40	764.42	2.44	2.40	-112.97	-41.19	216.34	237.07	231.89	5.18	45.740		
900.00	895.62	861.86	858.89	2.84	2.75	-117.13	-38.11	229.67	259.43	253.59	5.84	44.401		
1,000.00	993.47	956.87	952.92	3.26	3.11	-121.24	-35.05	242.93	283.97	277.47	6.49	43.725		
1,100.00	1,091.31	1,051.87	1,046.95	3.69	3.47	-124.71	-31.98	256.19	309.71	302.56	7.15	43.309		
1,200.00	1,189.15	1,146.88	1,140.98	4.13	3.83	-127.65	-28.92	269.45	336.38	328.57	7.81	43.072		
1,300.00	1,286.99	1,241.89	1,235.01	4.58	4.19	-130.16	-25.85	282.71	363.76	355.29	8.47	42.922		
1,400.00	1,384.83	1,336.90	1,329.04	5.02	4.56	-132.33	-22.79	295.97	391.72	382.58	9.14	42.841		
1,500.00	1,482.67	1,431.91	1,423.06	5.47	4.93	-134.21	-19.72	309.23	420.14	410.32	9.82	42.804		
1,600.00	1,580.51	1,526.92	1,517.09	5.92	5.29	-135.85	-16.66	322.49	448.92	438.43	10.49	42.796		
1,700.00	1,678.35	1,621.92	1,611.12	6.38	5.66	-137.30	-13.59	335.75	478.01	466.84	11.17	42.806		
1,800.00	1,776.20	1,716.93	1,705.15	6.83	6.03	-138.59	-10.53	349.02	507.35	495.50	11.85	42.829		
1,900.00	1,874.04	1,811.94	1,799.18	7.29	6.40	-139.73	-7.46	362.28	536.90	524.37	12.53	42.859		
2,000.00	1,971.88	1,906.95	1,893.21	7.75	6.77	-140.76	-4.40	375.54	566.63	553.42	13.21	42.894		
2,100.00	2,069.72	2,001.96	1,987.23	8.20	7.14	-141.68	-1.33	388.80	596.50	582.61	13.89	42.932		
2,200.00	2,167.56	2,096.97	2,081.26	8.66	7.51	-142.52	1.73	402.06	626.51	611.93	14.58	42.972		
2,300.00	2,265.40	2,191.97	2,175.29	9.12	7.88	-143.28	4.80	415.32	656.62	641.36	15.27	43.011		
2,400.00	2,363.24	2,286.98	2,269.32	9.58	8.25	-143.97	7.86	428.58	686.84	670.88	15.95	43.051		
2,500.00	2,461.09	2,381.99	2,363.35	10.04	8.62	-144.61	10.93	441.84	717.14	700.49	16.64	43.091		
2,600.00	2,558.93	2,477.00	2,457.38	10.50	8.99	-145.19	13.99	455.10	747.51	730.18	17.33	43.129		
2,700.00	2,656.77	2,572.01	2,551.40	10.96	9.36	-145.73	17.06	468.36	777.95	759.92	18.02	43.166		
2,800.00	2,754.61	2,667.02	2,645.43	11.42	9.73	-146.23	20.12	481.62	808.44	789.73	18.71	43.202		
2,900.00	2,852.45	2,762.02	2,739.46	11.88	10.10	-146.69	23.19	494.89	838.99	819.59	19.40	43.237		
3,000.00	2,950.29	2,857.03	2,833.49	12.34	10.47	-147.12	26.25	508.15	869.58	849.49	20.10	43.271		
3,100.00	3,048.13	2,952.04	2,927.52	12.80	10.84	-147.52	29.32	521.41	900.22	879.43	20.79	43.303		
3,200.00	3,145.98	3,047.05	3,021.55	13.26	11.21	-147.90	32.38	534.67	930.89	909.41	21.48	43.334		
3,300.00	3,243.82	3,142.06	3,115.57	13.72	11.58	-148.25	35.45	547.93	961.60	939.42	22.17	43.364		
3,400.00	3,341.66	3,237.07	3,209.60	14.18	11.95	-148.58	38.51	561.19	992.34	969.47	22.87	43.393		
3,500.00	3,439.50	3,332.07	3,303.63	14.65	12.32	-148.89	41.58	574.45	1,023.10	999.54	23.56	43.420		
3,600.00	3,537.34	3,427.08	3,397.66	15.11	12.70	-149.18	44.64	587.71	1,053.89	1,029.64	24.26	43.447		
3,700.00	3,635.18	3,522.09	3,491.69	15.57	13.07	-149.46	47.71	600.97	1,084.71	1,059.76	24.95	43.472		
3,800.00	3,733.02	3,617.10	3,585.72	16.03	13.44	-149.71	50.77	614.23	1,115.54	1,089.90	25.65	43.496		
3,900.00	3,830.87	3,712.11	3,679.74	16.49	13.81	-149.96	53.84	627.50	1,146.40	1,120.06	26.34	43.520		
4,000.00	3,928.71	3,807.12	3,773.77	16.95	14.18	-150.19	56.90	640.76	1,177.27	1,150.23	27.04	43.542		
4,100.00	4,026.55	3,902.12	3,867.80	17.42	14.55	-150.41	59.97	654.02	1,208.16	1,180.43	27.73	43.563		
4,200.00	4,124.39	3,997.13	3,961.83	17.88	14.92	-150.63	63.03	667.28	1,239.07	1,210.64	28.43	43.584		
4,299.99	4,222.22	4,092.13	4,055.85	18.34	15.29	-150.82	66.10	680.54	1,269.99	1,240.86	29.13	43.603		
4,400.00	4,320.39	4,187.61	4,150.34	18.71	15.67	-151.27	69.18	693.86	1,299.55	1,269.77	29.77	43.652		
4,500.00	4,419.16	4,283.98	4,245.72	18.98	16.04	-151.61	72.28	707.32	1,326.17	1,295.81	30.36	43.676		
4,600.00	4,518.42	4,381.14	4,341.88	19.23	16.42	-151.83	75.42	720.88	1,349.83	1,318.87	30.96	43.598		
4,700.00	4,618.03	4,478.96	4,438.69	19.47	16.81	-151.96	78.57	734.53	1,370.48	1,338.92	31.56	43.426		
4,800.00	4,717.89	4,626.67	4,585.16	19.69	17.30	-151.93	82.86	753.05	1,387.01	1,354.60	32.41	42.795		
4,899.99	4,817.86	6,260.84	5,606.00	19.93	22.53	90.00	-749.99	768.39	1,368.19	1,335.48	32.71	41.824		
5,000.00	4,917.87	6,260.84	5,606.00	20.17	22.53	90.00	-749.99	768.39	1,313.13	1,278.84	34.29	38.297		
5,099.99	5,017.86	6,260.84	5,606.00	20.38	22.53	90.99	-749.99	768.39	1,263.61	1,227.78	35.83	35.267		

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-1901
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-1901	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
5,200.00	5,117.24	6,251.11	5,606.00	20.54	22.47	95.72	-740.26	768.39	1,220.67	1,183.46	37.21	32.809	
5,300.00	5,212.93	6,222.60	5,606.00	20.62	22.28	98.38	-711.75	768.39	1,186.05	1,147.83	38.22	31.036	
5,400.00	5,301.43	6,176.36	5,606.00	20.61	21.98	99.22	-665.52	768.39	1,160.46	1,121.64	38.82	29.895	
5,500.00	5,379.47	6,114.10	5,606.00	20.54	21.62	98.67	-603.25	768.39	1,143.46	1,104.44	39.02	29.301	
5,600.00	5,444.21	6,038.09	5,606.00	20.44	21.21	97.27	-527.24	768.39	1,133.65	1,094.72	38.93	29.120 SF	
5,700.00	5,493.25	5,951.13	5,606.00	20.31	20.82	95.62	-440.28	768.39	1,129.12	1,090.48	38.64	29.220	
5,800.00	5,524.80	5,841.38	5,595.64	20.19	20.41	93.56	-331.22	768.39	1,127.35	1,089.08	38.27	29.457	
5,867.43	5,535.59	5,772.28	5,577.49	20.13	20.19	92.14	-264.60	768.39	1,127.00	1,088.92	38.08	29.595	
5,900.00	5,537.71	5,740.35	5,566.15	20.10	20.10	91.46	-234.76	768.39	1,127.08	1,089.09	37.99	29.666	
6,000.00	5,538.00	5,650.00	5,524.45	20.09	19.87	89.31	-154.74	768.39	1,128.41	1,090.58	37.84	29.823	
6,100.00	5,538.00	5,576.44	5,480.70	20.18	19.70	87.09	-95.68	768.39	1,132.46	1,094.62	37.84	29.927	
6,200.00	5,538.00	5,516.89	5,439.46	20.39	19.56	85.01	-52.76	768.39	1,140.82	1,102.86	37.96	30.051	
6,300.00	5,538.00	5,469.08	5,402.97	20.74	19.45	83.19	-21.89	768.39	1,154.63	1,116.44	38.18	30.240	
6,400.00	5,538.00	5,430.44	5,371.52	21.21	19.37	81.62	0.54	768.38	1,174.55	1,136.07	38.49	30.520	
6,500.00	5,538.00	5,400.00	5,345.62	21.79	19.30	80.35	16.53	768.38	1,200.89	1,162.05	38.83	30.925	
6,600.00	5,538.00	5,372.85	5,321.77	22.46	19.23	79.18	29.49	768.38	1,233.61	1,194.41	39.20	31.468	
6,700.00	5,538.00	5,350.00	5,301.20	23.21	19.18	78.18	39.42	768.38	1,272.52	1,232.93	39.59	32.142	
6,800.00	5,538.00	5,332.63	5,285.27	24.03	19.14	77.41	46.37	768.38	1,317.25	1,277.27	39.98	32.950	
6,900.00	5,538.00	5,316.88	5,270.64	24.91	19.10	76.70	52.20	768.38	1,367.35	1,327.01	40.34	33.895	
7,000.00	5,538.00	5,300.00	5,254.78	25.85	19.06	75.95	57.96	768.38	1,422.38	1,381.71	40.67	34.977	
7,100.00	5,538.00	5,300.00	5,254.78	26.84	19.06	75.95	57.96	768.38	1,481.88	1,440.85	41.03	36.120	
7,200.00	5,538.00	5,281.04	5,236.75	27.87	19.01	75.09	63.81	768.38	1,545.21	1,503.95	41.26	37.446	



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1901
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-1901	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	Hz	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IFR1+MS+sag													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	118.86	-49.59	89.97	102.73					
100.00	100.00	100.00	100.00	0.13	0.13	118.86	-49.59	89.97	102.73	102.46	0.27	385.697		
200.00	200.00	200.00	200.00	0.47	0.47	118.86	-49.59	89.97	102.73	101.79	0.94	109.212		
300.00	300.00	300.00	300.00	0.81	0.81	118.86	-49.59	89.97	102.73	101.11	1.61	63.612 CC		
400.00	399.98	398.57	398.55	1.11	1.14	-87.97	-48.52	91.28	103.31	101.06	2.25	45.903 ES		
500.00	499.84	497.57	497.45	1.41	1.47	-92.95	-45.71	94.71	105.33	102.45	2.88	36.618		
600.00	599.45	596.71	596.48	1.74	1.80	-99.59	-42.76	98.32	108.81	105.28	3.53	30.836		
700.00	698.70	695.33	694.99	2.07	2.13	-107.31	-39.83	101.91	114.69	110.48	4.21	27.262		
800.00	797.47	793.32	792.88	2.44	2.46	-115.51	-36.91	105.47	123.99	119.09	4.90	25.280		
900.00	895.62	890.56	890.01	2.84	2.79	-123.55	-34.02	109.01	137.49	131.87	5.62	24.471		
1,000.00	993.47	987.42	986.76	3.26	3.12	-130.70	-31.13	112.54	154.40	148.09	6.31	24.472		
1,100.00	1,091.31	1,084.28	1,083.51	3.69	3.44	-136.41	-28.25	116.07	173.24	166.26	6.99	24.791		
1,200.00	1,189.15	1,181.14	1,180.26	4.13	3.77	-141.00	-25.37	119.59	193.45	185.79	7.66	25.260		
1,300.00	1,286.99	1,277.99	1,277.01	4.58	4.10	-144.71	-22.48	123.12	214.64	206.32	8.32	25.786		
1,400.00	1,384.83	1,374.85	1,373.76	5.02	4.43	-147.76	-19.60	126.65	236.55	227.57	8.99	26.323		
1,500.00	1,482.67	1,471.71	1,470.51	5.47	4.76	-150.29	-16.72	130.17	259.00	249.35	9.65	26.844		
1,600.00	1,580.51	1,568.57	1,567.26	5.92	5.09	-152.42	-13.83	133.70	281.85	271.54	10.31	27.340		
1,700.00	1,678.35	1,665.42	1,664.01	6.38	5.42	-154.23	-10.95	137.22	305.02	294.05	10.97	27.804		
1,800.00	1,776.20	1,762.28	1,760.76	6.83	5.75	-155.78	-8.07	140.75	328.43	316.80	11.63	28.237		
1,900.00	1,874.04	1,859.14	1,857.51	7.29	6.08	-157.13	-5.18	144.28	352.05	339.76	12.29	28.637		
2,000.00	1,971.88	1,956.00	1,954.26	7.75	6.41	-158.31	-2.30	147.80	375.83	362.88	12.96	29.009		
2,100.00	2,069.72	2,052.85	2,051.01	8.20	6.74	-159.35	0.58	151.33	399.74	386.12	13.62	29.352		
2,200.00	2,167.56	2,149.71	2,147.76	8.66	7.07	-160.27	3.47	154.85	423.77	409.48	14.28	29.670		
2,300.00	2,265.40	2,246.57	2,244.51	9.12	7.40	-161.09	6.35	158.38	447.88	432.93	14.95	29.966		
2,400.00	2,363.24	2,343.43	2,341.26	9.58	7.73	-161.83	9.23	161.91	472.08	456.46	15.61	30.240		
2,500.00	2,461.09	2,440.28	2,438.01	10.04	8.06	-162.50	12.12	165.43	496.34	480.06	16.28	30.495		
2,600.00	2,558.93	2,537.14	2,534.77	10.50	8.39	-163.10	15.00	168.96	520.66	503.71	16.94	30.732		
2,700.00	2,656.77	2,634.00	2,631.52	10.96	8.72	-163.66	17.88	172.48	545.02	527.42	17.61	30.954		
2,800.00	2,754.61	2,730.86	2,728.27	11.42	9.05	-164.16	20.77	176.01	569.44	551.16	18.27	31.161		
2,900.00	2,852.45	2,827.71	2,825.02	11.88	9.38	-164.62	23.65	179.54	593.89	574.95	18.94	31.355		
3,000.00	2,950.29	2,924.57	2,921.77	12.34	9.71	-165.05	26.53	183.06	618.37	598.76	19.61	31.537		
3,100.00	3,048.13	3,021.43	3,018.52	12.80	10.04	-165.44	29.42	186.59	642.88	622.61	20.27	31.709		
3,200.00	3,145.98	3,118.29	3,115.27	13.26	10.37	-165.81	32.30	190.12	667.42	646.48	20.94	31.870		
3,300.00	3,243.82	3,215.14	3,212.02	13.72	10.70	-166.15	35.18	193.64	691.99	670.38	21.61	32.022		
3,400.00	3,341.66	3,312.00	3,308.77	14.18	11.03	-166.46	38.07	197.17	716.57	694.30	22.28	32.165		
3,500.00	3,439.50	3,408.86	3,405.52	14.65	11.36	-166.76	40.95	200.69	741.18	718.23	22.95	32.301		
3,600.00	3,537.34	3,505.72	3,502.27	15.11	11.69	-167.03	43.83	204.22	765.80	742.18	23.61	32.429		
3,700.00	3,635.18	3,602.57	3,599.02	15.57	12.02	-167.29	46.72	207.75	790.44	766.15	24.28	32.550		
3,800.00	3,733.02	3,699.43	3,695.77	16.03	12.35	-167.54	49.60	211.27	815.09	790.14	24.95	32.666		
3,900.00	3,830.87	3,796.29	3,792.52	16.49	12.68	-167.77	52.48	214.80	839.75	814.13	25.62	32.776		
4,000.00	3,928.71	3,893.15	3,889.27	16.95	13.01	-167.98	55.37	218.32	864.43	838.14	26.29	32.880		
4,100.00	4,026.55	3,990.00	3,986.02	17.42	13.34	-168.19	58.25	221.85	889.12	862.16	26.96	32.979		
4,200.00	4,124.39	4,086.86	4,082.77	17.88	13.67	-168.38	61.13	225.38	913.81	886.19	27.63	33.074		
4,299.99	4,222.22	4,183.71	4,179.51	18.34	14.00	-168.56	64.02	228.90	938.52	910.22	28.30	33.164		
4,400.00	4,320.39	4,280.97	4,276.66	18.71	14.33	-168.81	66.91	232.44	961.67	932.74	28.93	33.243		
4,500.00	4,419.16	4,378.96	4,374.55	18.98	14.67	-168.99	69.83	236.01	981.47	951.95	29.52	33.249		
4,600.00	4,518.42	4,477.59	4,473.07	19.23	15.00	-169.12	72.77	239.60	997.91	967.80	30.11	33.139		
4,700.00	4,618.03	4,576.73	4,572.10	19.47	15.34	-169.19	75.72	243.21	1,010.96	980.25	30.71	32.920		
4,800.00	4,717.89	4,676.26	4,671.52	19.69	15.68	-169.21	78.68	246.83	1,020.60	989.30	31.31	32.600		
4,899.99	4,817.86	4,776.05	4,771.19	19.93	16.02	35.83	81.65	250.47	1,026.83	994.90	31.93	32.157		
5,000.00	4,917.87	4,875.95	4,870.98	20.17	16.36	35.90	84.62	254.10	1,031.38	998.82	32.56	31.677		
5,099.99	5,017.86	4,973.89	4,968.92	20.38	16.68	90.97	-748.98	261.36	1,008.55	982.30	26.25	38.419		

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-1901
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-1901	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	3.00 sigma
Reference Wellbore	HZ	Database:	LandmarkEDM
Reference Design:	APD	Offset TVD Reference:	Offset Datum

Offset Design												Sec 30-T10N-R57W - Horsetail #30E-3135 - Hz - APD		Offset Site Error:		0.00 usft	
Survey Program: 0-MWD+IFR1+MS+sag														Offset Well Error:		0.00 usft	
Reference		Offset		Semi Major Axis			Distance							Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor					
5,200.00	5,117.24	6,430.16	5,820.00	20.54	21.62	103.26	-739.25	261.34	931.56	903.36	28.20	33.033					
5,300.00	5,212.93	6,401.65	5,820.00	20.62	21.41	111.15	-710.74	261.29	861.96	831.84	30.12	28.613					
5,400.00	5,301.43	6,355.41	5,820.00	20.61	21.12	115.39	-664.50	261.21	802.62	770.71	31.91	25.149					
5,500.00	5,379.47	6,293.15	5,820.00	20.54	20.74	117.03	-602.23	261.11	755.30	721.89	33.41	22.608					
5,600.00	5,444.21	6,217.14	5,820.00	20.44	20.34	117.01	-526.22	260.98	720.42	685.90	34.53	20.865					
5,700.00	5,493.25	6,130.17	5,820.00	20.31	19.94	116.15	-439.26	260.84	697.23	662.00	35.23	19.791					
5,800.00	5,524.80	5,930.80	5,785.13	20.19	19.26	110.66	-244.19	260.51	677.45	641.56	35.89	18.875					
5,900.00	5,537.71	5,777.57	5,709.93	20.10	18.88	105.14	-111.31	260.29	656.19	619.30	36.89	17.788					
6,000.00	5,538.00	5,666.76	5,633.06	20.09	18.61	98.69	-31.79	260.16	637.74	600.18	37.56	16.978					
6,100.00	5,538.00	5,592.95	5,573.26	20.18	18.43	93.24	11.38	260.09	625.34	587.33	38.01	16.452					
6,165.19	5,538.00	5,557.91	5,542.87	20.31	18.34	90.45	28.81	260.06	622.79	584.55	38.24	16.285					
6,200.00	5,538.00	5,542.23	5,528.91	20.39	18.30	89.16	35.94	260.05	623.56	585.23	38.34	16.266 SF					
6,300.00	5,538.00	5,505.88	5,495.76	20.74	18.20	86.12	50.83	260.02	634.63	596.05	38.59	16.447					
6,400.00	5,538.00	5,478.78	5,470.41	21.21	18.13	83.81	60.40	260.01	659.01	620.24	38.77	16.997					
6,500.00	5,538.00	5,450.00	5,442.98	21.79	18.05	81.33	69.12	259.99	695.95	657.12	38.83	17.924					
6,600.00	5,538.00	5,450.00	5,442.98	22.46	18.05	81.33	69.12	259.99	743.81	704.79	39.02	19.063					
6,700.00	5,538.00	5,428.02	5,421.74	23.21	18.00	79.44	74.75	259.98	800.76	761.79	38.97	20.549					
6,800.00	5,538.00	5,416.98	5,410.98	24.03	17.97	78.49	77.23	259.98	865.29	826.34	38.95	22.214					
6,900.00	5,538.00	5,400.00	5,394.34	24.91	17.92	77.03	80.61	259.97	935.92	897.05	38.87	24.079					
7,000.00	5,538.00	5,400.00	5,394.34	25.85	17.92	77.03	80.61	259.97	1,011.21	972.34	38.87	26.014					
7,100.00	5,538.00	5,400.00	5,394.34	26.84	17.92	77.03	80.61	259.97	1,090.48	1,051.62	38.86	28.064					
7,200.00	5,538.00	5,400.00	5,394.34	27.87	17.92	77.03	80.61	259.97	1,172.92	1,134.09	38.83	30.206					
7,300.00	5,538.00	5,382.05	5,376.64	28.93	17.87	75.49	83.59	259.97	1,257.52	1,218.79	38.73	32.469					
7,400.00	5,538.00	5,377.49	5,372.13	30.04	17.86	75.10	84.25	259.97	1,344.36	1,305.67	38.69	34.746					
7,500.00	5,538.00	5,373.43	5,368.11	31.17	17.85	74.76	84.81	259.96	1,432.87	1,394.21	38.66	37.066					
7,600.00	5,538.00	5,369.79	5,364.50	32.33	17.84	74.45	85.28	259.96	1,522.77	1,484.14	38.63	39.419					



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1901
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-1901	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						
0.00	0.00	0.00	0.00	0.00	0.00	108.30	-49.60	149.95	157.94									
100.00	100.00	100.00	100.00	0.13	0.13	108.30	-49.60	149.95	157.94	157.67	0.27	592.969						
200.00	200.00	200.00	200.00	0.47	0.47	108.30	-49.60	149.95	157.94	157.00	0.94	167.902						
300.00	300.00	300.00	300.00	0.81	0.81	108.30	-49.60	149.95	157.94	156.32	1.61	97.797	CC, ES					
400.00	399.98	395.59	395.57	1.11	1.12	-97.61	-49.14	151.47	159.53	157.26	2.27	70.336						
500.00	499.84	490.62	490.48	1.41	1.44	-100.15	-47.78	156.02	164.55	161.59	2.96	55.633						
600.00	599.45	584.58	584.11	1.74	1.76	-103.99	-45.54	163.47	173.65	169.95	3.70	46.871						
700.00	698.70	681.19	680.18	2.07	2.09	-108.73	-42.60	173.28	186.81	182.43	4.38	42.683						
800.00	797.47	778.28	776.71	2.44	2.43	-113.69	-39.62	183.23	202.70	197.66	5.04	40.222						
900.00	895.62	874.51	872.39	2.84	2.77	-118.59	-36.67	193.08	221.69	215.96	5.73	38.715						
1,000.00	993.47	970.33	967.66	3.26	3.11	-123.31	-33.73	202.89	243.10	236.70	6.40	37.982						
1,100.00	1,091.31	1,066.14	1,062.92	3.69	3.46	-127.26	-30.79	212.70	265.88	258.81	7.07	37.599						
1,200.00	1,189.15	1,161.95	1,158.18	4.13	3.81	-130.59	-27.85	222.51	289.70	281.96	7.75	37.400						
1,300.00	1,286.99	1,257.76	1,253.44	4.58	4.15	-133.43	-24.91	232.32	314.33	305.91	8.42	37.334						
1,400.00	1,384.83	1,353.57	1,348.71	5.02	4.50	-135.85	-21.97	242.13	339.59	330.49	9.09	37.346						
1,500.00	1,482.67	1,449.38	1,443.97	5.47	4.85	-137.94	-19.03	251.94	365.34	355.58	9.77	37.405						
1,600.00	1,580.51	1,545.19	1,539.23	5.92	5.20	-139.76	-16.09	261.75	391.50	381.06	10.44	37.492						
1,700.00	1,678.35	1,641.01	1,634.49	6.38	5.55	-141.35	-13.15	271.56	417.98	406.86	11.12	37.596						
1,800.00	1,776.20	1,736.82	1,729.76	6.83	5.90	-142.75	-10.21	281.37	444.73	432.94	11.79	37.707						
1,900.00	1,874.04	1,832.63	1,825.02	7.29	6.25	-144.00	-7.27	291.18	471.70	459.23	12.47	37.822						
2,000.00	1,971.88	1,928.44	1,920.28	7.75	6.60	-145.11	-4.33	300.99	498.86	485.71	13.15	37.937						
2,100.00	2,069.72	2,024.25	2,015.54	8.20	6.95	-146.10	-1.39	310.80	526.17	512.34	13.83	38.050						
2,200.00	2,167.56	2,120.06	2,110.81	8.66	7.30	-147.00	1.55	320.61	553.62	539.11	14.51	38.160						
2,300.00	2,265.40	2,215.87	2,206.07	9.12	7.65	-147.82	4.49	330.42	581.18	566.00	15.19	38.267						
2,400.00	2,363.24	2,311.69	2,301.33	9.58	8.00	-148.56	7.43	340.23	608.85	592.98	15.87	38.369						
2,500.00	2,461.09	2,407.50	2,396.59	10.04	8.35	-149.23	10.37	350.04	636.60	620.05	16.55	38.467						
2,600.00	2,558.93	2,503.31	2,491.86	10.50	8.70	-149.85	13.31	359.85	664.42	647.19	17.23	38.560						
2,700.00	2,656.77	2,599.12	2,587.12	10.96	9.05	-150.42	16.25	369.66	692.31	674.40	17.91	38.649						
2,800.00	2,754.61	2,694.93	2,682.38	11.42	9.40	-150.95	19.19	379.47	720.26	701.66	18.59	38.734						
2,900.00	2,852.45	2,790.74	2,777.64	11.88	9.75	-151.44	22.13	389.28	748.26	728.98	19.28	38.815						
3,000.00	2,950.29	2,886.55	2,872.91	12.34	10.10	-151.89	25.07	399.10	776.31	756.35	19.96	38.892						
3,100.00	3,048.13	2,982.37	2,968.17	12.80	10.45	-152.31	28.01	408.91	804.40	783.76	20.64	38.965						
3,200.00	3,145.98	3,078.18	3,063.43	13.26	10.80	-152.70	30.95	418.72	832.53	811.20	21.33	39.035						
3,300.00	3,243.82	3,173.99	3,158.69	13.72	11.15	-153.07	33.89	428.53	860.69	838.68	22.01	39.102						
3,400.00	3,341.66	3,269.80	3,253.96	14.18	11.50	-153.42	36.83	438.34	888.88	866.18	22.70	39.165						
3,500.00	3,439.50	3,365.61	3,349.22	14.65	11.86	-153.74	39.77	448.15	917.10	893.72	23.38	39.226						
3,600.00	3,537.34	3,461.42	3,444.48	15.11	12.21	-154.04	42.71	457.96	945.34	921.28	24.06	39.284						
3,700.00	3,635.18	3,557.23	3,539.74	15.57	12.56	-154.33	45.65	467.77	973.61	948.86	24.75	39.339						
3,800.00	3,733.02	3,653.05	3,635.01	16.03	12.91	-154.60	48.59	477.58	1,001.90	976.46	25.43	39.392						
3,900.00	3,830.87	3,748.86	3,730.27	16.49	13.26	-154.85	51.53	487.39	1,030.21	1,004.09	26.12	39.442						
4,000.00	3,928.71	3,844.67	3,825.53	16.95	13.61	-155.09	54.47	497.20	1,058.53	1,031.73	26.80	39.490						
4,100.00	4,026.55	3,940.48	3,920.79	17.42	13.96	-155.32	57.41	507.01	1,086.87	1,059.38	27.49	39.537						
4,200.00	4,124.39	4,036.29	4,016.06	17.88	14.31	-155.54	60.35	516.82	1,115.23	1,087.05	28.18	39.581						
4,299.99	4,222.22	4,132.09	4,111.31	18.34	14.66	-155.75	63.29	526.63	1,143.60	1,114.74	28.86	39.623						
4,400.00	4,320.39	4,228.35	4,207.01	18.71	15.02	-156.13	66.24	536.48	1,170.54	1,141.04	29.50	39.679						
4,500.00	4,419.16	4,325.44	4,303.55	18.98	15.37	-156.41	69.22	546.42	1,194.39	1,164.30	30.09	39.693						
4,600.00	4,518.42	4,423.26	4,400.81	19.23	15.73	-156.60	72.22	556.44	1,215.13	1,184.44	30.69	39.599						
4,700.00	4,618.03	4,521.69	4,498.68	19.47	16.09	-156.69	75.24	566.52	1,232.73	1,201.44	31.28	39.405						
4,800.00	4,717.89	4,620.61	4,597.03	19.69	16.45	-156.69	78.28	576.65	1,247.16	1,215.28	31.88	39.117						
4,899.99	4,817.86	4,719.88	4,695.73	19.93	16.82	-156.69	81.32	586.81	1,258.42	1,225.91	32.51	38.706						
5,000.00	4,917.87	4,819.87	4,795.00	20.17	17.17	-156.69	84.36	596.92	1,269.69	1,236.18	33.14	38.284						
5,099.99	5,017.86	4,919.86	4,895.00	20.41	17.51	-156.69	87.39	607.03	1,280.96	1,247.45	33.77	37.862						
5,199.99	5,117.85	5,019.85	5,000.00	20.65	17.85	-156.69	90.42	617.14	1,292.23	1,258.72	34.40	37.440						
5,299.99	5,217.84	5,119.84	5,100.00	20.89	18.19	-156.69	93.45	627.25	1,303.50	1,269.99	35.03	37.018						
5,399.99	5,317.83	5,219.83	5,200.00	21.13	18.53	-156.69	96.48	637.36	1,314.77	1,281.26	35.66	36.596						
5,499.99	5,417.82	5,319.82	5,300.00	21.37	18.87	-156.69	99.51	647.47	1,325.94	1,292.53	36.29	36.174						
5,599.99	5,517.81	5,419.81	5,400.00	21.61	19.21	-156.69	102.54	657.58	1,337.21	1,303.80	36.92	35.752						
5,699.99	5,617.80	5,519.80	5,500.00	21.85	19.55	-156.69	105.57	667.69	1,348.48	1,315.07	37.55	35.330						
5,799.99	5,717.79	5,619.79	5,600.00	22.09	19.89	-156.69	108.60	677.80	1,359.75	1,326.34	38.18	34.908						
5,899.99	5,817.78	5,719.78	5,700.00	22.33	20.23	-156.69	111.63	687.91	1,371.02	1,337.61	38.81	34.486						
5,999.99	5,917.77	5,819.77	5,800.00	22.57	20.57	-156.69	114.66	698.02	1,382.29	1,348.88	39.44	34.064						
6,099.99	6,017.76	5,919.76	5,900.00	22.81	20.91	-156.69	117.69	708.13	1,393.56	1,360.15	40.07	33.642						
6,199.99	6,117.75	6,019.75	6,000.00	23.05	21.25	-156.69	120.72	718.24	1,404.83	1,371.42	40.70	33.220						
6,299.99	6,217.74	6,119.74	6,100.00	23.29	21.59	-156.69	123.75	728.35	1,416.10	1,382.69	41.33	32.798						
6,399.99	6,317.73	6,219.73	6,200.00	23.53	21.93	-156.69	126.78	738.46	1,427.37	1,393.96	41.96	32						



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1901
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-1901	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	5,117.24	6,362.86	5,735.00	20.54	22.26	98.01	-740.26	603.78	1,136.50	1,101.91	34.59	32.859						
5,300.00	5,212.93	6,334.35	5,735.00	20.62	22.07	102.46	-711.75	603.78	1,087.86	1,051.87	35.99	30.224						
5,400.00	5,301.43	6,288.11	5,735.00	20.61	21.76	104.66	-665.52	603.78	1,048.97	1,011.93	37.04	28.321						
5,500.00	5,379.47	6,225.85	5,735.00	20.54	21.39	105.14	-603.25	603.78	1,020.15	982.45	37.70	27.061						
5,600.00	5,444.21	6,149.84	5,735.00	20.44	20.98	104.49	-527.24	603.78	1,000.63	962.63	37.99	26.337						
5,700.00	5,493.25	6,062.88	5,735.00	20.31	20.58	103.34	-440.28	603.78	988.87	950.86	38.01	26.017						
5,800.00	5,524.80	5,911.84	5,714.86	20.19	20.01	100.41	-291.13	603.78	980.56	942.74	37.82	25.928						
5,900.00	5,537.71	5,783.03	5,664.51	20.10	19.64	97.38	-172.91	603.78	973.16	935.37	37.80	25.748						
6,000.00	5,538.00	5,678.60	5,603.40	20.09	19.37	93.88	-88.46	603.78	967.66	929.81	37.85	25.564						
6,093.07	5,538.00	5,605.92	5,551.48	20.17	19.20	90.80	-37.67	603.78	965.45	927.46	37.99	25.413						
6,100.00	5,538.00	5,601.30	5,547.94	20.18	19.19	90.59	-34.69	603.78	965.46	927.46	38.00	25.408						
6,200.00	5,538.00	5,544.18	5,502.18	20.39	19.05	87.88	-0.56	603.78	969.14	930.93	38.21	25.362 SF						
6,300.00	5,538.00	5,500.00	5,464.39	20.74	18.94	85.64	22.29	603.78	980.22	941.74	38.48	25.475						
6,400.00	5,538.00	5,468.12	5,435.98	21.21	18.86	83.98	36.75	603.78	999.37	960.58	38.79	25.763						
6,500.00	5,538.00	5,450.00	5,419.46	21.79	18.82	83.01	44.18	603.78	1,026.76	987.59	39.17	26.215						
6,600.00	5,538.00	5,421.09	5,392.59	22.46	18.75	81.45	54.84	603.78	1,061.95	1,022.50	39.45	26.916						
6,700.00	5,538.00	5,400.00	5,372.63	23.21	18.69	80.30	61.67	603.78	1,104.57	1,064.82	39.74	27.792						
6,800.00	5,538.00	5,400.00	5,372.63	24.03	18.69	80.30	61.67	603.78	1,153.94	1,113.85	40.10	28.779						
6,900.00	5,538.00	5,377.54	5,351.10	24.91	18.64	79.06	68.04	603.78	1,209.10	1,168.81	40.29	30.012						
7,000.00	5,538.00	5,367.21	5,341.11	25.85	18.61	78.49	70.66	603.78	1,269.60	1,229.11	40.50	31.351						
7,100.00	5,538.00	5,350.00	5,324.35	26.84	18.56	77.54	74.58	603.78	1,334.76	1,294.12	40.64	32.846						
7,200.00	5,538.00	5,350.00	5,324.35	27.87	18.56	77.54	74.58	603.78	1,403.75	1,362.93	40.82	34.390						
7,300.00	5,538.00	5,350.00	5,324.35	28.93	18.56	77.54	74.58	603.78	1,476.30	1,435.33	40.97	36.036						



WOG

Anticollision Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #30E-1901
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-1901	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	101.68	-49.60	239.91	244.99					
100.00	100.00	100.00	100.00	0.13	0.13	101.68	-49.60	239.91	244.99	244.72	0.27	919.799		
200.00	200.00	200.00	200.00	0.47	0.47	101.68	-49.60	239.91	244.99	244.05	0.94	260.445		
300.00	300.00	300.00	300.00	0.81	0.81	101.68	-49.60	239.91	244.99	243.37	1.61	151.700 CC, ES		
400.00	399.98	392.44	392.43	1.11	1.11	-103.78	-49.41	241.39	246.92	244.66	2.27	108.969		
500.00	499.84	484.41	484.29	1.41	1.41	-105.04	-48.84	245.80	252.84	249.88	2.96	85.455		
600.00	599.45	575.45	575.03	1.74	1.72	-107.00	-47.90	253.04	262.99	259.29	3.70	71.118		
700.00	698.70	665.12	664.13	2.07	2.03	-109.44	-46.62	262.96	277.74	273.28	4.46	62.258		
800.00	797.47	753.01	751.12	2.44	2.35	-112.15	-45.02	275.36	297.45	292.22	5.23	56.841		
900.00	895.62	838.73	835.56	2.84	2.68	-114.92	-43.13	290.00	322.41	316.40	6.01	53.661		
1,000.00	993.47	922.51	917.62	3.26	3.01	-117.91	-40.97	306.73	351.94	345.20	6.74	52.181		
1,100.00	1,091.31	1,004.63	997.55	3.69	3.36	-120.43	-38.55	325.43	385.13	377.67	7.45	51.669 SF		
1,200.00	1,189.15	1,092.90	1,082.98	4.13	3.76	-122.73	-35.72	347.41	421.09	413.01	8.08	52.129		
1,300.00	1,286.99	1,184.77	1,171.88	4.58	4.19	-124.76	-32.74	370.43	457.75	449.06	8.68	52.723		
1,400.00	1,384.83	1,276.65	1,260.77	5.02	4.62	-126.50	-29.77	393.44	494.84	485.54	9.30	53.218		
1,500.00	1,482.67	1,368.52	1,349.67	5.47	5.05	-127.99	-26.80	416.46	532.28	522.35	9.93	53.584		
1,600.00	1,580.51	1,460.39	1,438.56	5.92	5.49	-129.30	-23.83	439.47	569.99	559.42	10.58	53.889		
1,700.00	1,678.35	1,552.27	1,527.46	6.38	5.94	-130.44	-20.86	462.48	607.94	596.70	11.23	54.131		
1,800.00	1,776.20	1,644.14	1,616.36	6.83	6.38	-131.45	-17.88	485.50	646.06	634.17	11.89	54.324		
1,900.00	1,874.04	1,736.02	1,705.25	7.29	6.83	-132.35	-14.91	508.51	684.34	671.78	12.56	54.478		
2,000.00	1,971.88	1,827.89	1,794.15	7.75	7.27	-133.15	-11.94	531.53	722.75	709.51	13.24	54.601		
2,100.00	2,069.72	1,919.76	1,883.04	8.20	7.72	-133.87	-8.97	554.54	761.27	747.35	13.92	54.699		
2,200.00	2,167.56	2,011.64	1,971.94	8.66	8.17	-134.53	-6.00	577.56	799.88	785.28	14.60	54.777		
2,300.00	2,265.40	2,103.51	2,060.83	9.12	8.63	-135.12	-3.02	600.57	838.58	823.29	15.29	54.839		
2,400.00	2,363.24	2,195.39	2,149.73	9.58	9.08	-135.67	-0.05	623.58	877.35	861.36	15.98	54.888		
2,500.00	2,461.09	2,287.26	2,238.62	10.04	9.53	-136.16	2.92	646.60	916.17	899.49	16.68	54.926		
2,600.00	2,558.93	2,379.14	2,327.52	10.50	9.98	-136.62	5.89	669.61	955.05	937.67	17.38	54.955		
2,700.00	2,656.77	2,471.01	2,416.41	10.96	10.44	-137.04	8.86	692.63	993.98	975.90	18.08	54.978		
2,800.00	2,754.61	2,562.88	2,505.31	11.42	10.89	-137.43	11.84	715.64	1,032.95	1,014.17	18.78	54.994		
2,900.00	2,852.45	2,654.76	2,594.20	11.88	11.35	-137.79	14.81	738.66	1,071.96	1,052.47	19.49	55.006		
3,000.00	2,950.29	2,746.63	2,683.10	12.34	11.80	-138.13	17.78	761.67	1,111.01	1,090.81	20.20	55.014		
3,100.00	3,048.13	2,838.51	2,771.99	12.80	12.26	-138.44	20.75	784.68	1,150.08	1,129.17	20.90	55.018		
3,200.00	3,145.98	2,930.38	2,860.89	13.26	12.71	-138.73	23.72	807.70	1,189.18	1,167.56	21.61	55.020		
3,300.00	3,243.82	3,022.25	2,949.78	13.72	13.17	-139.00	26.70	830.71	1,228.30	1,205.98	22.32	55.020		
3,400.00	3,341.66	3,114.13	3,038.68	14.18	13.62	-139.26	29.67	853.73	1,267.45	1,244.41	23.04	55.018		
3,500.00	3,439.50	3,206.00	3,127.58	14.65	14.08	-139.50	32.64	876.74	1,306.62	1,282.87	23.75	55.014		
3,600.00	3,537.34	3,297.88	3,216.47	15.11	14.53	-139.73	35.61	899.76	1,345.80	1,321.34	24.47	55.009		
3,700.00	3,635.18	3,389.75	3,305.37	15.57	14.99	-139.95	38.58	922.77	1,385.01	1,359.83	25.18	55.002		
3,800.00	3,733.02	3,481.63	3,394.26	16.03	15.45	-140.15	41.56	945.78	1,424.23	1,398.33	25.90	54.995		
3,900.00	3,830.87	3,573.50	3,483.16	16.49	15.90	-140.34	44.53	968.80	1,463.46	1,436.85	26.61	54.987		
4,000.00	3,928.71	3,665.37	3,572.05	16.95	16.36	-140.52	47.50	991.81	1,502.71	1,475.37	27.33	54.979		
4,100.00	4,026.55	3,757.25	3,660.95	17.42	16.82	-140.70	50.47	1,014.83	1,541.96	1,513.91	28.05	54.970		

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



WOG

Anticollision Report

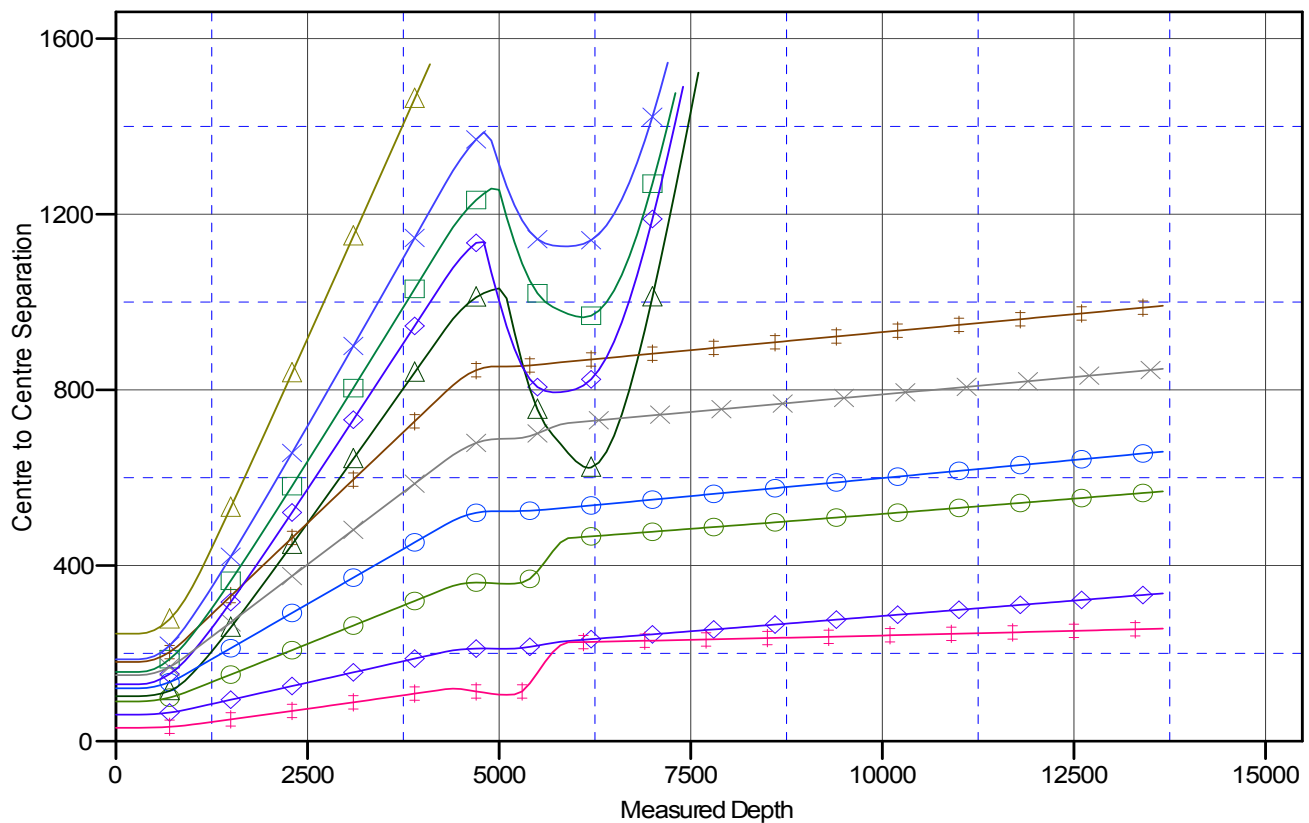
Company: Whiting Petroleum Corp.
Project: Weld County, CO
Reference Site: Sec 30-T10N-R57W
Site Error: 0.00 usft
Reference Well: Horsetail #30E-1901
Well Error: 0.00 usft
Reference Wellbore: Hz
Reference Design: APD

Local Co-ordinate Reference: Well Horsetail #30E-1901
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-1901
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 1.10°

Ladder Plot



LEGEND

- Horsetail #30E-1935, Hz, APDV0
- Horsetail #30E-1902, Hz, APDV0
- Horsetail #30E-3104, Hz, APDV0
- Horsetail #30E-3135, Hz, APDV0
- Horsetail #30E-1934, Hz, APDV0
- Horsetail #30E-1904, Hz, APDV0
- Horsetail #30E-3103, Hz, APDV0
- Horsetail #30E-3136, Hz, APDV0
- Horsetail #30E-1936, Hz, APDV0
- Horsetail #30E-1903, Hz, APDV0
- Horsetail #30E-3138, Hz, APDV0



WOG

Anticollision Report

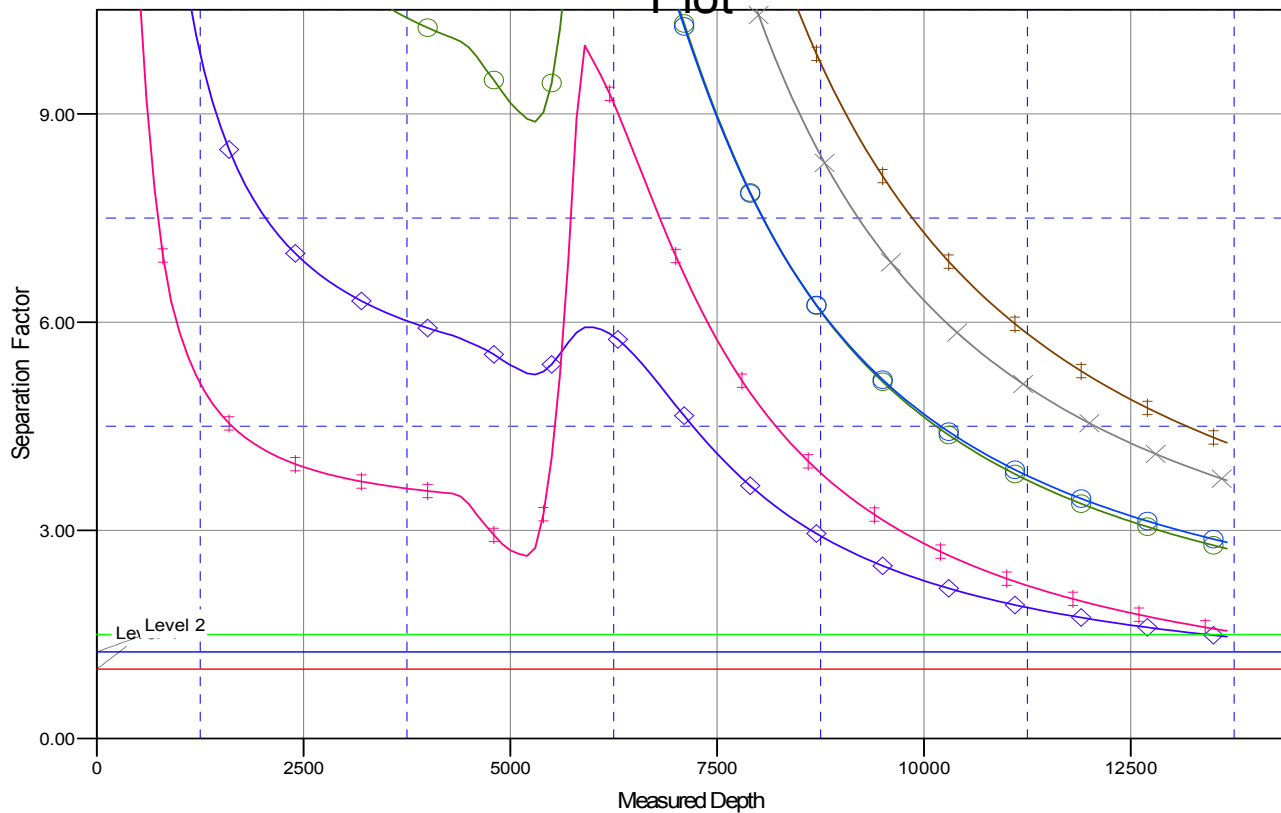
Company: Whiting Petroleum Corp.
Project: Weld County, CO
Reference Site: Sec 30-T10N-R57W
Site Error: 0.00 usft
Reference Well: Horsetail #30E-1901
Well Error: 0.00 usft
Reference Wellbore: Hz
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TVD Reference: KBE @ 4827.40usft (Original Well Elev)
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-1901
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 1.10°

Separation Factor Plot



LEGEND

- Horsetail #30E-1935, Hz, APDV0
- Horsetail #30E-1902, Hz, APDV0
- Horsetail #30E-1934, Hz, APDV0
- Horsetail #30E-1904, Hz, APDV0
- Horsetail #30E-3103, Hz, APDV0
- Horsetail #30E-3104, Hz, APDV0
- Horsetail #30E-3135, Hz, APDV0
- Horsetail #30E-3136, Hz, APDV0
- Horsetail #30E-1936, Hz, APDV0
- Horsetail #30E-1903, Hz, APDV0