



# **Extraction Oil & Gas**

**Weld Co., Co  
Sec.08-T07N-R66W  
Thornton 9**

**Original Hole  
Rev 0**

## **Anticollision Risk Report**

**21 June, 2014**



**Schlumberger**  
Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	Rev 0		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	Stations Interval 1.00usft	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	Unlimited	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum center-center distance of 25,000.00usft	<b>Error Surface:</b>	Elliptical Conic
<b>Warning Levels Evaluated at:</b>	2.00 Sigma	<b>Casing Method:</b>	Not applied

<b>Risk Settings</b>	
<b>Vertical Depth for Analysis:</b>	usft (Below TVD Reference Datum)
<b>Level of Acceptable Risk (1 in):</b>	
<b>Minimum Separation:</b>	0 usft

<b>Survey Tool Program</b>	<b>Date</b>	6/21/2014		
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.00	17,568.49	Rev 0 (Original Hole)	Pathfinder	Pathfinder MWD

<b>Summary</b>						
<b>Site Name</b>	<b>Reference Measured Depth (usft)</b>	<b>Offset Measured Depth (usft)</b>	<b>Distance Between Centres (usft)</b>		<b>Separation Factor</b>	<b>Warning</b>
<b>Offset Well - Wellbore - Design</b>			<b>Between Centres (usft)</b>	<b>Between Ellipses (usft)</b>		
Sec.08-T07N-R66W						
Thornton 1 - Original Hole - Rev 0	500.00	497.00	223.71	222.02	132.822 CC, ES	
Thornton 1 - Original Hole - Rev 0	17,568.49	17,324.42	1,844.23	1,697.37	12.557 SF	
Thornton 10 - Original Hole - Rev 0	766.33	767.33	28.05	25.43	10.703 CC	
Thornton 10 - Original Hole - Rev 0	800.00	800.99	28.05	25.31	10.244 ES	
Thornton 10 - Original Hole - Rev 0	17,568.49	17,253.61	369.86	272.80	3.811 SF	
Thornton 11 - Original Hole - Rev 0	665.99	667.99	56.10	53.83	24.690 CC	
Thornton 11 - Original Hole - Rev 0	700.00	701.97	56.11	53.71	23.465 ES	
Thornton 11 - Original Hole - Rev 0	17,568.49	17,293.10	596.09	464.53	4.531 SF	
Thornton 12 - Original Hole - Rev 0	565.64	568.64	84.16	82.23	43.745 CC	
Thornton 12 - Original Hole - Rev 0	600.00	602.92	84.16	82.12	41.181 ES	
Thornton 12 - Original Hole - Rev 0	17,568.49	17,641.00	660.13	511.36	4.437 SF	
Thornton 2 - Original Hole - Rev 0	600.00	597.00	195.64	193.61	96.217 CC, ES	
Thornton 2 - Original Hole - Rev 0	17,568.49	17,273.45	1,520.52	1,374.53	10.415 SF	
Thornton 3 - Original Hole - Rev 0	700.00	697.00	167.95	165.57	70.499 CC, ES	
Thornton 3 - Original Hole - Rev 0	17,568.49	17,582.23	1,319.91	1,171.32	8.883 SF	
Thornton 4 - Original Hole - Rev 0	800.00	797.00	139.90	137.17	51.219 CC, ES	
Thornton 4 - Original Hole - Rev 0	17,568.49	17,242.86	1,200.28	1,055.89	8.313 SF	
Thornton 5 - Original Hole - Rev 0	900.00	898.00	111.85	108.77	36.290 CC, ES	
Thornton 5 - Original Hole - Rev 0	17,568.49	17,222.47	887.63	746.82	6.304 SF	
Thornton 6 - Original Hole - Rev 0	900.00	899.00	83.80	80.71	27.171 CC, ES	
Thornton 6 - Original Hole - Rev 0	17,568.49	17,547.64	659.77	511.18	4.440 SF	
Thornton 7 - Original Hole - Rev 0	900.00	899.00	55.74	52.66	18.075 CC, ES	
Thornton 7 - Original Hole - Rev 0	17,568.49	17,219.06	594.14	463.45	4.546 SF	
Thornton 8 - Original Hole - Rev 0	900.00	899.00	27.69	24.61	8.978 CC, ES	
Thornton 8 - Original Hole - Rev 0	17,568.49	17,230.36	367.91	271.92	3.833 SF	

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



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<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision		
0.00	0.00	0.00	0.00	0.00	0.00	0.05	223.73						CC, ES	0
100.00	100.00	97.00	97.00	0.15	0.14	0.05	223.71	223.42	0.29	774.555	0			0
200.00	200.00	197.00	197.00	0.32	0.32	0.05	223.71	223.07	0.64	351.160	0			0
300.00	300.00	297.00	297.00	0.50	0.49	0.05	223.71	222.72	0.99	226.856	0			0
400.00	400.00	397.00	397.00	0.67	0.66	0.05	223.71	222.37	1.34	167.547	0			0
500.00	500.00	497.00	497.00	0.84	0.84	0.05	223.71	222.02	1.68	132.822	0			0
600.00	600.00	590.44	590.43	1.02	1.00	-0.09	225.12	223.10	2.02	111.334	0			0
700.00	700.00	683.50	683.37	1.19	1.17	-0.51	229.55	227.19	2.36	97.276	0			0
800.00	800.00	776.16	775.73	1.37	1.33	-1.19	237.00	234.30	2.70	87.845	0			0
900.00	900.00	868.25	867.24	1.54	1.50	-2.06	247.50	244.46	3.04	81.497	0			0
1,000.00	999.98	959.50	957.53	1.72	1.66	124.30	262.02	258.65	3.37	77.734	0			0
1,100.00	1,099.84	1,049.52	1,046.16	1.89	1.83	123.68	281.45	277.75	3.70	75.986	0			0
1,200.00	1,199.45	1,137.99	1,132.73	2.07	2.01	123.35	305.65	301.62	4.03	75.774	0			0
1,229.56	1,228.83	1,163.80	1,157.88	2.12	2.06	123.30	313.69	309.56	4.13	75.945	0			0
1,300.00	1,298.81	1,227.98	1,220.22	2.25	2.18	123.50	333.87	329.50	4.37	76.401	0			0
1,400.00	1,398.15	1,323.70	1,313.13	2.43	2.38	123.75	362.77	358.05	4.72	76.869	0			0
1,500.00	1,497.49	1,419.43	1,406.05	2.61	2.57	123.96	391.67	386.60	5.07	77.249	0			0
1,600.00	1,596.83	1,515.15	1,498.97	2.79	2.77	124.14	420.58	415.16	5.42	77.564	0			0
1,700.00	1,696.16	1,610.87	1,591.89	2.97	2.97	124.30	449.50	443.72	5.78	77.830	0			0
1,800.00	1,795.50	1,706.59	1,684.80	3.15	3.17	124.44	478.41	472.29	6.13	78.058	0			0
1,900.00	1,894.84	1,802.31	1,777.72	3.33	3.37	124.56	507.33	500.85	6.48	78.256	0			0
2,000.00	1,994.18	1,898.03	1,870.64	3.51	3.57	124.67	536.25	529.42	6.84	78.428	0			0
2,100.00	2,093.52	1,993.76	1,963.55	3.70	3.77	124.77	565.17	557.98	7.19	78.579	0			0
2,200.00	2,192.86	2,089.48	2,056.47	3.88	3.97	124.86	594.10	586.55	7.55	78.712	0			0
2,300.00	2,292.20	2,185.20	2,149.39	4.06	4.17	124.94	623.02	615.12	7.90	78.831	0			0
2,400.00	2,391.54	2,280.92	2,242.31	4.24	4.37	125.02	651.95	643.69	8.26	78.937	0			0
2,500.00	2,490.88	2,376.64	2,335.22	4.43	4.58	125.08	680.87	672.26	8.62	79.033	0			0
2,600.00	2,590.22	2,472.37	2,428.14	4.61	4.78	125.15	709.80	700.83	8.97	79.119	0			0
2,700.00	2,689.55	2,568.09	2,521.06	4.79	4.98	125.20	738.73	729.40	9.33	79.198	0			0
2,800.00	2,788.89	2,663.81	2,613.97	4.98	5.19	125.26	767.66	757.97	9.68	79.269	0			0
2,900.00	2,888.23	2,759.53	2,706.89	5.16	5.39	125.30	796.59	786.55	10.04	79.335	0			0
3,000.00	2,987.57	2,855.25	2,799.81	5.34	5.59	125.35	825.52	815.12	10.40	79.395	0			0
3,100.00	3,086.91	2,950.98	2,892.72	5.53	5.80	125.39	854.45	843.69	10.75	79.450	0			0
3,200.00	3,186.25	3,046.70	2,985.64	5.71	6.00	125.43	883.38	872.27	11.11	79.501	0			0
3,300.00	3,285.59	3,142.42	3,078.56	5.89	6.21	125.47	912.31	900.84	11.47	79.548	0			0
3,400.00	3,384.93	3,238.14	3,171.48	6.08	6.41	125.50	941.24	929.41	11.83	79.592	0			0
3,500.00	3,484.27	3,333.86	3,264.39	6.26	6.62	125.54	970.17	957.99	12.18	79.633	0			0
3,600.00	3,583.61	3,429.59	3,357.31	6.45	6.82	125.57	999.10	986.56	12.54	79.671	0			0
3,700.00	3,682.95	3,525.31	3,450.23	6.63	7.03	125.60	1,028.03	1,015.14	12.90	79.707	0			0
3,800.00	3,782.28	3,621.03	3,543.14	6.81	7.23	125.62	1,056.97	1,043.71	13.26	79.740	0			0
3,900.00	3,881.62	3,716.75	3,636.06	7.00	7.44	125.65	1,085.90	1,072.29	13.61	79.771	0			0
4,000.00	3,980.96	3,812.47	3,728.98	7.18	7.64	125.67	1,114.83	1,100.86	13.97	79.801	0			0
4,100.00	4,080.30	3,908.20	3,821.90	7.37	7.85	125.70	1,143.76	1,129.44	14.33	79.828	0			0
4,200.00	4,179.64	4,003.92	3,914.81	7.55	8.05	125.72	1,172.70	1,158.01	14.69	79.855	0			0
4,300.00	4,278.98	4,099.64	4,007.73	7.73	8.26	125.74	1,201.63	1,186.59	15.04	79.879	0			0
4,400.00	4,378.32	4,195.36	4,100.65	7.92	8.46	125.76	1,230.56	1,215.16	15.40	79.903	0			0
4,500.00	4,477.66	4,291.08	4,193.56	8.10	8.67	125.78	1,259.50	1,243.74	15.76	79.925	0			0
4,600.00	4,577.00	4,386.81	4,286.48	8.29	8.87	125.80	1,288.43	1,272.31	16.12	79.946	0			0
4,700.00	4,676.34	4,482.53	4,379.40	8.47	9.08	125.82	1,317.36	1,300.89	16.47	79.966	0			0
4,800.00	4,775.67	4,578.25	4,472.32	8.66	9.28	125.83	1,346.30	1,329.47	16.83	79.985	0			0
4,900.00	4,875.01	4,673.97	4,565.23	8.84	9.49	125.85	1,375.23	1,358.04	17.19	80.003	0			0
5,000.00	4,974.35	4,769.69	4,658.15	9.02	9.69	125.87	1,404.17	1,386.62	17.55	80.020	0			0
5,100.00	5,073.69	4,865.42	4,751.07	9.21	9.90	125.88	1,433.10	1,415.19	17.91	80.036	0			0
5,200.00	5,173.03	4,961.14	4,843.98	9.39	10.10	125.90	1,462.03	1,443.77	18.26	80.052	0			0

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



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<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision		
5,300.00	5,272.37	5,056.86	4,936.90	9.58	10.31	125.91	1,490.97	1,472.35	18.62	80.067	0			
5,400.00	5,371.71	5,152.58	5,029.82	9.76	10.52	125.92	1,519.90	1,500.92	18.98	80.082	0			
5,500.00	5,471.05	5,248.30	5,122.73	9.95	10.72	125.93	1,548.84	1,529.50	19.34	80.095	0			
5,600.00	5,570.39	5,344.03	5,215.65	10.13	10.93	125.95	1,577.77	1,558.08	19.70	80.109	0			
5,700.00	5,669.73	5,439.75	5,308.57	10.31	11.13	125.96	1,606.71	1,586.65	20.05	80.121	0			
5,800.00	5,769.07	5,535.47	5,401.49	10.50	11.34	125.97	1,635.64	1,615.23	20.41	80.133	0			
5,900.00	5,868.40	5,631.19	5,494.40	10.68	11.54	125.98	1,664.58	1,643.81	20.77	80.145	0			
6,000.00	5,967.74	5,726.91	5,587.32	10.87	11.75	125.99	1,693.51	1,672.38	21.13	80.156	0			
6,100.00	6,067.08	5,822.64	5,680.24	11.05	11.96	126.00	1,722.44	1,700.96	21.49	80.167	0			
6,200.00	6,166.42	5,929.41	5,783.90	11.24	12.18	126.01	1,751.35	1,729.49	21.86	80.104	0			
6,300.00	6,265.76	6,155.12	6,005.21	11.42	12.63	126.17	1,776.18	1,753.73	22.45	79.115	0			
6,400.00	6,365.10	6,387.74	6,236.19	11.60	13.04	126.54	1,793.77	1,770.73	23.04	77.858	0			
6,490.04	6,454.55	6,600.76	6,449.00	11.77	13.37	127.06	1,803.21	1,779.65	23.56	76.522	0			
6,500.00	6,464.44	6,613.20	6,461.44	11.79	13.39	127.11	1,803.90	1,780.29	23.61	76.408	0			
6,600.00	6,563.99	6,712.68	6,560.92	11.97	13.54	127.44	1,809.60	1,785.61	24.00	75.405	0			
6,700.00	6,663.81	6,809.82	6,657.59	12.14	13.67	127.91	1,813.29	1,788.92	24.37	74.412	0			
6,800.00	6,763.78	6,901.94	6,747.06	12.31	13.79	128.68	1,815.21	1,790.47	24.74	73.367	0			
6,819.60	6,783.38	6,919.21	6,763.44	12.34	13.81	1.53	1,815.42	1,789.70	25.72	70.590	0			
6,900.00	6,863.78	6,986.58	6,825.74	12.48	13.89	2.34	1,816.54	1,790.59	25.95	70.002	0			
6,919.60	6,883.38	7,000.00	6,837.81	12.51	13.90	2.52	1,816.95	1,790.95	26.00	69.877	0			
6,950.00	6,913.77	7,025.71	6,860.57	12.56	13.93	-87.05	1,817.67	1,792.38	25.29	71.869	0			
7,000.00	6,963.56	7,063.91	6,893.46	12.64	13.97	-86.41	1,819.04	1,793.56	25.48	71.399	0			
7,050.00	7,012.87	7,100.00	6,923.41	12.71	14.01	-85.80	1,820.59	1,794.93	25.65	70.969	0			
7,100.00	7,061.37	7,138.25	6,953.85	12.78	14.05	-85.17	1,822.29	1,796.45	25.84	70.535	0			
7,150.00	7,108.78	7,174.55	6,981.40	12.85	14.09	-84.58	1,824.10	1,798.10	26.00	70.147	0			
7,200.00	7,154.80	7,210.36	7,007.21	12.91	14.13	-84.01	1,825.99	1,799.83	26.16	69.798	0			
7,250.00	7,199.14	7,250.00	7,034.12	12.97	14.18	-83.43	1,827.94	1,801.61	26.32	69.443	0			
7,300.00	7,241.54	7,280.71	7,053.68	13.03	14.21	-82.96	1,829.88	1,803.43	26.44	69.201	0			
7,350.00	7,281.73	7,315.36	7,074.36	13.09	14.26	-82.47	1,831.80	1,805.23	26.57	68.954	0			
7,400.00	7,319.47	7,350.00	7,093.48	13.16	14.30	-82.02	1,833.67	1,806.99	26.68	68.738	0			
7,450.00	7,354.51	7,383.79	7,110.60	13.22	14.34	-81.61	1,835.45	1,808.67	26.78	68.544	0			
7,500.00	7,386.65	7,417.65	7,126.18	13.28	14.39	-81.23	1,837.12	1,810.25	26.87	68.369	0			
7,550.00	7,415.69	7,450.00	7,139.55	13.35	14.44	-80.90	1,838.65	1,811.70	26.95	68.226	0			
7,600.00	7,441.45	7,484.81	7,152.25	13.42	14.49	-80.60	1,840.02	1,812.98	27.04	68.039	0			
7,650.00	7,463.76	7,518.16	7,162.74	13.50	14.54	-80.34	1,841.21	1,814.08	27.13	67.868	0			
7,700.00	7,482.50	7,550.00	7,171.19	13.58	14.60	-80.14	1,842.21	1,815.00	27.21	67.710	0			
7,750.00	7,497.54	7,584.56	7,178.61	13.67	14.66	-79.98	1,842.99	1,815.67	27.31	67.476	0			
7,800.00	7,508.80	7,617.65	7,184.00	13.77	14.72	-79.86	1,843.54	1,816.13	27.42	67.237	0			
7,850.00	7,516.20	7,650.00	7,187.61	13.89	14.79	-79.80	1,843.87	1,816.34	27.53	66.976	0			
7,900.00	7,519.70	7,683.72	7,189.64	14.02	14.86	-79.78	1,843.96	1,816.28	27.68	66.616	0			
7,919.60	7,520.00	7,700.00	7,189.98	14.07	14.89	-79.78	1,843.94	1,816.16	27.78	66.384	0			
7,949.97	7,520.00	7,722.69	7,190.00	14.15	14.94	-79.79	1,843.92	1,816.00	27.93	66.031	0			
8,000.00	7,520.00	7,772.71	7,190.00	14.30	15.06	-79.79	1,843.92	1,815.71	28.21	65.371	0			
8,100.00	7,520.00	7,872.71	7,190.00	14.60	15.32	-79.79	1,843.92	1,815.11	28.82	63.990	0			
8,200.00	7,520.00	7,972.71	7,190.00	14.94	15.61	-79.79	1,843.92	1,814.44	29.48	62.554	0			
8,300.00	7,520.00	8,072.71	7,190.00	15.30	15.94	-79.79	1,843.92	1,813.73	30.19	61.081	0			
8,400.00	7,520.00	8,172.71	7,190.00	15.68	16.28	-79.79	1,843.92	1,812.98	30.95	59.587	0			
8,500.00	7,520.00	8,272.71	7,190.00	16.08	16.66	-79.79	1,843.92	1,812.18	31.74	58.086	0			
8,600.00	7,520.00	8,372.71	7,190.00	16.50	17.05	-79.79	1,843.92	1,811.34	32.58	56.590	0			
8,700.00	7,520.00	8,472.71	7,190.00	16.94	17.47	-79.79	1,843.92	1,810.46	33.46	55.108	0			
8,800.00	7,520.00	8,572.71	7,190.00	17.40	17.91	-79.79	1,843.92	1,809.55	34.37	53.649	0			
8,900.00	7,520.00	8,672.71	7,190.00	17.87	18.36	-79.79	1,843.92	1,808.61	35.31	52.219	0			
9,000.00	7,520.00	8,772.70	7,190.00	18.36	18.83	-79.79	1,843.92	1,807.64	36.28	50.823	0			
9,100.00	7,520.00	8,872.70	7,190.00	18.86	19.32	-79.79	1,843.93	1,806.65	37.28	49.465	0			

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



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Sec.08-T07N-R66W - Thornton 1 - Original Hole - Rev 0		Offset Site Error:		0.00 usft	
Survey Program: 0-Pathfinder													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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision						
9,200.00	7,520.00	8,972.70	7,190.00	19.38	19.81	-79.79	1,843.93	1,805.63	38.30	48.146	0							
9,300.00	7,520.00	9,072.70	7,190.00	19.90	20.32	-79.79	1,843.93	1,804.58	39.34	46.869	0							
9,400.00	7,520.00	9,172.70	7,190.00	20.44	20.85	-79.79	1,843.93	1,803.52	40.41	45.634	0							
9,500.00	7,520.00	9,272.70	7,190.00	20.99	21.38	-79.79	1,843.93	1,802.44	41.49	44.443	0							
9,600.00	7,520.00	9,372.70	7,190.00	21.54	21.92	-79.79	1,843.93	1,801.34	42.59	43.293	0							
9,700.00	7,520.00	9,472.70	7,190.00	22.11	22.47	-79.79	1,843.93	1,800.22	43.71	42.186	0							
9,800.00	7,520.00	9,572.70	7,190.00	22.68	23.03	-79.79	1,843.93	1,799.09	44.84	41.120	0							
9,900.00	7,520.00	9,672.70	7,190.00	23.26	23.60	-79.79	1,843.93	1,797.94	45.99	40.095	0							
10,000.00	7,520.00	9,772.69	7,190.00	23.84	24.17	-79.79	1,843.93	1,796.78	47.15	39.108	0							
10,100.00	7,520.00	9,872.69	7,190.00	24.43	24.75	-79.79	1,843.93	1,795.61	48.32	38.160	0							
10,200.00	7,520.00	9,972.69	7,190.00	25.03	25.34	-79.79	1,843.93	1,794.43	49.50	37.248	0							
10,300.00	7,520.00	10,072.69	7,190.00	25.63	25.93	-79.79	1,843.94	1,793.24	50.70	36.371	0							
10,400.00	7,520.00	10,172.69	7,190.00	26.24	26.53	-79.79	1,843.94	1,792.03	51.90	35.527	0							
10,500.00	7,520.00	10,272.69	7,190.00	26.85	27.13	-79.79	1,843.94	1,790.82	53.11	34.716	0							
10,600.00	7,520.00	10,372.69	7,190.00	27.47	27.74	-79.79	1,843.94	1,789.60	54.34	33.936	0							
10,700.00	7,520.00	10,472.69	7,190.00	28.09	28.35	-79.79	1,843.94	1,788.38	55.56	33.185	0							
10,800.00	7,520.00	10,572.69	7,190.00	28.72	28.97	-79.79	1,843.94	1,787.14	56.80	32.463	0							
10,900.00	7,520.00	10,672.69	7,190.00	29.34	29.59	-79.79	1,843.94	1,785.90	58.04	31.768	0							
11,000.00	7,520.00	10,772.69	7,190.00	29.98	30.21	-79.79	1,843.95	1,784.65	59.29	31.098	0							
11,100.00	7,520.00	10,872.68	7,190.00	30.61	30.84	-79.79	1,843.95	1,783.40	60.55	30.453	0							
11,200.00	7,520.00	10,972.68	7,190.00	31.25	31.47	-79.79	1,843.95	1,782.14	61.81	29.832	0							
11,300.00	7,520.00	11,072.68	7,190.00	31.89	32.10	-79.79	1,843.95	1,780.87	63.08	29.232	0							
11,400.00	7,520.00	11,172.68	7,190.00	32.53	32.74	-79.79	1,843.95	1,779.60	64.35	28.655	0							
11,500.00	7,520.00	11,272.68	7,190.00	33.18	33.38	-79.79	1,843.95	1,778.33	65.63	28.097	0							
11,600.00	7,520.00	11,372.68	7,190.00	33.83	34.02	-79.79	1,843.96	1,777.05	66.91	27.559	0							
11,700.00	7,520.00	11,472.68	7,190.00	34.48	34.66	-79.79	1,843.96	1,775.76	68.19	27.040	0							
11,800.00	7,520.00	11,572.68	7,190.00	35.13	35.31	-79.79	1,843.96	1,774.48	69.48	26.538	0							
11,900.00	7,520.00	11,672.68	7,190.00	35.78	35.96	-79.79	1,843.96	1,773.18	70.78	26.053	0							
12,000.00	7,520.00	11,772.68	7,190.00	36.44	36.61	-79.79	1,843.96	1,771.89	72.07	25.584	0							
12,100.00	7,520.00	11,872.68	7,190.00	37.10	37.26	-79.79	1,843.97	1,770.59	73.37	25.131	0							
12,200.00	7,520.00	11,972.67	7,190.00	37.75	37.92	-79.79	1,843.97	1,769.29	74.68	24.692	0							
12,300.00	7,520.00	12,072.67	7,190.00	38.42	38.57	-79.79	1,843.97	1,767.99	75.98	24.268	0							
12,400.00	7,520.00	12,172.67	7,190.00	39.08	39.23	-79.79	1,843.97	1,766.68	77.29	23.857	0							
12,500.00	7,520.00	12,272.67	7,190.00	39.74	39.89	-79.79	1,843.97	1,765.37	78.61	23.459	0							
12,600.00	7,520.00	12,372.67	7,190.00	40.41	40.55	-79.79	1,843.98	1,764.06	79.92	23.073	0							
12,700.00	7,520.00	12,472.67	7,190.00	41.07	41.21	-79.79	1,843.98	1,762.74	81.24	22.699	0							
12,800.00	7,520.00	12,572.67	7,190.00	41.74	41.87	-79.79	1,843.98	1,761.42	82.56	22.336	0							
12,900.00	7,520.00	12,672.67	7,190.00	42.41	42.54	-79.79	1,843.98	1,760.10	83.88	21.984	0							
13,000.00	7,520.00	12,772.67	7,190.00	43.08	43.20	-79.79	1,843.99	1,758.78	85.20	21.642	0							
13,100.00	7,520.00	12,872.67	7,190.00	43.75	43.87	-79.79	1,843.99	1,757.46	86.53	21.311	0							
13,200.00	7,520.00	12,972.67	7,190.00	44.42	44.54	-79.79	1,843.99	1,756.13	87.86	20.989	0							
13,300.00	7,520.00	13,072.66	7,190.00	45.10	45.21	-79.79	1,843.99	1,754.81	89.19	20.676	0							
13,400.00	7,520.00	13,172.66	7,190.00	45.77	45.88	-79.79	1,844.00	1,753.48	90.52	20.372	0							
13,500.00	7,520.00	13,272.66	7,190.00	46.44	46.55	-79.79	1,844.00	1,752.15	91.85	20.076	0							
13,600.00	7,520.00	13,372.66	7,190.00	47.12	47.22	-79.79	1,844.00	1,750.82	93.19	19.788	0							
13,700.00	7,520.00	13,472.66	7,190.00	47.80	47.90	-79.79	1,844.01	1,749.48	94.52	19.508	0							
13,800.00	7,520.00	13,572.66	7,190.00	48.47	48.57	-79.79	1,844.01	1,748.15	95.86	19.236	0							
13,900.00	7,520.00	13,672.66	7,190.00	49.15	49.24	-79.79	1,844.01	1,746.81	97.20	18.971	0							
14,000.00	7,520.00	13,772.66	7,190.00	49.83	49.92	-79.79	1,844.01	1,745.47	98.54	18.713	0							
14,100.00	7,520.00	13,872.66	7,190.00	50.51	50.60	-79.79	1,844.02	1,744.13	99.88	18.462	0							
14,200.00	7,520.00	13,972.66	7,190.00	51.19	51.27	-79.79	1,844.02	1,742.79	101.23	18.217	0							
14,300.00	7,520.00	14,072.66	7,190.00	51.87	51.95	-79.79	1,844.02	1,741.45	102.57	17.978	0							
14,400.00	7,520.00	14,172.65	7,190.00	52.55	52.63	-79.79	1,844.03	1,740.11	103.92	17.745	0							
14,500.00	7,520.00	14,272.65	7,190.00	53.23	53.31	-79.79	1,844.03	1,738.77	105.26	17.518	0							

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



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision		
14,600.00	7,520.00	14,372.65	7,190.00	53.91	53.99	-79.79	1,844.03	1,737.42	106.61	17.297	0			
14,700.00	7,520.00	14,472.65	7,190.00	54.60	54.67	-79.79	1,844.04	1,736.07	107.96	17.080	0			
14,800.00	7,520.00	14,572.65	7,190.00	55.28	55.35	-79.79	1,844.04	1,734.73	109.31	16.870	0			
14,900.00	7,520.00	14,672.65	7,190.00	55.96	56.03	-79.79	1,844.04	1,733.38	110.66	16.664	0			
15,000.00	7,520.00	14,772.65	7,190.00	56.65	56.71	-79.79	1,844.05	1,732.03	112.02	16.462	0			
15,100.00	7,520.00	14,872.65	7,190.00	57.33	57.40	-79.79	1,844.05	1,730.68	113.37	16.266	0			
15,200.00	7,520.00	14,972.65	7,190.00	58.02	58.08	-79.79	1,844.05	1,729.33	114.72	16.074	0			
15,300.00	7,520.00	15,072.65	7,190.00	58.70	58.76	-79.79	1,844.06	1,727.98	116.08	15.887	0			
15,400.00	7,520.00	15,172.64	7,190.00	59.39	59.45	-79.79	1,844.06	1,726.63	117.43	15.703	0			
15,500.00	7,520.00	15,272.64	7,190.00	60.08	60.13	-79.79	1,844.07	1,725.28	118.79	15.524	0			
15,600.00	7,520.00	15,372.64	7,190.00	60.76	60.82	-79.79	1,844.07	1,723.92	120.15	15.349	0			
15,700.00	7,520.00	15,472.64	7,190.00	61.45	61.50	-79.79	1,844.07	1,722.57	121.50	15.177	0			
15,800.00	7,520.00	15,572.64	7,190.00	62.14	62.19	-79.79	1,844.08	1,721.22	122.86	15.009	0			
15,900.00	7,520.00	15,672.64	7,190.00	62.83	62.87	-79.79	1,844.08	1,719.86	124.22	14.845	0			
16,000.00	7,520.00	15,772.64	7,190.00	63.52	63.56	-79.79	1,844.09	1,718.50	125.58	14.685	0			
16,100.00	7,520.00	15,872.64	7,190.00	64.20	64.25	-79.79	1,844.09	1,717.15	126.94	14.527	0			
16,200.00	7,520.00	15,972.64	7,190.00	64.89	64.93	-79.79	1,844.09	1,715.79	128.30	14.373	0			
16,300.00	7,520.00	16,072.64	7,190.00	65.58	65.62	-79.79	1,844.10	1,714.43	129.66	14.222	0			
16,400.00	7,520.00	16,172.64	7,190.00	66.27	66.31	-79.79	1,844.10	1,713.08	131.03	14.074	0			
16,500.00	7,520.00	16,272.63	7,190.00	66.96	67.00	-79.79	1,844.11	1,711.72	132.39	13.930	0			
16,600.00	7,520.00	16,372.63	7,190.00	67.65	67.69	-79.79	1,844.11	1,710.36	133.75	13.788	0			
16,700.00	7,520.00	16,472.63	7,190.00	68.34	68.37	-79.79	1,844.11	1,709.00	135.12	13.648	0			
16,800.00	7,520.00	16,572.63	7,190.00	69.03	69.06	-79.79	1,844.12	1,707.64	136.48	13.512	0			
16,900.00	7,520.00	16,672.63	7,190.00	69.72	69.75	-79.79	1,844.12	1,706.28	137.84	13.378	0			
17,000.00	7,520.00	16,772.63	7,190.00	70.42	70.44	-79.79	1,844.13	1,704.92	139.21	13.247	0			
17,100.00	7,520.00	16,872.63	7,190.00	71.11	71.13	-79.79	1,844.13	1,703.56	140.58	13.118	0			
17,200.00	7,520.00	16,972.63	7,190.00	71.80	71.82	-79.79	1,844.14	1,702.20	141.94	12.992	0			
17,300.00	7,520.00	17,072.63	7,190.00	72.49	72.51	-79.79	1,844.14	1,700.83	143.31	12.868	0			
17,400.00	7,520.00	17,172.63	7,190.00	73.18	73.20	-79.79	1,844.15	1,699.47	144.68	12.747	0			
17,500.00	7,520.00	17,272.63	7,190.00	73.88	73.90	-79.79	1,844.15	1,698.11	146.04	12.627	0			
17,532.01	7,520.00	17,304.64	7,190.00	74.10	74.12	-79.79	1,844.15	1,697.67	146.48	12.590	0			
17,568.49	7,520.00	17,324.42	7,190.00	74.35	74.25	-79.79	1,844.23	1,697.37	146.87	12.557	0	SF		



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Sec.08-T07N-R66W - Thornton 10 - Original Hole - Rev 0		Offset Site Error: 0.00 usft	
Survey Program: 0-Pathfinder													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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Riskd Separation Factor	Probability of Collision				
0.00	0.00	1.00	1.00	0.00	0.00	179.55	28.05									
100.00	100.00	101.00	101.00	0.15	0.15	179.55	28.05	27.76	0.29	95.105	0					
200.00	200.00	201.00	201.00	0.32	0.32	179.55	28.05	27.41	0.64	43.557	0					
300.00	300.00	301.00	301.00	0.50	0.50	179.55	28.05	27.06	0.99	28.247	0					
400.00	400.00	401.00	401.00	0.67	0.67	179.55	28.05	26.71	1.34	20.901	0					
500.00	500.00	501.00	501.00	0.84	0.85	179.55	28.05	26.36	1.69	16.587	0					
600.00	600.00	601.00	601.00	1.02	1.02	179.55	28.05	26.01	2.04	13.749	0					
700.00	700.00	701.00	701.00	1.19	1.20	179.55	28.05	25.66	2.39	11.740	0					
766.33	766.33	767.33	767.33	1.31	1.31	179.55	28.05	25.43	2.62	10.703	0		CC			
800.00	800.00	800.99	800.99	1.37	1.37	179.55	28.05	25.31	2.74	10.244	0		ES			
900.00	900.00	900.00	899.98	1.54	1.54	-178.05	29.34	26.25	3.09	9.506	0					
1,000.00	999.98	999.39	999.23	1.72	1.72	-46.84	32.18	28.74	3.43	9.371	0					
1,100.00	1,099.84	1,098.39	1,097.85	1.89	1.89	-44.28	35.44	31.66	3.78	9.374	0					
1,200.00	1,199.45	1,197.55	1,196.27	2.07	2.07	-42.75	39.05	34.92	4.13	9.459	0					
1,229.56	1,228.83	1,226.81	1,225.25	2.12	2.12	-42.59	40.05	35.82	4.23	9.466	0					
1,300.00	1,298.81	1,297.21	1,294.98	2.25	2.25	-42.58	42.18	37.70	4.48	9.412	0					
1,400.00	1,398.15	1,397.17	1,393.97	2.43	2.43	-42.58	45.19	40.36	4.84	9.343	0					
1,500.00	1,497.49	1,497.12	1,492.97	2.61	2.62	-42.58	48.21	43.02	5.19	9.281	0					
1,600.00	1,596.83	1,597.08	1,591.96	2.79	2.80	-42.57	51.23	45.67	5.55	9.227	0					
1,700.00	1,696.16	1,697.03	1,690.96	2.97	2.98	-42.57	54.24	48.33	5.91	9.178	0					
1,800.00	1,795.50	1,796.99	1,789.95	3.15	3.17	-42.57	57.26	50.99	6.27	9.134	0					
1,900.00	1,894.84	1,896.94	1,888.94	3.33	3.35	-42.57	60.27	53.65	6.63	9.094	0					
2,000.00	1,994.18	1,996.90	1,987.94	3.51	3.54	-42.56	63.29	56.30	6.99	9.058	0					
2,100.00	2,093.52	2,096.85	2,086.93	3.70	3.73	-42.56	66.31	58.96	7.35	9.026	0					
2,200.00	2,192.86	2,196.80	2,185.92	3.88	3.91	-42.56	69.32	61.62	7.71	8.995	0					
2,300.00	2,292.20	2,296.76	2,284.92	4.06	4.10	-42.56	72.34	64.27	8.07	8.968	0					
2,400.00	2,391.54	2,396.71	2,383.91	4.24	4.29	-42.56	75.36	66.93	8.43	8.942	0					
2,500.00	2,490.88	2,496.67	2,482.91	4.43	4.47	-42.56	78.37	69.58	8.79	8.919	0					
2,600.00	2,590.22	2,596.62	2,581.90	4.61	4.66	-42.55	81.39	72.24	9.15	8.897	0					
2,700.00	2,689.55	2,696.58	2,680.89	4.79	4.85	-42.55	84.40	74.89	9.51	8.877	0					
2,800.00	2,788.89	2,796.53	2,779.89	4.98	5.04	-42.55	87.42	77.55	9.87	8.858	0					
2,900.00	2,888.23	2,896.49	2,878.88	5.16	5.22	-42.55	90.44	80.21	10.23	8.840	0					
3,000.00	2,987.57	2,996.44	2,977.87	5.34	5.41	-42.55	93.45	82.86	10.59	8.824	0					
3,100.00	3,086.91	3,096.40	3,076.87	5.53	5.60	-42.55	96.47	85.52	10.95	8.808	0					
3,200.00	3,186.25	3,196.35	3,175.86	5.71	5.79	-42.55	99.48	88.17	11.31	8.794	0					
3,300.00	3,285.59	3,296.30	3,274.85	5.89	5.97	-42.55	102.50	90.83	11.67	8.780	0					
3,400.00	3,384.93	3,396.26	3,373.85	6.08	6.16	-42.55	105.52	93.48	12.04	8.767	0					
3,500.00	3,484.27	3,496.21	3,472.84	6.26	6.35	-42.55	108.53	96.13	12.40	8.755	0					
3,600.00	3,583.61	3,596.17	3,571.84	6.45	6.54	-42.55	111.55	98.79	12.76	8.743	0					
3,700.00	3,682.95	3,696.12	3,670.83	6.63	6.73	-42.54	114.56	101.44	13.12	8.732	0					
3,800.00	3,782.28	3,796.08	3,769.82	6.81	6.91	-42.54	117.58	104.10	13.48	8.722	0					
3,900.00	3,881.62	3,896.03	3,868.82	7.00	7.10	-42.54	120.60	106.75	13.84	8.712	0					
4,000.00	3,980.96	3,995.99	3,967.81	7.18	7.29	-42.54	123.61	109.41	14.20	8.703	0					
4,100.00	4,080.30	4,095.94	4,066.80	7.37	7.48	-42.54	126.63	112.06	14.57	8.694	0					
4,200.00	4,179.64	4,195.89	4,165.80	7.55	7.67	-42.54	129.64	114.72	14.93	8.685	0					
4,300.00	4,278.98	4,295.85	4,264.79	7.73	7.86	-42.54	132.66	117.37	15.29	8.677	0					
4,400.00	4,378.32	4,395.80	4,363.78	7.92	8.04	-42.54	135.68	120.03	15.65	8.669	0					
4,500.00	4,477.66	4,495.76	4,462.78	8.10	8.23	-42.54	138.69	122.68	16.01	8.662	0					
4,600.00	4,577.00	4,595.71	4,561.77	8.29	8.42	-42.54	141.71	125.33	16.37	8.655	0					
4,700.00	4,676.34	4,695.67	4,660.77	8.47	8.61	-42.54	144.72	127.99	16.74	8.648	0					
4,800.00	4,775.67	4,795.62	4,759.76	8.66	8.80	-42.54	147.74	130.64	17.10	8.641	0					
4,900.00	4,875.01	4,895.58	4,858.75	8.84	8.99	-42.54	150.76	133.30	17.46	8.635	0					
5,000.00	4,974.35	4,995.53	4,957.75	9.02	9.17	-42.54	153.77	135.95	17.82	8.629	0					
5,100.00	5,073.69	5,095.49	5,056.74	9.21	9.36	-42.54	156.79	138.61	18.18	8.623	0					

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





# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Sec.08-T07N-R66W - Thornton 10 - Original Hole - Rev 0		Offset Site Error:		0.00 usft
Survey Program: 0-Pathfinder													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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision					
5,200.00	5,173.03	5,195.44	5,155.73	9.39	9.55	-42.54	159.80	141.26	18.54	8.618	0						
5,300.00	5,272.37	5,295.39	5,254.73	9.58	9.74	-42.54	162.82	143.91	18.91	8.612	0						
5,400.00	5,371.71	5,395.35	5,353.72	9.76	9.93	-42.54	165.84	146.57	19.27	8.607	0						
5,500.00	5,471.05	5,495.30	5,452.71	9.95	10.12	-42.54	168.85	149.22	19.63	8.602	0						
5,600.00	5,570.39	5,595.26	5,551.71	10.13	10.31	-42.54	171.87	151.88	19.99	8.597	0						
5,700.00	5,669.73	5,695.21	5,650.70	10.31	10.49	-42.54	174.88	154.53	20.35	8.593	0						
5,800.00	5,769.07	5,795.17	5,749.70	10.50	10.68	-42.54	177.90	157.19	20.71	8.588	0						
5,900.00	5,868.40	5,895.12	5,848.69	10.68	10.87	-42.54	180.92	159.84	21.08	8.584	0						
6,000.00	5,967.74	5,995.08	5,947.68	10.87	11.06	-42.54	183.93	162.49	21.44	8.580	0						
6,100.00	6,067.08	6,095.03	6,046.68	11.05	11.25	-42.54	186.95	165.15	21.80	8.576	0						
6,200.00	6,166.42	6,200.14	6,150.98	11.24	11.44	-42.80	188.74	166.57	22.17	8.513	0						
6,300.00	6,265.76	6,305.80	6,256.22	11.42	11.63	-43.73	187.54	164.99	22.55	8.316	0						
6,400.00	6,365.10	6,411.10	6,361.39	11.60	11.81	-45.39	183.42	160.48	22.94	7.997	0						
6,490.04	6,454.55	6,505.28	6,455.55	11.77	11.96	-47.60	177.39	154.10	23.29	7.616	0						
6,500.00	6,464.44	6,515.17	6,465.44	11.79	11.98	-47.86	176.63	153.30	23.33	7.571	0						
6,600.00	6,563.99	6,614.87	6,565.14	11.97	12.14	-50.14	170.44	146.74	23.70	7.191	0						
6,700.00	6,663.81	6,713.97	6,663.68	12.14	12.29	-54.89	166.80	142.72	24.09	6.925	0						
6,729.50	6,693.29	6,742.28	6,691.45	12.19	12.33	-57.07	166.54	142.34	24.20	6.881	0						
6,800.00	6,763.78	6,807.59	6,754.37	12.31	12.42	-63.38	168.46	143.98	24.48	6.880	0						
6,819.60	6,783.38	6,825.09	6,770.89	12.34	12.44	167.34	169.81	145.65	24.17	7.027	0						
6,900.00	6,863.78	6,893.20	6,833.54	12.48	12.53	158.90	179.77	155.45	24.32	7.390	0						
6,919.60	6,883.38	6,908.85	6,847.50	12.51	12.55	156.80	183.44	159.08	24.37	7.529	0						
6,950.00	6,913.77	6,932.63	6,868.38	12.56	12.57	63.16	189.91	164.85	25.06	7.580	0						
7,000.00	6,963.56	6,971.08	6,901.20	12.64	12.62	57.72	201.81	176.63	25.19	8.013	0						
7,050.00	7,012.87	7,008.77	6,932.14	12.71	12.66	52.94	214.82	189.59	25.24	8.512	0						
7,100.00	7,061.37	7,050.00	6,964.46	12.78	12.71	48.46	228.52	203.32	25.19	9.070	0						
7,150.00	7,108.78	7,082.22	6,988.53	12.85	12.75	45.20	242.38	217.32	25.06	9.673	0						
7,200.00	7,154.80	7,118.13	7,014.03	12.91	12.79	42.10	256.25	231.42	24.83	10.320	0						
7,250.00	7,199.14	7,150.00	7,035.44	12.97	12.83	39.61	269.88	245.36	24.52	11.005	0						
7,300.00	7,241.54	7,188.61	7,059.76	13.03	12.88	37.15	282.99	258.85	24.14	11.723	0						
7,350.00	7,281.73	7,223.28	7,080.01	13.09	12.93	35.19	295.52	271.82	23.70	12.468	0						
7,400.00	7,319.47	7,257.64	7,098.54	13.16	12.97	33.50	307.31	284.09	23.22	13.234	0						
7,450.00	7,354.51	7,291.72	7,115.35	13.22	13.02	32.06	318.27	295.55	22.72	14.010	0						
7,500.00	7,386.65	7,325.56	7,130.45	13.28	13.07	30.83	328.31	306.10	22.21	14.783	0						
7,550.00	7,415.69	7,359.19	7,143.84	13.35	13.12	29.79	337.37	315.66	21.71	15.537	0						
7,600.00	7,441.45	7,400.00	7,157.87	13.42	13.19	28.82	345.51	324.25	21.26	16.249	0						
7,650.00	7,463.76	7,425.93	7,165.50	13.50	13.24	28.21	352.34	331.48	20.86	16.887	0						
7,700.00	7,482.50	7,459.10	7,173.78	13.58	13.30	27.63	358.17	337.62	20.54	17.436	0						
7,750.00	7,497.54	7,500.00	7,181.67	13.67	13.39	27.12	362.97	342.64	20.33	17.855	0						
7,800.00	7,508.80	7,525.17	7,185.23	13.77	13.44	26.85	366.35	346.15	20.21	18.129	0						
7,850.00	7,516.20	7,550.00	7,187.79	13.89	13.50	26.65	368.81	348.62	20.19	18.263	0						
7,900.00	7,519.70	7,591.01	7,189.88	14.02	13.60	26.53	369.80	349.45	20.35	18.168	0						
7,919.60	7,520.00	7,604.32	7,190.00	14.07	13.64	26.52	369.92	349.47	20.45	18.093	0						
8,000.00	7,520.00	7,684.72	7,190.00	14.30	13.86	26.52	369.92	348.98	20.94	17.669	0						
8,100.00	7,520.00	7,784.72	7,190.00	14.60	14.17	26.52	369.92	348.36	21.56	17.157	0						
8,200.00	7,520.00	7,884.72	7,190.00	14.94	14.51	26.52	369.92	347.72	22.20	16.664	0						
8,300.00	7,520.00	7,984.72	7,190.00	15.30	14.87	26.52	369.92	347.07	22.85	16.188	0						
8,400.00	7,520.00	8,084.72	7,190.00	15.68	15.26	26.52	369.92	346.40	23.52	15.731	0						
8,500.00	7,520.00	8,184.72	7,190.00	16.08	15.66	26.52	369.92	345.73	24.19	15.292	0						
8,600.00	7,520.00	8,284.72	7,190.00	16.50	16.09	26.52	369.92	345.04	24.88	14.870	0						
8,700.00	7,520.00	8,384.72	7,190.00	16.94	16.54	26.52	369.92	344.35	25.57	14.466	0						
8,800.00	7,520.00	8,484.72	7,190.00	17.40	17.00	26.52	369.92	343.64	26.27	14.079	0						
8,900.00	7,520.00	8,584.72	7,190.00	17.87	17.48	26.52	369.92	342.93	26.99	13.707	0						
9,000.00	7,520.00	8,684.72	7,190.00	18.36	17.97	26.52	369.92	342.21	27.71	13.352	0						

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





# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Sec.08-T07N-R66W - Thornton 10 - Original Hole - Rev 0		Offset Site Error:		0.00 usft
Survey Program: 0-Pathfinder													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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision					
9,100.00	7,520.00	8,784.72	7,190.00	18.86	18.48	26.52	369.92	341.49	28.43	13.011	0						
9,200.00	7,520.00	8,884.72	7,190.00	19.38	19.00	26.52	369.92	340.75	29.16	12.684	0						
9,300.00	7,520.00	8,984.72	7,190.00	19.90	19.53	26.52	369.92	340.02	29.90	12.371	0						
9,400.00	7,520.00	9,084.72	7,190.00	20.44	20.07	26.52	369.92	339.27	30.65	12.071	0						
9,500.00	7,520.00	9,184.72	7,190.00	20.99	20.63	26.52	369.92	338.52	31.40	11.783	0						
9,600.00	7,520.00	9,284.72	7,190.00	21.54	21.19	26.52	369.92	337.77	32.15	11.507	0						
9,700.00	7,520.00	9,384.72	7,190.00	22.11	21.75	26.52	369.92	337.01	32.91	11.242	0						
9,800.00	7,520.00	9,484.72	7,190.00	22.68	22.33	26.52	369.92	336.25	33.67	10.987	0						
9,900.00	7,520.00	9,584.72	7,190.00	23.26	22.91	26.52	369.92	335.48	34.43	10.743	0						
10,000.00	7,520.00	9,684.72	7,190.00	23.84	23.50	26.52	369.92	334.71	35.20	10.508	0						
10,100.00	7,520.00	9,784.72	7,190.00	24.43	24.10	26.52	369.92	333.94	35.98	10.282	0						
10,200.00	7,520.00	9,884.72	7,190.00	25.03	24.70	26.52	369.92	333.17	36.75	10.065	0						
10,300.00	7,520.00	9,984.72	7,190.00	25.63	25.31	26.52	369.92	332.39	37.53	9.857	0						
10,400.00	7,520.00	10,084.72	7,190.00	26.24	25.92	26.52	369.92	331.61	38.31	9.656	0						
10,500.00	7,520.00	10,184.72	7,190.00	26.85	26.54	26.52	369.92	330.82	39.10	9.462	0						
10,600.00	7,520.00	10,284.72	7,190.00	27.47	27.16	26.52	369.92	330.04	39.88	9.275	0						
10,700.00	7,520.00	10,384.72	7,190.00	28.09	27.78	26.52	369.92	329.25	40.67	9.095	0						
10,800.00	7,520.00	10,484.72	7,190.00	28.72	28.41	26.52	369.92	328.46	41.46	8.922	0						
10,900.00	7,520.00	10,584.72	7,190.00	29.34	29.04	26.52	369.92	327.66	42.25	8.755	0						
11,000.00	7,520.00	10,684.72	7,190.00	29.98	29.68	26.52	369.92	326.87	43.05	8.593	0						
11,100.00	7,520.00	10,784.72	7,190.00	30.61	30.31	26.52	369.92	326.07	43.85	8.437	0						
11,200.00	7,520.00	10,884.72	7,190.00	31.25	30.95	26.52	369.92	325.27	44.64	8.286	0						
11,300.00	7,520.00	10,984.72	7,190.00	31.89	31.60	26.52	369.92	324.47	45.44	8.140	0						
11,400.00	7,520.00	11,084.72	7,190.00	32.53	32.24	26.52	369.92	323.67	46.25	7.999	0						
11,500.00	7,520.00	11,184.72	7,190.00	33.18	32.89	26.52	369.92	322.87	47.05	7.862	0						
11,600.00	7,520.00	11,284.72	7,190.00	33.83	33.54	26.52	369.92	322.06	47.85	7.730	0						
11,700.00	7,520.00	11,384.72	7,190.00	34.48	34.20	26.52	369.92	321.26	48.66	7.602	0						
11,800.00	7,520.00	11,484.72	7,190.00	35.13	34.85	26.52	369.92	320.45	49.47	7.478	0						
11,900.00	7,520.00	11,584.72	7,190.00	35.78	35.51	26.52	369.92	319.64	50.27	7.358	0						
12,000.00	7,520.00	11,684.72	7,190.00	36.44	36.16	26.52	369.92	318.83	51.08	7.241	0						
12,100.00	7,520.00	11,784.72	7,190.00	37.10	36.82	26.52	369.92	318.02	51.89	7.128	0						
12,200.00	7,520.00	11,884.72	7,190.00	37.75	37.49	26.52	369.92	317.21	52.71	7.018	0						
12,300.00	7,520.00	11,984.72	7,190.00	38.42	38.15	26.52	369.92	316.40	53.52	6.912	0						
12,400.00	7,520.00	12,084.72	7,190.00	39.08	38.81	26.52	369.92	315.59	54.33	6.808	0						
12,500.00	7,520.00	12,184.72	7,190.00	39.74	39.48	26.52	369.92	314.77	55.15	6.708	0						
12,600.00	7,520.00	12,284.72	7,190.00	40.41	40.15	26.52	369.92	313.96	55.96	6.610	0						
12,700.00	7,520.00	12,384.72	7,190.00	41.07	40.81	26.52	369.92	313.14	56.78	6.515	0						
12,800.00	7,520.00	12,484.72	7,190.00	41.74	41.48	26.52	369.92	312.32	57.59	6.423	0						
12,900.00	7,520.00	12,584.72	7,190.00	42.41	42.15	26.52	369.92	311.51	58.41	6.333	0						
13,000.00	7,520.00	12,684.72	7,190.00	43.08	42.83	26.52	369.92	310.69	59.23	6.245	0						
13,100.00	7,520.00	12,784.72	7,190.00	43.75	43.50	26.52	369.92	309.87	60.05	6.160	0						
13,200.00	7,520.00	12,884.72	7,190.00	44.42	44.17	26.52	369.92	309.05	60.87	6.077	0						
13,300.00	7,520.00	12,984.72	7,190.00	45.10	44.85	26.52	369.92	308.23	61.69	5.996	0						
13,400.00	7,520.00	13,084.72	7,190.00	45.77	45.52	26.52	369.92	307.41	62.51	5.918	0						
13,500.00	7,520.00	13,184.72	7,190.00	46.44	46.20	26.52	369.92	306.59	63.33	5.841	0						
13,600.00	7,520.00	13,284.72	7,190.00	47.12	46.88	26.52	369.92	305.76	64.15	5.766	0						
13,700.00	7,520.00	13,384.72	7,190.00	47.80	47.55	26.52	369.92	304.94	64.98	5.693	0						
13,800.00	7,520.00	13,484.72	7,190.00	48.47	48.23	26.52	369.92	304.12	65.80	5.622	0						
13,900.00	7,520.00	13,584.72	7,190.00	49.15	48.91	26.52	369.92	303.29	66.62	5.552	0						
14,000.00	7,520.00	13,684.72	7,190.00	49.83	49.59	26.52	369.92	302.47	67.45	5.484	0						
14,100.00	7,520.00	13,784.72	7,190.00	50.51	50.27	26.52	369.92	301.64	68.27	5.418	0						
14,200.00	7,520.00	13,884.72	7,190.00	51.19	50.95	26.52	369.92	300.82	69.10	5.353	0						
14,300.00	7,520.00	13,984.72	7,190.00	51.87	51.63	26.52	369.92	299.99	69.92	5.290	0						
14,400.00	7,520.00	14,084.72	7,190.00	52.55	52.32	26.52	369.92	299.17	70.75	5.228	0						

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



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Sec.08-T07N-R66W - Thornton 10 - Original Hole - Rev 0		Offset Site Error:		0.00 usft
Survey Program: 0-Pathfinder													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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision					
14,500.00	7,520.00	14,184.72	7,190.00	53.23	53.00	26.52	369.92	298.34	71.58	5.168	0						
14,600.00	7,520.00	14,284.72	7,190.00	53.91	53.68	26.52	369.92	297.51	72.40	5.109	0						
14,700.00	7,520.00	14,384.72	7,190.00	54.60	54.37	26.52	369.92	296.69	73.23	5.051	0						
14,800.00	7,520.00	14,484.72	7,190.00	55.28	55.05	26.52	369.92	295.86	74.06	4.995	0						
14,900.00	7,520.00	14,584.72	7,190.00	55.96	55.74	26.52	369.92	295.03	74.89	4.940	0						
15,000.00	7,520.00	14,684.72	7,190.00	56.65	56.42	26.52	369.92	294.20	75.71	4.886	0						
15,100.00	7,520.00	14,784.72	7,190.00	57.33	57.11	26.52	369.92	293.37	76.54	4.833	0						
15,200.00	7,520.00	14,884.72	7,190.00	58.02	57.79	26.52	369.92	292.55	77.37	4.781	0						
15,300.00	7,520.00	14,984.72	7,190.00	58.70	58.48	26.52	369.92	291.72	78.20	4.730	0						
15,400.00	7,520.00	15,084.72	7,190.00	59.39	59.17	26.52	369.92	290.89	79.03	4.681	0						
15,500.00	7,520.00	15,184.72	7,190.00	60.08	59.86	26.52	369.92	290.06	79.86	4.632	0						
15,600.00	7,520.00	15,284.72	7,190.00	60.76	60.54	26.52	369.92	289.23	80.69	4.584	0						
15,700.00	7,520.00	15,384.72	7,190.00	61.45	61.23	26.52	369.92	288.40	81.52	4.538	0						
15,800.00	7,520.00	15,484.72	7,190.00	62.14	61.92	26.52	369.92	287.57	82.35	4.492	0						
15,900.00	7,520.00	15,584.72	7,190.00	62.83	62.61	26.52	369.92	286.73	83.18	4.447	0						
16,000.00	7,520.00	15,684.72	7,190.00	63.52	63.30	26.52	369.92	285.90	84.01	4.403	0						
16,100.00	7,520.00	15,784.72	7,190.00	64.20	63.99	26.52	369.92	285.07	84.85	4.360	0						
16,156.08	7,520.00	15,840.80	7,190.00	64.59	64.37	26.52	369.92	284.53	85.39	4.332	0						
16,200.00	7,520.00	15,884.72	7,190.00	64.89	64.68	26.52	369.92	284.24	85.68	4.318	0						
16,300.00	7,520.00	15,984.72	7,190.00	65.58	65.37	26.52	369.92	283.41	86.51	4.276	0						
16,400.00	7,520.00	16,084.72	7,190.00	66.27	66.06	26.52	369.92	282.58	87.34	4.235	0						
16,500.00	7,520.00	16,184.72	7,190.00	66.96	66.75	26.52	369.92	281.74	88.17	4.195	0						
16,600.00	7,520.00	16,284.72	7,190.00	67.65	67.44	26.52	369.92	280.91	89.01	4.156	0						
16,700.00	7,520.00	16,384.72	7,190.00	68.34	68.13	26.52	369.92	280.08	89.84	4.118	0						
16,800.00	7,520.00	16,484.72	7,190.00	69.03	68.82	26.52	369.92	279.24	90.67	4.080	0						
16,900.00	7,520.00	16,584.72	7,190.00	69.72	69.51	26.52	369.92	278.41	91.51	4.043	0						
17,000.00	7,520.00	16,684.72	7,190.00	70.42	70.21	26.52	369.92	277.58	92.34	4.006	0						
17,100.00	7,520.00	16,784.72	7,190.00	71.11	70.90	26.52	369.92	276.74	93.17	3.970	0						
17,200.00	7,520.00	16,884.72	7,190.00	71.80	71.59	26.52	369.92	275.91	94.01	3.935	0						
17,300.00	7,520.00	16,984.72	7,190.00	72.49	72.28	26.52	369.92	275.08	94.84	3.900	0						
17,400.00	7,520.00	17,084.72	7,190.00	73.18	72.97	26.52	369.92	274.24	95.68	3.866	0						
17,500.00	7,520.00	17,184.72	7,190.00	73.88	73.67	26.52	369.92	273.41	96.51	3.833	0						
17,568.49	7,520.00	17,253.61	7,190.00	74.35	74.15	26.50	369.86	272.80	97.06	3.811	0	SF					

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



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16")
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16")
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision		
0.00	0.00	2.00	2.00	0.00	0.00	179.84	56.10						0	
100.00	100.00	102.00	102.00	0.15	0.15	179.84	56.10	55.81	0.30	189.093	0		0	
200.00	200.00	202.00	202.00	0.32	0.32	179.84	56.10	55.46	0.65	86.880	0		0	
300.00	300.00	302.00	302.00	0.50	0.50	179.84	56.10	55.11	0.99	56.396	0		0	
400.00	400.00	402.00	402.00	0.67	0.67	179.84	56.10	54.76	1.34	41.748	0		0	
500.00	500.00	502.00	502.00	0.84	0.85	179.84	56.10	54.41	1.69	33.140	0		0	
600.00	600.00	602.00	602.00	1.02	1.02	179.84	56.10	54.06	2.04	27.475	0		0	
665.99	665.99	667.99	667.99	1.13	1.14	179.84	56.10	53.83	2.27	24.690	0		0	CC
700.00	700.00	701.97	701.97	1.19	1.20	179.84	56.11	53.71	2.39	23.465	0		0	ES
800.00	800.00	800.00	799.98	1.37	1.37	-179.24	57.63	54.89	2.74	21.055	0		0	
900.00	900.00	898.38	898.22	1.54	1.54	-176.80	62.15	59.06	3.09	20.144	0		0	
1,000.00	999.98	996.15	995.63	1.72	1.71	-47.08	68.65	65.22	3.43	20.019	0		0	
1,100.00	1,099.84	1,093.66	1,092.42	1.89	1.89	-45.88	75.89	72.11	3.77	20.104	0		0	
1,200.00	1,199.45	1,190.89	1,188.49	2.07	2.07	-45.58	83.79	79.67	4.12	20.331	0		0	
1,229.56	1,228.83	1,219.58	1,216.73	2.12	2.12	-45.63	86.25	82.02	4.22	20.419	0		0	
1,300.00	1,298.81	1,289.51	1,285.48	2.25	2.25	-45.83	92.35	87.88	4.47	20.640	0		0	
1,400.00	1,398.15	1,389.13	1,383.41	2.43	2.44	-46.07	101.04	96.21	4.83	20.911	0		0	
1,500.00	1,497.49	1,488.75	1,481.34	2.61	2.63	-46.28	109.73	104.54	5.19	21.141	0		0	
1,600.00	1,596.83	1,588.37	1,579.27	2.79	2.82	-46.45	118.42	112.87	5.55	21.338	0		0	
1,700.00	1,696.16	1,687.99	1,677.20	2.97	3.01	-46.60	127.12	121.21	5.91	21.509	0		0	
1,800.00	1,795.50	1,787.61	1,775.13	3.15	3.20	-46.73	135.81	129.54	6.27	21.658	0		0	
1,900.00	1,894.84	1,887.23	1,873.06	3.33	3.40	-46.84	144.50	137.87	6.63	21.789	0		0	
2,000.00	1,994.18	1,986.85	1,970.99	3.51	3.59	-46.95	153.20	146.20	6.99	21.906	0		0	
2,100.00	2,093.52	2,086.47	2,068.92	3.70	3.79	-47.04	161.89	154.54	7.36	22.010	0		0	
2,200.00	2,192.86	2,186.10	2,166.85	3.88	3.98	-47.12	170.59	162.87	7.72	22.103	0		0	
2,300.00	2,292.20	2,285.72	2,264.78	4.06	4.18	-47.19	179.28	171.20	8.08	22.188	0		0	
2,400.00	2,391.54	2,385.34	2,362.71	4.24	4.37	-47.26	187.98	179.54	8.44	22.264	0		0	
2,500.00	2,490.88	2,484.96	2,460.64	4.43	4.57	-47.32	196.68	187.87	8.81	22.334	0		0	
2,600.00	2,590.22	2,584.58	2,558.57	4.61	4.76	-47.38	205.37	196.20	9.17	22.398	0		0	
2,700.00	2,689.55	2,684.20	2,656.50	4.79	4.96	-47.43	214.07	204.54	9.53	22.456	0		0	
2,800.00	2,788.89	2,783.82	2,754.43	4.98	5.16	-47.48	222.77	212.87	9.90	22.510	0		0	
2,900.00	2,888.23	2,883.44	2,852.36	5.16	5.35	-47.52	231.46	221.20	10.26	22.560	0		0	
3,000.00	2,987.57	2,983.06	2,950.29	5.34	5.55	-47.56	240.16	229.54	10.62	22.606	0		0	
3,100.00	3,086.91	3,082.68	3,048.22	5.53	5.75	-47.60	248.86	237.87	10.99	22.649	0		0	
3,200.00	3,186.25	3,182.31	3,146.15	5.71	5.94	-47.63	257.55	246.20	11.35	22.689	0		0	
3,300.00	3,285.59	3,281.93	3,244.08	5.89	6.14	-47.67	266.25	254.53	11.72	22.726	0		0	
3,400.00	3,384.93	3,381.55	3,342.01	6.08	6.34	-47.70	274.95	262.87	12.08	22.761	0		0	
3,500.00	3,484.27	3,481.17	3,439.94	6.26	6.53	-47.73	283.65	271.20	12.44	22.794	0		0	
3,600.00	3,583.61	3,580.79	3,537.87	6.45	6.73	-47.75	292.34	279.53	12.81	22.825	0		0	
3,700.00	3,682.95	3,680.41	3,635.80	6.63	6.93	-47.78	301.04	287.87	13.17	22.854	0		0	
3,800.00	3,782.28	3,780.03	3,733.73	6.81	7.13	-47.80	309.74	296.20	13.54	22.881	0		0	
3,900.00	3,881.62	3,879.65	3,831.66	7.00	7.32	-47.83	318.44	304.53	13.90	22.907	0		0	
4,000.00	3,980.96	3,979.27	3,929.59	7.18	7.52	-47.85	327.13	312.87	14.27	22.931	0		0	
4,100.00	4,080.30	4,078.89	4,027.52	7.37	7.72	-47.87	335.83	321.20	14.63	22.954	0		0	
4,200.00	4,179.64	4,178.52	4,125.45	7.55	7.92	-47.89	344.53	329.53	15.00	22.976	0		0	
4,300.00	4,278.98	4,278.14	4,223.38	7.73	8.11	-47.91	353.23	337.87	15.36	22.997	0		0	
4,400.00	4,378.32	4,377.76	4,321.31	7.92	8.31	-47.92	361.92	346.20	15.72	23.017	0		0	
4,500.00	4,477.66	4,477.38	4,419.24	8.10	8.51	-47.94	370.62	354.53	16.09	23.036	0		0	
4,600.00	4,577.00	4,577.00	4,517.17	8.29	8.71	-47.96	379.32	362.87	16.45	23.054	0		0	
4,700.00	4,676.34	4,676.62	4,615.10	8.47	8.91	-47.97	388.02	371.20	16.82	23.071	0		0	
4,800.00	4,775.67	4,776.24	4,713.03	8.66	9.10	-47.99	396.72	379.53	17.18	23.087	0		0	
4,900.00	4,875.01	4,875.86	4,810.96	8.84	9.30	-48.00	405.41	387.87	17.55	23.103	0		0	
5,000.00	4,974.35	4,975.48	4,908.89	9.02	9.50	-48.01	414.11	396.20	17.91	23.118	0		0	
5,100.00	5,073.69	5,075.10	5,006.82	9.21	9.70	-48.03	422.81	404.53	18.28	23.132	0		0	

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



# Schlumberger

## Anticollision Risk Report



<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Sec.08-T07N-R66W - Thornton 11 - Original Hole - Rev 0	Offset Site Error:	0.00 usft
Survey Program:													0-Pathfinder	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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision			
5,200.00	5,173.03	5,174.72	5,104.75	9.39	9.89	-48.04	431.51	412.86	18.64	23.146	0				
5,300.00	5,272.37	5,274.35	5,202.68	9.58	10.09	-48.05	440.21	421.20	19.01	23.159	0				
5,400.00	5,371.71	5,373.97	5,300.61	9.76	10.29	-48.06	448.90	429.53	19.37	23.172	0				
5,500.00	5,471.05	5,473.59	5,398.54	9.95	10.49	-48.07	457.60	437.86	19.74	23.184	0				
5,600.00	5,570.39	5,573.21	5,496.47	10.13	10.69	-48.08	466.30	446.20	20.10	23.196	0				
5,700.00	5,669.73	5,672.83	5,594.41	10.31	10.89	-48.09	475.00	454.53	20.47	23.208	0				
5,800.00	5,769.07	5,772.45	5,692.34	10.50	11.08	-48.10	483.70	462.86	20.83	23.218	0				
5,900.00	5,868.40	5,872.07	5,790.27	10.68	11.28	-48.11	492.39	471.20	21.20	23.229	0				
6,000.00	5,967.74	5,971.69	5,888.20	10.87	11.48	-48.12	501.09	479.53	21.56	23.239	0				
6,100.00	6,067.08	6,082.42	5,997.19	11.05	11.70	-48.18	509.14	487.20	21.95	23.199	0				
6,200.00	6,166.42	6,201.05	6,114.67	11.24	11.92	-48.46	513.84	491.50	22.35	22.996	0				
6,300.00	6,265.76	6,319.79	6,232.84	11.42	12.12	-49.00	514.90	492.15	22.74	22.639	0				
6,400.00	6,365.10	6,438.24	6,351.08	11.60	12.32	-49.80	512.36	489.22	23.14	22.139	0				
6,490.04	6,454.55	6,543.72	6,456.55	11.77	12.49	-50.75	507.08	483.58	23.50	21.577	0				
6,500.00	6,464.44	6,553.62	6,466.44	11.79	12.51	-50.83	506.37	482.83	23.54	21.514	0				
6,600.00	6,563.99	6,653.37	6,566.20	11.97	12.67	-51.59	500.46	476.58	23.88	20.955	0				
6,700.00	6,663.81	6,752.81	6,665.06	12.14	12.81	-53.18	496.79	472.57	24.22	20.513	0				
6,764.69	6,728.47	6,814.34	6,725.01	12.25	12.89	-54.92	495.99	471.56	24.43	20.301	0				
6,800.00	6,763.78	6,846.67	6,755.92	12.31	12.93	-56.06	496.26	471.72	24.55	20.217	0				
6,819.60	6,783.38	6,864.21	6,772.46	12.34	12.95	175.93	496.68	471.89	24.78	20.043	0				
6,900.00	6,863.78	6,932.42	6,835.13	12.48	13.03	172.85	500.07	475.10	24.97	20.025	0				
6,919.60	6,883.38	6,950.00	6,850.78	12.51	13.06	171.94	501.39	476.37	25.02	20.041	0				
6,950.00	6,913.77	6,971.89	6,869.96	12.56	13.08	80.60	503.75	478.69	25.06	20.098	0				
7,000.00	6,963.56	7,010.36	6,902.74	12.64	13.12	78.27	508.32	483.08	25.24	20.140	0				
7,050.00	7,012.87	7,050.00	6,935.18	12.71	13.17	75.93	513.60	488.20	25.40	20.220	0				
7,100.00	7,061.37	7,085.10	6,962.67	12.78	13.21	73.86	519.44	493.90	25.53	20.345	0				
7,150.00	7,108.78	7,121.54	6,989.89	12.85	13.25	71.80	525.70	500.06	25.64	20.505	0				
7,200.00	7,154.80	7,157.45	7,015.32	12.91	13.29	69.86	532.25	506.54	25.71	20.702	0				
7,250.00	7,199.14	7,192.89	7,038.98	12.97	13.33	68.03	538.96	513.21	25.75	20.932	0				
7,300.00	7,241.54	7,227.92	7,060.89	13.03	13.38	66.33	545.69	519.94	25.75	21.192	0				
7,350.00	7,281.73	7,262.59	7,081.06	13.09	13.42	64.75	552.33	526.61	25.72	21.475	0				
7,400.00	7,319.47	7,300.00	7,101.06	13.16	13.47	63.24	558.79	533.13	25.66	21.774	0				
7,450.00	7,354.51	7,331.00	7,116.21	13.22	13.51	62.01	564.94	539.35	25.58	22.081	0				
7,500.00	7,386.65	7,364.82	7,131.21	13.28	13.56	60.83	570.72	545.22	25.50	22.385	0				
7,550.00	7,415.69	7,400.00	7,145.09	13.35	13.61	59.77	576.05	550.64	25.41	22.672	0				
7,600.00	7,441.45	7,431.86	7,156.10	13.42	13.67	58.89	580.86	555.53	25.33	22.929	0				
7,650.00	7,463.76	7,465.13	7,165.98	13.50	13.72	58.11	585.09	559.81	25.28	23.146	0				
7,700.00	7,482.50	7,500.00	7,174.55	13.58	13.78	57.45	588.70	563.44	25.26	23.307	0				
7,750.00	7,497.54	7,531.32	7,180.65	13.67	13.84	56.95	591.63	566.35	25.28	23.402	0				
7,800.00	7,508.80	7,564.28	7,185.44	13.77	13.91	56.57	593.86	568.51	25.36	23.421	0				
7,850.00	7,516.20	7,600.00	7,188.71	13.89	13.99	56.30	595.38	569.89	25.49	23.355	0				
7,900.00	7,519.70	7,630.06	7,189.91	14.02	14.06	56.18	596.14	570.46	25.68	23.214	0				
7,919.60	7,520.00	7,644.20	7,190.00	14.07	14.09	56.16	596.24	570.46	25.78	23.131	0				
8,000.00	7,520.00	7,724.59	7,190.00	14.30	14.30	56.16	596.24	570.00	26.24	22.720	0				
8,100.00	7,520.00	7,824.59	7,190.00	14.60	14.59	56.16	596.24	569.38	26.86	22.198	0				
8,200.00	7,520.00	7,924.60	7,190.00	14.94	14.91	56.16	596.24	568.72	27.52	21.668	0				
8,300.00	7,520.00	8,024.59	7,190.00	15.30	15.26	56.16	596.24	568.03	28.21	21.135	0				
8,400.00	7,520.00	8,124.60	7,190.00	15.68	15.63	56.16	596.24	567.30	28.94	20.602	0				
8,500.00	7,520.00	8,224.60	7,190.00	16.08	16.03	56.16	596.24	566.54	29.70	20.074	0				
8,600.00	7,520.00	8,324.60	7,190.00	16.50	16.45	56.16	596.24	565.75	30.49	19.553	0				
8,700.00	7,520.00	8,424.60	7,190.00	16.94	16.89	56.16	596.24	564.93	31.31	19.042	0				
8,800.00	7,520.00	8,524.60	7,190.00	17.40	17.34	56.16	596.24	564.08	32.16	18.541	0				
8,900.00	7,520.00	8,624.60	7,190.00	17.87	17.81	56.16	596.24	563.21	33.02	18.054	0				
9,000.00	7,520.00	8,724.60	7,190.00	18.36	18.30	56.16	596.24	562.32	33.91	17.581	0				

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



# Schlumberger

## Anticollision Risk Report



<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Riskd Separation Factor	Probability of Collision		
9,100.00	7,520.00	8,824.60	7,190.00	18.86	18.80	56.16	596.24	561.41	34.82	17.121	0			
9,200.00	7,520.00	8,924.60	7,190.00	19.38	19.31	56.16	596.24	560.48	35.75	16.677	0			
9,300.00	7,520.00	9,024.60	7,190.00	19.90	19.83	56.16	596.24	559.54	36.70	16.247	0			
9,400.00	7,520.00	9,124.60	7,190.00	20.44	20.37	56.16	596.24	558.58	37.66	15.833	0			
9,500.00	7,520.00	9,224.60	7,190.00	20.99	20.91	56.16	596.24	557.60	38.63	15.433	0			
9,600.00	7,520.00	9,324.60	7,190.00	21.54	21.47	56.16	596.23	556.61	39.62	15.047	0			
9,700.00	7,520.00	9,424.60	7,190.00	22.11	22.03	56.16	596.23	555.61	40.63	14.676	0			
9,800.00	7,520.00	9,524.60	7,190.00	22.68	22.60	56.16	596.23	554.59	41.64	14.319	0			
9,900.00	7,520.00	9,624.60	7,190.00	23.26	23.18	56.16	596.23	553.57	42.66	13.975	0			
10,000.00	7,520.00	9,724.60	7,190.00	23.84	23.76	56.16	596.23	552.53	43.70	13.644	0			
10,100.00	7,520.00	9,824.60	7,190.00	24.43	24.35	56.16	596.23	551.49	44.74	13.326	0			
10,200.00	7,520.00	9,924.60	7,190.00	25.03	24.95	56.16	596.23	550.44	45.79	13.020	0			
10,300.00	7,520.00	10,024.60	7,190.00	25.63	25.55	56.16	596.23	549.38	46.85	12.725	0			
10,400.00	7,520.00	10,124.60	7,190.00	26.24	26.16	56.16	596.23	548.31	47.92	12.441	0			
10,500.00	7,520.00	10,224.60	7,190.00	26.85	26.77	56.16	596.23	547.23	49.00	12.168	0			
10,600.00	7,520.00	10,324.60	7,190.00	27.47	27.39	56.16	596.23	546.15	50.08	11.906	0			
10,700.00	7,520.00	10,424.60	7,190.00	28.09	28.01	56.16	596.23	545.06	51.17	11.652	0			
10,800.00	7,520.00	10,524.60	7,190.00	28.72	28.63	56.16	596.23	543.96	52.26	11.408	0			
10,900.00	7,520.00	10,624.60	7,190.00	29.34	29.26	56.16	596.23	542.86	53.36	11.173	0			
11,000.00	7,520.00	10,724.60	7,190.00	29.98	29.89	56.16	596.22	541.76	54.47	10.947	0			
11,100.00	7,520.00	10,824.60	7,190.00	30.61	30.52	56.16	596.22	540.65	55.58	10.728	0			
11,200.00	7,520.00	10,924.60	7,190.00	31.25	31.16	56.16	596.22	539.53	56.69	10.517	0			
11,300.00	7,520.00	11,024.60	7,190.00	31.89	31.80	56.16	596.22	538.41	57.81	10.314	0			
11,400.00	7,520.00	11,124.60	7,190.00	32.53	32.44	56.16	596.22	537.29	58.93	10.117	0			
11,500.00	7,520.00	11,224.60	7,190.00	33.18	33.09	56.16	596.22	536.16	60.06	9.928	0			
11,600.00	7,520.00	11,324.60	7,190.00	33.83	33.73	56.16	596.22	535.03	61.19	9.744	0			
11,700.00	7,520.00	11,424.60	7,190.00	34.48	34.38	56.16	596.22	533.90	62.32	9.567	0			
11,800.00	7,520.00	11,524.60	7,190.00	35.13	35.04	56.16	596.22	532.76	63.46	9.396	0			
11,900.00	7,520.00	11,624.60	7,190.00	35.78	35.69	56.16	596.22	531.62	64.59	9.230	0			
12,000.00	7,520.00	11,724.60	7,190.00	36.44	36.34	56.16	596.21	530.48	65.74	9.070	0			
12,100.00	7,520.00	11,824.60	7,190.00	37.10	37.00	56.16	596.21	529.33	66.88	8.914	0			
12,200.00	7,520.00	11,924.60	7,190.00	37.75	37.66	56.16	596.21	528.18	68.03	8.764	0			
12,300.00	7,520.00	12,024.60	7,190.00	38.42	38.32	56.16	596.21	527.03	69.18	8.618	0			
12,400.00	7,520.00	12,124.60	7,190.00	39.08	38.98	56.16	596.21	525.88	70.33	8.477	0			
12,500.00	7,520.00	12,224.60	7,190.00	39.74	39.65	56.16	596.21	524.72	71.49	8.340	0			
12,600.00	7,520.00	12,324.60	7,190.00	40.41	40.31	56.16	596.21	523.56	72.64	8.207	0			
12,700.00	7,520.00	12,424.60	7,190.00	41.07	40.98	56.16	596.20	522.40	73.80	8.078	0			
12,800.00	7,520.00	12,524.60	7,190.00	41.74	41.64	56.16	596.20	521.24	74.96	7.953	0			
12,900.00	7,520.00	12,624.60	7,190.00	42.41	42.31	56.16	596.20	520.07	76.13	7.832	0			
13,000.00	7,520.00	12,724.60	7,190.00	43.08	42.98	56.16	596.20	518.91	77.29	7.714	0			
13,100.00	7,520.00	12,824.60	7,190.00	43.75	43.65	56.16	596.20	517.74	78.46	7.599	0			
13,200.00	7,520.00	12,924.60	7,190.00	44.42	44.32	56.16	596.20	516.57	79.63	7.488	0			
13,300.00	7,520.00	13,024.60	7,190.00	45.10	45.00	56.16	596.20	515.40	80.79	7.379	0			
13,400.00	7,520.00	13,124.60	7,190.00	45.77	45.67	56.16	596.19	514.23	81.97	7.274	0			
13,500.00	7,520.00	13,224.60	7,190.00	46.44	46.35	56.16	596.19	513.05	83.14	7.171	0			
13,600.00	7,520.00	13,324.60	7,190.00	47.12	47.02	56.16	596.19	511.88	84.31	7.071	0			
13,700.00	7,520.00	13,424.60	7,190.00	47.80	47.70	56.16	596.19	510.70	85.49	6.974	0			
13,800.00	7,520.00	13,524.60	7,190.00	48.47	48.37	56.16	596.19	509.52	86.66	6.879	0			
13,900.00	7,520.00	13,624.61	7,190.00	49.15	49.05	56.16	596.18	508.35	87.84	6.787	0			
14,000.00	7,520.00	13,724.61	7,190.00	49.83	49.73	56.16	596.18	507.17	89.02	6.697	0			
14,100.00	7,520.00	13,824.61	7,190.00	50.51	50.41	56.16	596.18	505.98	90.20	6.610	0			
14,200.00	7,520.00	13,924.61	7,190.00	51.19	51.09	56.16	596.18	504.80	91.38	6.524	0			
14,300.00	7,520.00	14,024.61	7,190.00	51.87	51.77	56.16	596.18	503.62	92.56	6.441	0			
14,400.00	7,520.00	14,124.61	7,190.00	52.55	52.45	56.16	596.18	502.43	93.74	6.360	0			

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



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Sec.08-T07N-R66W - Thornton 11 - Original Hole - Rev 0		Offset Site Error:		0.00 usft
Survey Program: 0-Pathfinder													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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision					
14,500.00	7,520.00	14,224.61	7,190.00	53.23	53.13	56.16	596.17	501.25	94.93	6.280	0						
14,600.00	7,520.00	14,324.61	7,190.00	53.91	53.81	56.16	596.17	500.06	96.11	6.203	0						
14,700.00	7,520.00	14,424.61	7,190.00	54.60	54.50	56.16	596.17	498.87	97.30	6.127	0						
14,800.00	7,520.00	14,524.61	7,190.00	55.28	55.18	56.16	596.17	497.69	98.48	6.054	0						
14,900.00	7,520.00	14,624.61	7,190.00	55.96	55.86	56.16	596.17	496.50	99.67	5.981	0						
15,000.00	7,520.00	14,724.61	7,190.00	56.65	56.55	56.16	596.16	495.31	100.86	5.911	0						
15,100.00	7,520.00	14,824.61	7,190.00	57.33	57.23	56.16	596.16	494.12	102.05	5.842	0						
15,200.00	7,520.00	14,924.61	7,190.00	58.02	57.92	56.16	596.16	492.92	103.23	5.775	0						
15,300.00	7,520.00	15,024.61	7,190.00	58.70	58.60	56.16	596.16	491.73	104.42	5.709	0						
15,400.00	7,520.00	15,124.61	7,190.00	59.39	59.29	56.16	596.15	490.54	105.62	5.645	0						
15,500.00	7,520.00	15,224.61	7,190.00	60.08	59.97	56.16	596.15	489.35	106.81	5.582	0						
15,600.00	7,520.00	15,324.61	7,190.00	60.76	60.66	56.16	596.15	488.15	108.00	5.520	0						
15,700.00	7,520.00	15,424.61	7,190.00	61.45	61.35	56.16	596.15	486.96	109.19	5.460	0						
15,800.00	7,520.00	15,524.61	7,190.00	62.14	62.04	56.16	596.14	485.76	110.38	5.401	0						
15,900.00	7,520.00	15,624.61	7,190.00	62.83	62.72	56.16	596.14	484.56	111.58	5.343	0						
16,000.00	7,520.00	15,724.61	7,190.00	63.52	63.41	56.16	596.14	483.37	112.77	5.286	0						
16,100.00	7,520.00	15,824.61	7,190.00	64.20	64.10	56.16	596.14	482.17	113.97	5.231	0						
16,200.00	7,520.00	15,924.61	7,190.00	64.89	64.79	56.16	596.13	480.97	115.16	5.176	0						
16,300.00	7,520.00	16,024.61	7,190.00	65.58	65.48	56.16	596.13	479.77	116.36	5.123	0						
16,400.00	7,520.00	16,124.61	7,190.00	66.27	66.17	56.16	596.13	478.57	117.56	5.071	0						
16,500.00	7,520.00	16,224.61	7,190.00	66.96	66.86	56.16	596.13	477.38	118.75	5.020	0						
16,600.00	7,520.00	16,324.61	7,190.00	67.65	67.55	56.16	596.12	476.18	119.95	4.970	0						
16,700.00	7,520.00	16,424.61	7,190.00	68.34	68.24	56.16	596.12	474.98	121.15	4.921	0						
16,800.00	7,520.00	16,524.61	7,190.00	69.03	68.93	56.16	596.12	473.77	122.35	4.872	0						
16,900.00	7,520.00	16,624.61	7,190.00	69.72	69.62	56.16	596.12	472.57	123.54	4.825	0						
17,000.00	7,520.00	16,724.61	7,190.00	70.42	70.31	56.16	596.11	471.37	124.74	4.779	0						
17,100.00	7,520.00	16,824.61	7,190.00	71.11	71.00	56.16	596.11	470.17	125.94	4.733	0						
17,200.00	7,520.00	16,924.61	7,190.00	71.80	71.69	56.16	596.11	468.97	127.14	4.689	0						
17,300.00	7,520.00	17,024.61	7,190.00	72.49	72.39	56.15	596.11	467.76	128.34	4.645	0						
17,400.00	7,520.00	17,124.61	7,190.00	73.18	73.08	56.15	596.10	466.56	129.54	4.602	0						
17,500.00	7,520.00	17,224.61	7,190.00	73.88	73.77	56.15	596.10	465.36	130.74	4.559	0						
17,568.49	7,520.00	17,293.10	7,190.00	74.35	74.24	56.15	596.09	464.53	131.57	4.531	0	SF					



# Schlumberger

## Anticollision Risk Report



<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error: 0.00 usft	
Survey Program: 0-Pathfinder												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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor		
0.00	0.00	3.00	3.00	0.00	0.00	179.93	84.16				0	CC ES	
100.00	100.00	103.00	103.00	0.15	0.15	179.93	84.16	83.86	0.30	281.983	0		
200.00	200.00	203.00	203.00	0.32	0.33	179.93	84.16	83.51	0.65	129.971	0		
300.00	300.00	303.00	303.00	0.50	0.50	179.93	84.16	83.16	1.00	84.447	0		
400.00	400.00	403.00	403.00	0.67	0.68	179.93	84.16	82.81	1.35	62.541	0		
500.00	500.00	503.00	503.00	0.84	0.85	179.93	84.16	82.46	1.69	49.659	0		
565.64	565.64	568.64	568.64	0.96	0.96	179.93	84.16	82.23	1.92	43.745	0		
600.00	600.00	602.92	602.92	1.02	1.02	179.93	84.16	82.12	2.04	41.181	0		
700.00	700.00	700.00	699.98	1.19	1.19	-179.52	85.75	83.37	2.39	35.910	0		
800.00	800.00	797.56	797.40	1.37	1.37	-178.03	90.39	87.66	2.73	33.054	0		
900.00	900.00	894.31	893.79	1.54	1.54	-175.88	98.17	95.09	3.08	31.845	0		
1,000.00	999.98	990.58	989.37	1.72	1.71	-46.60	107.98	104.56	3.42	31.561	0		
1,100.00	1,099.84	1,086.47	1,084.14	1.89	1.89	-45.54	118.57	114.81	3.77	31.488	0		
1,200.00	1,199.45	1,183.33	1,179.35	2.07	2.07	-45.22	129.67	125.55	4.11	31.528	0		
1,229.56	1,228.83	1,212.74	1,208.21	2.12	2.12	-45.30	132.68	128.46	4.22	31.463	0		
1,300.00	1,298.81	1,282.83	1,277.02	2.25	2.26	-45.69	139.61	135.14	4.47	31.242	0		
1,400.00	1,398.15	1,382.34	1,374.70	2.43	2.45	-46.18	149.45	144.63	4.83	30.964	0		
1,500.00	1,497.49	1,481.84	1,472.38	2.61	2.64	-46.61	159.31	154.12	5.19	30.721	0		
1,600.00	1,596.83	1,581.35	1,570.06	2.79	2.83	-46.99	169.17	163.63	5.55	30.506	0		
1,700.00	1,696.16	1,680.86	1,667.74	2.97	3.03	-47.32	179.04	173.14	5.91	30.314	0		
1,800.00	1,795.50	1,780.36	1,765.42	3.15	3.22	-47.63	188.92	182.65	6.27	30.143	0		
1,900.00	1,894.84	1,879.87	1,863.10	3.33	3.42	-47.90	198.80	192.17	6.63	29.989	0		
2,000.00	1,994.18	1,979.38	1,960.78	3.51	3.62	-48.14	208.68	201.69	6.99	29.849	0		
2,100.00	2,093.52	2,078.88	2,058.46	3.70	3.81	-48.37	218.57	211.22	7.35	29.722	0		
2,200.00	2,192.86	2,178.39	2,156.14	3.88	4.01	-48.57	228.46	220.75	7.72	29.605	0		
2,300.00	2,292.20	2,277.90	2,253.82	4.06	4.21	-48.76	238.36	230.28	8.08	29.498	0		
2,400.00	2,391.54	2,377.40	2,351.50	4.24	4.40	-48.93	248.25	239.81	8.44	29.399	0		
2,500.00	2,490.88	2,476.91	2,449.18	4.43	4.60	-49.09	258.15	249.34	8.81	29.308	0		
2,600.00	2,590.22	2,576.42	2,546.86	4.61	4.80	-49.24	268.05	258.88	9.17	29.224	0		
2,700.00	2,689.55	2,675.92	2,644.54	4.79	5.00	-49.38	277.95	268.41	9.54	29.146	0		
2,800.00	2,788.89	2,775.43	2,742.22	4.98	5.20	-49.50	287.85	277.95	9.90	29.073	0		
2,900.00	2,888.23	2,874.93	2,839.90	5.16	5.39	-49.62	297.76	287.49	10.27	29.005	0		
3,000.00	2,987.57	2,974.44	2,937.58	5.34	5.59	-49.74	307.66	297.03	10.63	28.942	0		
3,100.00	3,086.91	3,073.95	3,035.26	5.53	5.79	-49.84	317.57	306.57	11.00	28.883	0		
3,200.00	3,186.25	3,173.45	3,132.95	5.71	5.99	-49.94	327.48	316.12	11.36	28.827	0		
3,300.00	3,285.59	3,272.96	3,230.63	5.89	6.19	-50.03	337.38	325.66	11.73	28.774	0		
3,400.00	3,384.93	3,372.47	3,328.31	6.08	6.39	-50.12	347.29	335.20	12.09	28.725	0		
3,500.00	3,484.27	3,471.97	3,425.99	6.26	6.59	-50.20	357.20	344.75	12.46	28.678	0		
3,600.00	3,583.61	3,571.48	3,523.67	6.45	6.79	-50.28	367.11	354.29	12.82	28.634	0		
3,700.00	3,682.95	3,670.99	3,621.35	6.63	6.99	-50.35	377.02	363.84	13.19	28.592	0		
3,800.00	3,782.28	3,770.49	3,719.03	6.81	7.19	-50.42	386.94	373.38	13.55	28.552	0		
3,900.00	3,881.62	3,870.00	3,816.71	7.00	7.38	-50.49	396.85	382.93	13.92	28.514	0		
4,000.00	3,980.96	3,969.51	3,914.39	7.18	7.58	-50.55	406.76	392.48	14.28	28.478	0		
4,100.00	4,080.30	4,069.01	4,012.07	7.37	7.78	-50.61	416.67	402.03	14.65	28.444	0		
4,200.00	4,179.64	4,168.52	4,109.75	7.55	7.98	-50.67	426.59	411.57	15.01	28.412	0		
4,300.00	4,278.98	4,268.03	4,207.43	7.73	8.18	-50.72	436.50	421.12	15.38	28.381	0		
4,400.00	4,378.32	4,367.53	4,305.11	7.92	8.38	-50.78	446.42	430.67	15.75	28.351	0		
4,500.00	4,477.66	4,467.04	4,402.79	8.10	8.58	-50.83	456.33	440.22	16.11	28.323	0		
4,600.00	4,577.00	4,566.55	4,500.47	8.29	8.78	-50.87	466.25	449.77	16.48	28.295	0		
4,700.00	4,676.34	4,666.05	4,598.15	8.47	8.98	-50.92	476.16	459.32	16.84	28.269	0		
4,800.00	4,775.67	4,765.56	4,695.83	8.66	9.18	-50.96	486.08	468.87	17.21	28.244	0		
4,900.00	4,875.01	4,865.06	4,793.51	8.84	9.38	-51.01	495.99	478.42	17.58	28.221	0		
5,000.00	4,974.35	4,964.57	4,891.19	9.02	9.58	-51.05	505.91	487.97	17.94	28.198	0		
5,100.00	5,073.69	5,064.08	4,988.87	9.21	9.78	-51.09	515.83	497.52	18.31	28.175	0		

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





# Schlumberger

## Anticollision Risk Report



<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error: 0.00 usft	
Survey Program: 0-Pathfinder												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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor		
5,200.00	5,173.03	5,163.58	5,086.55	9.39	9.98	-51.12	525.74	507.07	18.67	28.154	0		
5,300.00	5,272.37	5,263.09	5,184.23	9.58	10.18	-51.16	535.66	516.62	19.04	28.134	0		
5,400.00	5,371.71	5,362.60	5,281.91	9.76	10.38	-51.20	545.58	526.17	19.41	28.114	0		
5,500.00	5,471.05	5,462.10	5,379.59	9.95	10.58	-51.23	555.49	535.72	19.77	28.095	0		
5,600.00	5,570.39	5,561.61	5,477.27	10.13	10.78	-51.26	565.41	545.27	20.14	28.076	0		
5,700.00	5,669.73	5,661.12	5,574.95	10.31	10.98	-51.29	575.33	554.82	20.50	28.059	0		
5,800.00	5,769.07	5,760.62	5,672.63	10.50	11.18	-51.32	585.25	564.38	20.87	28.042	0		
5,900.00	5,868.40	5,860.13	5,770.31	10.68	11.38	-51.35	595.16	573.93	21.24	28.025	0		
6,000.00	5,967.74	5,959.64	5,867.99	10.87	11.58	-51.38	605.08	583.48	21.60	28.009	0		
6,100.00	6,067.08	6,059.14	5,965.67	11.05	11.78	-51.41	615.00	593.03	21.97	27.994	0		
6,200.00	6,166.42	6,158.65	6,063.35	11.24	11.98	-51.44	624.92	602.58	22.34	27.979	0		
6,300.00	6,265.76	6,258.16	6,161.03	11.42	12.18	-51.46	634.84	612.14	22.70	27.964	0		
6,400.00	6,365.10	6,363.19	6,264.16	11.60	12.39	-51.49	644.66	621.58	23.08	27.934	0		
6,490.04	6,454.55	6,475.59	6,375.07	11.77	12.60	-51.65	651.26	627.81	23.45	27.775	0		
6,500.00	6,464.44	6,488.04	6,387.40	11.79	12.62	-51.69	651.81	628.32	23.49	27.751	0		
6,600.00	6,563.99	6,613.31	6,511.80	11.97	12.85	-51.98	656.38	632.50	23.88	27.491	0		
6,700.00	6,663.81	6,738.81	6,636.96	12.14	13.06	-52.17	659.21	634.97	24.25	27.189	0		
6,800.00	6,763.78	6,864.43	6,762.52	12.31	13.26	-52.25	660.31	635.71	24.60	26.843	0		
6,819.60	6,783.38	6,888.29	6,786.38	12.34	13.30	-179.58	660.33	635.15	25.18	26.228	0		
6,900.00	6,863.78	6,968.69	6,866.78	12.48	13.43	-179.58	660.33	634.88	25.44	25.953	0		
6,919.60	6,883.38	6,988.31	6,886.40	12.51	13.46	-179.58	660.33	634.82	25.51	25.887	0		
6,950.00	6,913.77	7,018.94	6,917.02	12.56	13.50	90.41	660.32	635.22	25.10	26.305	0		
7,000.00	6,963.56	7,069.30	6,967.15	12.64	13.58	90.38	660.32	635.07	25.26	26.144	0		
7,050.00	7,012.87	7,119.64	7,016.74	12.71	13.64	90.36	660.32	634.92	25.40	25.993	0		
7,100.00	7,061.37	7,169.96	7,065.47	12.78	13.71	90.33	660.32	634.78	25.54	25.852	0		
7,150.00	7,108.78	7,220.24	7,113.03	12.85	13.77	90.30	660.32	634.64	25.68	25.718	0		
7,200.00	7,154.80	7,270.50	7,159.14	12.91	13.83	90.27	660.32	634.51	25.80	25.589	0		
7,250.00	7,199.14	7,320.73	7,203.51	12.97	13.89	90.24	660.31	634.38	25.93	25.465	0		
7,300.00	7,241.54	7,370.93	7,245.86	13.03	13.95	90.20	660.31	634.26	26.05	25.343	0		
7,350.00	7,281.73	7,421.09	7,285.93	13.09	14.01	90.16	660.31	634.13	26.18	25.223	0		
7,400.00	7,319.47	7,471.22	7,323.48	13.16	14.06	90.13	660.31	634.00	26.31	25.101	0		
7,450.00	7,354.51	7,521.32	7,358.28	13.22	14.12	90.09	660.31	633.87	26.44	24.976	0		
7,500.00	7,386.65	7,571.38	7,390.12	13.28	14.18	90.05	660.31	633.73	26.58	24.846	0		
7,550.00	7,415.69	7,621.40	7,418.80	13.35	14.25	90.01	660.31	633.58	26.72	24.708	0		
7,600.00	7,441.45	7,671.39	7,444.17	13.42	14.31	89.97	660.31	633.42	26.88	24.562	0		
7,609.91	7,446.15	7,681.30	7,448.79	13.44	14.33	89.96	660.31	633.26	27.05	24.415	0		
7,650.00	7,463.76	7,721.35	7,466.06	13.50	14.39	89.93	660.31	633.25	27.06	24.405	0		
7,700.00	7,482.50	7,771.27	7,484.36	13.58	14.46	89.90	660.31	633.06	27.24	24.237	0		
7,750.00	7,497.54	7,821.16	7,498.96	13.67	14.55	89.86	660.31	632.86	27.45	24.058	0		
7,800.00	7,508.80	7,871.01	7,509.77	13.77	14.64	89.82	660.31	632.64	27.67	23.866	0		
7,850.00	7,516.20	7,920.83	7,516.74	13.89	14.74	89.79	660.31	632.41	27.90	23.664	0		
7,900.00	7,519.70	7,970.62	7,519.83	14.02	14.84	89.75	660.31	632.16	28.16	23.452	0		
7,919.60	7,520.00	7,990.16	7,520.00	14.07	14.89	89.74	660.31	632.05	28.26	23.367	0		
8,000.00	7,520.00	8,070.55	7,520.00	14.30	15.08	89.74	660.31	631.60	28.71	23.002	0		
8,100.00	7,520.00	8,170.55	7,520.00	14.60	15.36	89.74	660.31	631.00	29.31	22.526	0		
8,200.00	7,520.00	8,270.55	7,520.00	14.94	15.67	89.74	660.31	630.34	29.97	22.030	0		
8,300.00	7,520.00	8,370.55	7,520.00	15.30	16.00	89.74	660.31	629.63	30.68	21.520	0		
8,400.00	7,520.00	8,470.55	7,520.00	15.68	16.37	89.74	660.31	628.87	31.44	21.002	0		
8,500.00	7,520.00	8,570.55	7,520.00	16.08	16.75	89.74	660.31	628.07	32.24	20.480	0		
8,600.00	7,520.00	8,670.55	7,520.00	16.50	17.16	89.74	660.31	627.22	33.08	19.959	0		
8,700.00	7,520.00	8,770.55	7,520.00	16.94	17.58	89.74	660.31	626.34	33.96	19.443	0		
8,800.00	7,520.00	8,870.55	7,520.00	17.40	18.03	89.74	660.31	625.43	34.88	18.933	0		
8,900.00	7,520.00	8,970.55	7,520.00	17.87	18.48	89.74	660.31	624.48	35.82	18.433	0		
9,000.00	7,520.00	9,070.55	7,520.00	18.36	18.96	89.74	660.30	623.51	36.80	17.945	0		

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



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error: 0.00 usft	
Survey Program: 0-Pathfinder												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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision	
9,100.00	7,520.00	9,170.55	7,520.00	18.86	19.45	89.74	660.30	622.51	37.80	17.469	0		
9,200.00	7,520.00	9,270.55	7,520.00	19.38	19.95	89.74	660.30	621.48	38.83	17.007	0		
9,300.00	7,520.00	9,370.55	7,520.00	19.90	20.46	89.74	660.30	620.43	39.88	16.559	0		
9,400.00	7,520.00	9,470.55	7,520.00	20.44	20.99	89.74	660.30	619.35	40.95	16.125	0		
9,500.00	7,520.00	9,570.55	7,520.00	20.99	21.52	89.74	660.30	618.26	42.04	15.706	0		
9,600.00	7,520.00	9,670.55	7,520.00	21.54	22.07	89.74	660.30	617.15	43.15	15.302	0		
9,700.00	7,520.00	9,770.55	7,520.00	22.11	22.62	89.74	660.30	616.02	44.28	14.913	0		
9,800.00	7,520.00	9,870.55	7,520.00	22.68	23.18	89.74	660.30	614.88	45.42	14.538	0		
9,900.00	7,520.00	9,970.55	7,520.00	23.26	23.75	89.74	660.30	613.72	46.58	14.177	0		
10,000.00	7,520.00	10,070.55	7,520.00	23.84	24.32	89.74	660.30	612.55	47.75	13.829	0		
10,100.00	7,520.00	10,170.55	7,520.00	24.43	24.91	89.74	660.30	611.37	48.93	13.495	0		
10,200.00	7,520.00	10,270.55	7,520.00	25.03	25.49	89.74	660.30	610.17	50.12	13.173	0		
10,300.00	7,520.00	10,370.55	7,520.00	25.63	26.09	89.74	660.30	608.97	51.33	12.864	0		
10,400.00	7,520.00	10,470.55	7,520.00	26.24	26.69	89.74	660.30	607.75	52.55	12.566	0		
10,500.00	7,520.00	10,570.55	7,520.00	26.85	27.29	89.74	660.30	606.52	53.77	12.280	0		
10,600.00	7,520.00	10,670.55	7,520.00	27.47	27.90	89.74	660.29	605.29	55.00	12.005	0		
10,700.00	7,520.00	10,770.55	7,520.00	28.09	28.51	89.74	660.29	604.05	56.25	11.740	0		
10,800.00	7,520.00	10,870.55	7,520.00	28.72	29.13	89.74	660.29	602.80	57.49	11.484	0		
10,900.00	7,520.00	10,970.55	7,520.00	29.34	29.75	89.74	660.29	601.54	58.75	11.239	0		
11,000.00	7,520.00	11,070.55	7,520.00	29.98	30.37	89.74	660.29	600.28	60.01	11.002	0		
11,100.00	7,520.00	11,170.55	7,520.00	30.61	31.00	89.74	660.29	599.01	61.28	10.774	0		
11,200.00	7,520.00	11,270.55	7,520.00	31.25	31.63	89.74	660.29	597.73	62.56	10.555	0		
11,300.00	7,520.00	11,370.55	7,520.00	31.89	32.27	89.74	660.29	596.45	63.84	10.343	0		
11,400.00	7,520.00	11,470.55	7,520.00	32.53	32.90	89.74	660.29	595.16	65.13	10.139	0		
11,500.00	7,520.00	11,570.55	7,520.00	33.18	33.54	89.74	660.29	593.87	66.42	9.942	0		
11,600.00	7,520.00	11,670.55	7,520.00	33.83	34.19	89.74	660.29	592.58	67.71	9.751	0		
11,700.00	7,520.00	11,770.55	7,520.00	34.48	34.83	89.74	660.29	591.28	69.01	9.568	0		
11,800.00	7,520.00	11,870.55	7,520.00	35.13	35.48	89.74	660.29	589.97	70.32	9.390	0		
11,900.00	7,520.00	11,970.55	7,520.00	35.78	36.13	89.74	660.29	588.66	71.62	9.219	0		
12,000.00	7,520.00	12,070.55	7,520.00	36.44	36.78	89.74	660.29	587.35	72.94	9.053	0		
12,100.00	7,520.00	12,170.55	7,520.00	37.10	37.43	89.74	660.29	586.03	74.25	8.893	0		
12,200.00	7,520.00	12,270.55	7,520.00	37.75	38.08	89.74	660.28	584.72	75.57	8.738	0		
12,300.00	7,520.00	12,370.55	7,520.00	38.42	38.74	89.74	660.28	583.39	76.89	8.587	0		
12,400.00	7,520.00	12,470.55	7,520.00	39.08	39.40	89.74	660.28	582.07	78.22	8.442	0		
12,500.00	7,520.00	12,570.55	7,520.00	39.74	40.06	89.74	660.28	580.74	79.54	8.301	0		
12,600.00	7,520.00	12,670.55	7,520.00	40.41	40.72	89.74	660.28	579.41	80.87	8.164	0		
12,700.00	7,520.00	12,770.55	7,520.00	41.07	41.38	89.74	660.28	578.08	82.21	8.032	0		
12,800.00	7,520.00	12,870.55	7,520.00	41.74	42.04	89.74	660.28	576.74	83.54	7.904	0		
12,900.00	7,520.00	12,970.55	7,520.00	42.41	42.71	89.74	660.28	575.40	84.88	7.779	0		
13,000.00	7,520.00	13,070.55	7,520.00	43.08	43.37	89.74	660.28	574.06	86.22	7.658	0		
13,100.00	7,520.00	13,170.55	7,520.00	43.75	44.04	89.74	660.28	572.72	87.56	7.541	0		
13,200.00	7,520.00	13,270.55	7,520.00	44.42	44.71	89.74	660.28	571.38	88.90	7.427	0		
13,300.00	7,520.00	13,370.55	7,520.00	45.10	45.38	89.74	660.28	570.03	90.25	7.316	0		
13,400.00	7,520.00	13,470.55	7,520.00	45.77	46.05	89.74	660.28	568.68	91.60	7.209	0		
13,500.00	7,520.00	13,570.55	7,520.00	46.44	46.72	89.74	660.28	567.33	92.95	7.104	0		
13,600.00	7,520.00	13,670.55	7,520.00	47.12	47.39	89.74	660.28	565.98	94.30	7.002	0		
13,700.00	7,520.00	13,770.55	7,520.00	47.80	48.07	89.74	660.28	564.63	95.65	6.903	0		
13,800.00	7,520.00	13,870.55	7,520.00	48.47	48.74	89.74	660.27	563.27	97.00	6.807	0		
13,900.00	7,520.00	13,970.55	7,520.00	49.15	49.42	89.74	660.27	561.91	98.36	6.713	0		
14,000.00	7,520.00	14,070.55	7,520.00	49.83	50.09	89.74	660.27	560.56	99.72	6.622	0		
14,100.00	7,520.00	14,170.55	7,520.00	50.51	50.77	89.74	660.27	559.20	101.07	6.533	0		
14,200.00	7,520.00	14,270.55	7,520.00	51.19	51.45	89.74	660.27	557.84	102.43	6.446	0		
14,300.00	7,520.00	14,370.55	7,520.00	51.87	52.12	89.74	660.27	556.48	103.80	6.361	0		
14,400.00	7,520.00	14,470.55	7,520.00	52.55	52.80	89.74	660.27	555.11	105.16	6.279	0		

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



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Sec.08-T07N-R66W - Thornton 12 - Original Hole - Rev 0		Offset Site Error:		0.00 usft
Survey Program: 0-Pathfinder													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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision					
14,500.00	7,520.00	14,570.55	7,520.00	53.23	53.48	89.74	660.27	553.75	106.52	6.198	0						
14,600.00	7,520.00	14,670.55	7,520.00	53.91	54.16	89.74	660.27	552.38	107.89	6.120	0						
14,700.00	7,520.00	14,770.55	7,520.00	54.60	54.84	89.74	660.27	551.02	109.25	6.044	0						
14,800.00	7,520.00	14,870.55	7,520.00	55.28	55.52	89.74	660.27	549.65	110.62	5.969	0						
14,900.00	7,520.00	14,970.55	7,520.00	55.96	56.20	89.74	660.27	548.28	111.99	5.896	0						
15,000.00	7,520.00	15,070.55	7,520.00	56.65	56.89	89.74	660.27	546.91	113.35	5.825	0						
15,100.00	7,520.00	15,170.55	7,520.00	57.33	57.57	89.74	660.27	545.54	114.72	5.755	0						
15,200.00	7,520.00	15,270.55	7,520.00	58.02	58.25	89.74	660.27	544.17	116.09	5.687	0						
15,300.00	7,520.00	15,370.55	7,520.00	58.70	58.94	89.74	660.27	542.80	117.47	5.621	0						
15,400.00	7,520.00	15,470.55	7,520.00	59.39	59.62	89.74	660.26	541.43	118.84	5.556	0						
15,500.00	7,520.00	15,570.55	7,520.00	60.08	60.30	89.74	660.26	540.05	120.21	5.493	0						
15,600.00	7,520.00	15,670.55	7,520.00	60.76	60.99	89.74	660.26	538.68	121.58	5.430	0						
15,700.00	7,520.00	15,770.55	7,520.00	61.45	61.67	89.74	660.26	537.30	122.96	5.370	0						
15,800.00	7,520.00	15,870.55	7,520.00	62.14	62.36	89.74	660.26	535.93	124.33	5.310	0						
15,900.00	7,520.00	15,970.55	7,520.00	62.83	63.05	89.74	660.26	534.55	125.71	5.252	0						
16,000.00	7,520.00	16,070.55	7,520.00	63.52	63.73	89.74	660.26	533.17	127.09	5.195	0						
16,100.00	7,520.00	16,170.55	7,520.00	64.20	64.42	89.74	660.26	531.80	128.46	5.140	0						
16,200.00	7,520.00	16,270.55	7,520.00	64.89	65.11	89.74	660.26	530.42	129.84	5.085	0						
16,300.00	7,520.00	16,370.55	7,520.00	65.58	65.79	89.74	660.26	529.04	131.22	5.032	0						
16,400.00	7,520.00	16,470.55	7,520.00	66.27	66.48	89.74	660.26	527.66	132.60	4.979	0						
16,500.00	7,520.00	16,570.55	7,520.00	66.96	67.17	89.74	660.26	526.28	133.98	4.928	0						
16,600.00	7,520.00	16,670.55	7,520.00	67.65	67.86	89.74	660.26	524.90	135.36	4.878	0						
16,700.00	7,520.00	16,770.55	7,520.00	68.34	68.55	89.74	660.26	523.52	136.74	4.829	0						
16,800.00	7,520.00	16,870.55	7,520.00	69.03	69.24	89.74	660.26	522.13	138.12	4.780	0						
16,900.00	7,520.00	16,970.55	7,520.00	69.72	69.93	89.74	660.26	520.75	139.50	4.733	0						
17,000.00	7,520.00	17,070.55	7,520.00	70.42	70.62	89.74	660.25	519.37	140.89	4.686	0						
17,100.00	7,520.00	17,170.55	7,520.00	71.11	71.31	89.74	660.25	517.99	142.27	4.641	0						
17,200.00	7,520.00	17,270.55	7,520.00	71.80	72.00	89.74	660.25	516.60	143.65	4.596	0						
17,300.00	7,520.00	17,370.55	7,520.00	72.49	72.69	89.74	660.25	515.22	145.04	4.552	0						
17,400.00	7,520.00	17,470.55	7,520.00	73.18	73.38	89.74	660.25	513.83	146.42	4.509	0						
17,500.00	7,520.00	17,570.55	7,520.00	73.88	74.07	89.74	660.25	512.45	147.81	4.467	0						
17,568.49	7,520.00	17,641.00	7,520.00	74.35	74.56	89.74	660.13	511.36	148.77	4.437	0	SF					



# Schlumberger

## Anticollision Risk Report



<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision		
0.00	0.00	0.00	0.00	0.00	0.00	0.04	195.66						CC, ES	
100.00	100.00	97.00	97.00	0.15	0.14	0.04	195.64	195.35	0.29	677.381	0			
200.00	200.00	197.00	197.00	0.32	0.32	0.04	195.64	195.00	0.64	307.104	0			
300.00	300.00	297.00	297.00	0.50	0.49	0.04	195.64	194.65	0.99	198.395	0			
400.00	400.00	397.00	397.00	0.67	0.66	0.04	195.64	194.30	1.34	146.527	0			
500.00	500.00	497.00	497.00	0.84	0.84	0.04	195.64	193.96	1.68	116.159	0			
600.00	600.00	597.00	597.00	1.02	1.01	0.04	195.64	193.61	2.03	96.217	0			
700.00	700.00	691.51	691.49	1.19	1.18	-0.16	196.99	194.62	2.37	83.018	0			
800.00	800.00	785.64	785.51	1.37	1.34	-0.79	201.24	198.53	2.71	74.192	0			
900.00	900.00	879.38	878.94	1.54	1.51	-1.78	208.43	205.37	3.05	68.283	0			
1,000.00	999.98	972.48	971.43	1.72	1.68	124.43	219.57	216.18	3.39	64.741	0			
1,100.00	1,099.84	1,064.58	1,062.55	1.89	1.85	123.68	235.58	231.85	3.73	63.184	0			
1,200.00	1,199.45	1,155.86	1,152.38	2.07	2.02	123.25	256.33	252.26	4.06	63.086	0			
1,229.56	1,228.83	1,184.61	1,180.60	2.12	2.07	123.19	263.18	259.01	4.17	63.186	0			
1,300.00	1,298.81	1,253.08	1,247.82	2.25	2.20	123.39	279.70	275.28	4.41	63.398	0			
1,400.00	1,398.15	1,350.28	1,343.24	2.43	2.39	123.64	303.15	298.39	4.76	63.649	0			
1,500.00	1,497.49	1,447.48	1,438.66	2.61	2.57	123.85	326.62	321.50	5.12	63.852	0			
1,600.00	1,596.83	1,544.69	1,534.08	2.79	2.76	124.03	350.08	344.61	5.47	64.019	0			
1,700.00	1,696.16	1,641.89	1,629.50	2.97	2.95	124.19	373.55	367.73	5.82	64.158	0			
1,800.00	1,795.50	1,739.09	1,724.92	3.15	3.14	124.33	397.02	390.84	6.18	64.275	0			
1,900.00	1,894.84	1,836.29	1,820.34	3.33	3.33	124.46	420.49	413.96	6.53	64.371	0			
2,000.00	1,994.18	1,933.49	1,915.76	3.51	3.53	124.57	443.97	437.08	6.89	64.454	0			
2,100.00	2,093.52	2,030.70	2,011.18	3.70	3.72	124.67	467.44	460.20	7.24	64.525	0			
2,200.00	2,192.86	2,127.90	2,106.60	3.88	3.91	124.76	490.92	483.32	7.60	64.588	0			
2,300.00	2,292.20	2,225.10	2,202.02	4.06	4.10	124.85	514.40	506.44	7.96	64.642	0			
2,400.00	2,391.54	2,322.30	2,297.44	4.24	4.29	124.92	537.88	529.56	8.31	64.691	0			
2,500.00	2,490.88	2,419.51	2,392.86	4.43	4.49	124.99	561.36	552.69	8.67	64.733	0			
2,600.00	2,590.22	2,516.71	2,488.28	4.61	4.68	125.05	584.84	575.81	9.03	64.772	0			
2,700.00	2,689.55	2,613.91	2,583.70	4.79	4.87	125.11	608.32	598.93	9.39	64.806	0			
2,800.00	2,788.89	2,711.11	2,679.12	4.98	5.07	125.17	631.80	622.06	9.74	64.837	0			
2,900.00	2,888.23	2,808.31	2,774.54	5.16	5.26	125.22	655.28	645.18	10.10	64.865	0			
3,000.00	2,987.57	2,905.52	2,869.96	5.34	5.46	125.27	678.77	668.31	10.46	64.890	0			
3,100.00	3,086.91	3,002.72	2,965.38	5.53	5.65	125.31	702.25	691.43	10.82	64.913	0			
3,200.00	3,186.25	3,099.92	3,060.80	5.71	5.84	125.35	725.73	714.56	11.18	64.934	0			
3,300.00	3,285.59	3,197.12	3,156.22	5.89	6.04	125.39	749.22	737.68	11.53	64.954	0			
3,400.00	3,384.93	3,294.33	3,251.64	6.08	6.23	125.43	772.70	760.81	11.89	64.971	0			
3,500.00	3,484.27	3,391.53	3,347.06	6.26	6.43	125.46	796.19	783.93	12.25	64.988	0			
3,600.00	3,583.61	3,488.73	3,442.48	6.45	6.62	125.49	819.67	807.06	12.61	65.003	0			
3,700.00	3,682.95	3,585.93	3,537.90	6.63	6.82	125.52	843.15	830.19	12.97	65.017	0			
3,800.00	3,782.28	3,683.14	3,633.32	6.81	7.01	125.55	866.64	853.31	13.33	65.030	0			
3,900.00	3,881.62	3,780.34	3,728.74	7.00	7.20	125.58	890.13	876.44	13.69	65.042	0			
4,000.00	3,980.96	3,877.54	3,824.16	7.18	7.40	125.60	913.61	899.57	14.04	65.053	0			
4,100.00	4,080.30	3,974.74	3,919.58	7.37	7.59	125.63	937.10	922.69	14.40	65.064	0			
4,200.00	4,179.64	4,071.94	4,015.00	7.55	7.79	125.65	960.58	945.82	14.76	65.074	0			
4,300.00	4,278.98	4,169.15	4,110.42	7.73	7.98	125.67	984.07	968.95	15.12	65.083	0			
4,400.00	4,378.32	4,266.35	4,205.84	7.92	8.18	125.69	1,007.55	992.08	15.48	65.092	0			
4,500.00	4,477.66	4,363.55	4,301.26	8.10	8.37	125.71	1,031.04	1,015.20	15.84	65.100	0			
4,600.00	4,577.00	4,460.75	4,396.68	8.29	8.57	125.73	1,054.53	1,038.33	16.20	65.107	0			
4,700.00	4,676.34	4,557.96	4,492.10	8.47	8.76	125.75	1,078.01	1,061.46	16.56	65.115	0			
4,800.00	4,775.67	4,655.16	4,587.52	8.66	8.96	125.77	1,101.50	1,084.59	16.91	65.122	0			
4,900.00	4,875.01	4,752.36	4,682.94	8.84	9.15	125.79	1,124.99	1,107.71	17.27	65.128	0			
5,000.00	4,974.35	4,849.56	4,778.36	9.02	9.35	125.80	1,148.47	1,130.84	17.63	65.134	0			
5,100.00	5,073.69	4,946.76	4,873.78	9.21	9.54	125.82	1,171.96	1,153.97	17.99	65.140	0			
5,200.00	5,173.03	5,043.97	4,969.20	9.39	9.74	125.83	1,195.45	1,177.10	18.35	65.145	0			

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



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Sec.08-T07N-R66W - Thornton 2 - Original Hole - Rev 0		Offset Site Error: 0.00 usft	
Survey Program: 0-Pathfinder														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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision				
5,300.00	5,272.37	5,141.17	5,064.62	9.58	9.93	125.85	1,218.93	1,200.22	18.71	65.151	0					
5,400.00	5,371.71	5,238.37	5,160.04	9.76	10.13	125.86	1,242.42	1,223.35	19.07	65.156	0					
5,500.00	5,471.05	5,335.57	5,255.46	9.95	10.32	125.87	1,265.91	1,246.48	19.43	65.160	0					
5,600.00	5,570.39	5,432.78	5,350.88	10.13	10.52	125.89	1,289.40	1,269.61	19.79	65.165	0					
5,700.00	5,669.73	5,529.98	5,446.30	10.31	10.71	125.90	1,312.88	1,292.74	20.15	65.169	0					
5,800.00	5,769.07	5,627.18	5,541.72	10.50	10.91	125.91	1,336.37	1,315.86	20.50	65.173	0					
5,900.00	5,868.40	5,724.38	5,637.14	10.68	11.10	125.92	1,359.86	1,338.99	20.86	65.177	0					
6,000.00	5,967.74	5,821.58	5,732.56	10.87	11.30	125.93	1,383.34	1,362.12	21.22	65.181	0					
6,100.00	6,067.08	5,918.79	5,827.98	11.05	11.49	125.94	1,406.83	1,385.25	21.58	65.185	0					
6,200.00	6,166.42	6,028.84	5,936.04	11.24	11.71	125.96	1,430.25	1,408.28	21.96	65.118	0					
6,300.00	6,265.76	6,204.56	6,109.73	11.42	12.04	126.11	1,450.23	1,427.77	22.46	64.573	0					
6,400.00	6,365.10	6,383.29	6,287.73	11.60	12.35	126.47	1,464.87	1,441.91	22.95	63.824	0					
6,490.04	6,454.55	6,545.70	6,450.05	11.77	12.61	126.97	1,473.40	1,450.01	23.39	62.986	0					
6,500.00	6,464.44	6,557.09	6,461.44	11.79	12.63	127.02	1,474.08	1,450.65	23.43	62.904	0					
6,600.00	6,563.99	6,656.60	6,560.95	11.97	12.79	127.40	1,479.78	1,455.97	23.81	62.138	0					
6,700.00	6,663.81	6,754.06	6,657.93	12.14	12.93	127.97	1,483.47	1,459.29	24.18	61.355	0					
6,800.00	6,763.78	6,846.45	6,747.65	12.31	13.05	128.90	1,485.46	1,460.92	24.54	60.528	0					
6,819.60	6,783.38	6,863.76	6,764.06	12.34	13.07	1.80	1,485.70	1,460.72	24.98	59.484	0					
6,900.00	6,863.78	6,931.29	6,826.48	12.48	13.15	2.78	1,487.03	1,461.82	25.22	58.974	0					
6,919.60	6,883.38	6,946.84	6,840.44	12.51	13.17	3.05	1,487.52	1,462.25	25.27	58.861	0					
6,950.00	6,913.77	6,970.50	6,861.36	12.56	13.20	-86.47	1,488.39	1,463.30	25.09	59.330	0					
7,000.00	6,963.56	7,008.77	6,894.27	12.64	13.24	-85.68	1,490.03	1,464.76	25.27	58.968	0					
7,050.00	7,012.87	7,050.00	6,928.36	12.71	13.29	-84.86	1,491.91	1,466.45	25.46	58.605	0					
7,100.00	7,061.37	7,083.23	6,954.69	12.78	13.33	-84.17	1,493.96	1,468.34	25.62	58.314	0					
7,150.00	7,108.78	7,119.57	6,982.23	12.85	13.37	-83.45	1,496.16	1,470.38	25.78	58.032	0					
7,200.00	7,154.80	7,150.00	7,004.22	12.91	13.41	-82.83	1,498.48	1,472.56	25.91	57.832	0					
7,250.00	7,199.14	7,190.83	7,032.10	12.97	13.45	-82.09	1,500.82	1,474.75	26.07	57.567	0					
7,300.00	7,241.54	7,225.85	7,054.45	13.03	13.50	-81.46	1,503.19	1,476.99	26.20	57.380	0					
7,350.00	7,281.73	7,260.52	7,075.09	13.09	13.54	-80.87	1,505.53	1,479.22	26.31	57.226	0					
7,400.00	7,319.47	7,300.00	7,096.69	13.16	13.59	-80.28	1,507.82	1,481.39	26.43	57.049	0					
7,450.00	7,354.51	7,329.00	7,111.24	13.22	13.63	-79.82	1,509.98	1,483.48	26.50	56.985	0					
7,500.00	7,386.65	7,362.88	7,126.77	13.28	13.68	-79.36	1,512.02	1,485.45	26.58	56.890	0					
7,550.00	7,415.69	7,400.00	7,141.91	13.35	13.74	-78.92	1,513.90	1,487.23	26.67	56.765	0					
7,600.00	7,441.45	7,430.07	7,152.72	13.42	13.79	-78.59	1,515.58	1,488.85	26.73	56.706	0					
7,650.00	7,463.76	7,463.44	7,163.14	13.50	13.84	-78.28	1,517.04	1,490.24	26.80	56.606	0					
7,700.00	7,482.50	7,500.00	7,172.63	13.58	13.91	-78.01	1,518.27	1,491.38	26.90	56.448	0					
7,750.00	7,497.54	7,529.86	7,178.88	13.67	13.96	-77.83	1,519.24	1,492.27	26.97	56.339	0					
7,800.00	7,508.80	7,562.96	7,184.19	13.77	14.03	-77.69	1,519.94	1,492.87	27.06	56.160	0					
7,850.00	7,516.20	7,600.00	7,188.11	13.89	14.11	-77.60	1,520.37	1,493.16	27.20	55.887	0					
7,900.00	7,519.70	7,629.04	7,189.69	14.02	14.17	-77.57	1,520.50	1,493.19	27.31	55.673	0					
7,905.22	7,519.84	7,632.49	7,189.78	14.03	14.18	-77.57	1,520.49	1,493.16	27.33	55.626	0					
7,919.60	7,520.00	7,649.03	7,190.00	14.07	14.22	-77.58	1,520.50	1,493.08	27.42	55.457	0					
7,950.50	7,520.00	7,669.27	7,190.00	14.16	14.27	-77.58	1,520.46	1,492.90	27.56	55.169	0					
8,000.00	7,520.00	7,718.77	7,190.00	14.30	14.40	-77.58	1,520.46	1,492.62	27.84	54.613	0					
8,100.00	7,520.00	7,818.77	7,190.00	14.60	14.68	-77.58	1,520.46	1,492.01	28.45	53.440	0					
8,200.00	7,520.00	7,918.77	7,190.00	14.94	14.99	-77.58	1,520.46	1,491.34	29.12	52.222	0					
8,300.00	7,520.00	8,018.77	7,190.00	15.30	15.34	-77.58	1,520.46	1,490.63	29.83	50.975	0					
8,400.00	7,520.00	8,118.77	7,190.00	15.68	15.71	-77.58	1,520.46	1,489.87	30.59	49.711	0					
8,500.00	7,520.00	8,218.77	7,190.00	16.08	16.10	-77.58	1,520.46	1,489.07	31.39	48.442	0					
8,600.00	7,520.00	8,318.77	7,190.00	16.50	16.51	-77.58	1,520.46	1,488.23	32.23	47.179	0					
8,700.00	7,520.00	8,418.77	7,190.00	16.94	16.95	-77.58	1,520.46	1,487.36	33.10	45.930	0					
8,800.00	7,520.00	8,518.77	7,190.00	17.40	17.40	-77.58	1,520.46	1,486.45	34.01	44.701	0					
8,900.00	7,520.00	8,618.77	7,190.00	17.87	17.87	-77.58	1,520.46	1,485.50	34.95	43.498	0					
9,000.00	7,520.00	8,718.77	7,190.00	18.36	18.35	-77.58	1,520.46	1,484.54	35.92	42.324	0					

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



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder												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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision	
9,100.00	7,520.00	8,818.77	7,190.00	18.86	18.85	-77.58	1,520.46	1,483.54	36.92	41.183	0		
9,200.00	7,520.00	8,918.77	7,190.00	19.38	19.36	-77.58	1,520.46	1,482.52	37.94	40.076	0		
9,300.00	7,520.00	9,018.77	7,190.00	19.90	19.88	-77.58	1,520.46	1,481.48	38.98	39.005	0		
9,400.00	7,520.00	9,118.77	7,190.00	20.44	20.41	-77.58	1,520.46	1,480.42	40.04	37.970	0		
9,500.00	7,520.00	9,218.77	7,190.00	20.99	20.96	-77.58	1,520.46	1,479.33	41.12	36.972	0		
9,600.00	7,520.00	9,318.77	7,190.00	21.54	21.51	-77.58	1,520.46	1,478.24	42.22	36.010	0		
9,700.00	7,520.00	9,418.77	7,190.00	22.11	22.07	-77.58	1,520.46	1,477.12	43.34	35.083	0		
9,800.00	7,520.00	9,518.77	7,190.00	22.68	22.64	-77.58	1,520.46	1,475.99	44.47	34.192	0		
9,900.00	7,520.00	9,618.77	7,190.00	23.26	23.21	-77.58	1,520.46	1,474.85	45.61	33.334	0		
10,000.00	7,520.00	9,718.77	7,190.00	23.84	23.79	-77.58	1,520.46	1,473.69	46.77	32.510	0		
10,100.00	7,520.00	9,818.77	7,190.00	24.43	24.38	-77.58	1,520.46	1,472.52	47.94	31.718	0		
10,200.00	7,520.00	9,918.77	7,190.00	25.03	24.98	-77.58	1,520.46	1,471.34	49.12	30.956	0		
10,300.00	7,520.00	10,018.77	7,190.00	25.63	25.58	-77.58	1,520.46	1,470.15	50.31	30.224	0		
10,400.00	7,520.00	10,118.77	7,190.00	26.24	26.18	-77.58	1,520.46	1,468.95	51.51	29.520	0		
10,500.00	7,520.00	10,218.77	7,190.00	26.85	26.79	-77.58	1,520.46	1,467.75	52.71	28.844	0		
10,600.00	7,520.00	10,318.77	7,190.00	27.47	27.41	-77.58	1,520.46	1,466.53	53.93	28.193	0		
10,700.00	7,520.00	10,418.77	7,190.00	28.09	28.03	-77.58	1,520.46	1,465.30	55.15	27.567	0		
10,800.00	7,520.00	10,518.77	7,190.00	28.72	28.65	-77.58	1,520.46	1,464.07	56.39	26.965	0		
10,900.00	7,520.00	10,618.77	7,190.00	29.34	29.28	-77.58	1,520.46	1,462.84	57.62	26.386	0		
11,000.00	7,520.00	10,718.77	7,190.00	29.98	29.91	-77.58	1,520.46	1,461.59	58.87	25.828	0		
11,100.00	7,520.00	10,818.77	7,190.00	30.61	30.54	-77.58	1,520.46	1,460.34	60.12	25.291	0		
11,200.00	7,520.00	10,918.77	7,190.00	31.25	31.18	-77.58	1,520.46	1,459.08	61.37	24.773	0		
11,300.00	7,520.00	11,018.77	7,190.00	31.89	31.82	-77.58	1,520.46	1,457.82	62.64	24.274	0		
11,400.00	7,520.00	11,118.77	7,190.00	32.53	32.46	-77.58	1,520.46	1,456.56	63.90	23.793	0		
11,500.00	7,520.00	11,218.77	7,190.00	33.18	33.10	-77.58	1,520.46	1,455.29	65.17	23.329	0		
11,600.00	7,520.00	11,318.77	7,190.00	33.83	33.75	-77.58	1,520.46	1,454.01	66.45	22.882	0		
11,700.00	7,520.00	11,418.77	7,190.00	34.48	34.40	-77.58	1,520.46	1,452.73	67.73	22.449	0		
11,800.00	7,520.00	11,518.77	7,190.00	35.13	35.05	-77.58	1,520.46	1,451.45	69.01	22.032	0		
11,900.00	7,520.00	11,618.77	7,190.00	35.78	35.70	-77.58	1,520.46	1,450.16	70.30	21.629	0		
12,000.00	7,520.00	11,718.77	7,190.00	36.44	36.35	-77.58	1,520.46	1,448.87	71.59	21.239	0		
12,100.00	7,520.00	11,818.77	7,190.00	37.10	37.01	-77.58	1,520.46	1,447.58	72.88	20.862	0		
12,200.00	7,520.00	11,918.77	7,190.00	37.75	37.67	-77.58	1,520.46	1,446.28	74.18	20.497	0		
12,300.00	7,520.00	12,018.77	7,190.00	38.42	38.33	-77.58	1,520.46	1,444.98	75.48	20.144	0		
12,400.00	7,520.00	12,118.77	7,190.00	39.08	38.99	-77.58	1,520.46	1,443.68	76.78	19.802	0		
12,500.00	7,520.00	12,218.77	7,190.00	39.74	39.65	-77.58	1,520.46	1,442.37	78.09	19.471	0		
12,600.00	7,520.00	12,318.77	7,190.00	40.41	40.32	-77.58	1,520.46	1,441.06	79.40	19.150	0		
12,700.00	7,520.00	12,418.77	7,190.00	41.07	40.98	-77.58	1,520.46	1,439.75	80.71	18.839	0		
12,800.00	7,520.00	12,518.77	7,190.00	41.74	41.65	-77.58	1,520.46	1,438.44	82.02	18.538	0		
12,900.00	7,520.00	12,618.77	7,190.00	42.41	42.32	-77.58	1,520.46	1,437.12	83.33	18.245	0		
13,000.00	7,520.00	12,718.77	7,190.00	43.08	42.99	-77.58	1,520.46	1,435.81	84.65	17.961	0		
13,100.00	7,520.00	12,818.77	7,190.00	43.75	43.66	-77.58	1,520.46	1,434.49	85.97	17.686	0		
13,200.00	7,520.00	12,918.77	7,190.00	44.42	44.33	-77.58	1,520.46	1,433.17	87.29	17.418	0		
13,300.00	7,520.00	13,018.77	7,190.00	45.10	45.00	-77.58	1,520.46	1,431.84	88.61	17.158	0		
13,400.00	7,520.00	13,118.77	7,190.00	45.77	45.67	-77.58	1,520.46	1,430.52	89.94	16.905	0		
13,500.00	7,520.00	13,218.77	7,190.00	46.44	46.35	-77.58	1,520.46	1,429.19	91.27	16.660	0		
13,600.00	7,520.00	13,318.77	7,190.00	47.12	47.02	-77.58	1,520.46	1,427.87	92.59	16.421	0		
13,700.00	7,520.00	13,418.77	7,190.00	47.80	47.70	-77.58	1,520.46	1,426.54	93.92	16.188	0		
13,800.00	7,520.00	13,518.77	7,190.00	48.47	48.37	-77.58	1,520.46	1,425.21	95.25	15.962	0		
13,900.00	7,520.00	13,618.77	7,190.00	49.15	49.05	-77.58	1,520.46	1,423.87	96.59	15.742	0		
14,000.00	7,520.00	13,718.77	7,190.00	49.83	49.73	-77.58	1,520.46	1,422.54	97.92	15.528	0		
14,100.00	7,520.00	13,818.77	7,190.00	50.51	50.41	-77.58	1,520.46	1,421.21	99.25	15.319	0		
14,200.00	7,520.00	13,918.77	7,190.00	51.19	51.09	-77.58	1,520.46	1,419.87	100.59	15.115	0		
14,300.00	7,520.00	14,018.77	7,190.00	51.87	51.77	-77.58	1,520.46	1,418.53	101.93	14.917	0		
14,400.00	7,520.00	14,118.77	7,190.00	52.55	52.45	-77.58	1,520.46	1,417.19	103.27	14.724	0		

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



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision		
14,500.00	7,520.00	14,218.77	7,190.00	53.23	53.13	-77.58	1,520.46	1,415.85	104.61	14.535	0			
14,600.00	7,520.00	14,318.77	7,190.00	53.91	53.81	-77.58	1,520.46	1,414.51	105.95	14.351	0			
14,700.00	7,520.00	14,418.77	7,190.00	54.60	54.49	-77.58	1,520.46	1,413.17	107.29	14.172	0			
14,800.00	7,520.00	14,518.77	7,190.00	55.28	55.17	-77.58	1,520.46	1,411.83	108.63	13.997	0			
14,900.00	7,520.00	14,618.77	7,190.00	55.96	55.86	-77.58	1,520.46	1,410.49	109.97	13.826	0			
15,000.00	7,520.00	14,718.77	7,190.00	56.65	56.54	-77.58	1,520.46	1,409.14	111.32	13.659	0			
15,100.00	7,520.00	14,818.77	7,190.00	57.33	57.23	-77.58	1,520.46	1,407.80	112.66	13.496	0			
15,200.00	7,520.00	14,918.77	7,190.00	58.02	57.91	-77.58	1,520.46	1,406.45	114.01	13.336	0			
15,300.00	7,520.00	15,018.77	7,190.00	58.70	58.60	-77.58	1,520.46	1,405.10	115.36	13.181	0			
15,400.00	7,520.00	15,118.77	7,190.00	59.39	59.28	-77.58	1,520.46	1,403.75	116.70	13.028	0			
15,500.00	7,520.00	15,218.77	7,190.00	60.08	59.97	-77.58	1,520.46	1,402.41	118.05	12.879	0			
15,600.00	7,520.00	15,318.77	7,190.00	60.76	60.65	-77.58	1,520.46	1,401.06	119.40	12.734	0			
15,700.00	7,520.00	15,418.77	7,190.00	61.45	61.34	-77.58	1,520.46	1,399.71	120.75	12.592	0			
15,800.00	7,520.00	15,518.77	7,190.00	62.14	62.03	-77.58	1,520.46	1,398.36	122.10	12.452	0			
15,900.00	7,520.00	15,618.77	7,190.00	62.83	62.72	-77.58	1,520.46	1,397.00	123.45	12.316	0			
16,000.00	7,520.00	15,718.77	7,190.00	63.52	63.40	-77.58	1,520.46	1,395.65	124.81	12.183	0			
16,100.00	7,520.00	15,818.77	7,190.00	64.20	64.09	-77.58	1,520.46	1,394.30	126.16	12.052	0			
16,200.00	7,520.00	15,918.77	7,190.00	64.89	64.78	-77.58	1,520.46	1,392.95	127.51	11.924	0			
16,300.00	7,520.00	16,018.77	7,190.00	65.58	65.47	-77.58	1,520.46	1,391.59	128.87	11.799	0			
16,400.00	7,520.00	16,118.77	7,190.00	66.27	66.16	-77.58	1,520.46	1,390.24	130.22	11.676	0			
16,500.00	7,520.00	16,218.77	7,190.00	66.96	66.85	-77.58	1,520.46	1,388.88	131.58	11.556	0			
16,600.00	7,520.00	16,318.77	7,190.00	67.65	67.54	-77.58	1,520.46	1,387.53	132.93	11.438	0			
16,700.00	7,520.00	16,418.77	7,190.00	68.34	68.23	-77.58	1,520.46	1,386.17	134.29	11.322	0			
16,800.00	7,520.00	16,518.77	7,190.00	69.03	68.92	-77.58	1,520.46	1,384.82	135.64	11.209	0			
16,900.00	7,520.00	16,618.77	7,190.00	69.72	69.61	-77.58	1,520.46	1,383.46	137.00	11.098	0			
17,000.00	7,520.00	16,718.77	7,190.00	70.42	70.30	-77.58	1,520.46	1,382.10	138.36	10.989	0			
17,100.00	7,520.00	16,818.77	7,190.00	71.11	70.99	-77.58	1,520.46	1,380.74	139.72	10.883	0			
17,200.00	7,520.00	16,918.77	7,190.00	71.80	71.68	-77.58	1,520.46	1,379.39	141.07	10.778	0			
17,300.00	7,520.00	17,018.77	7,190.00	72.49	72.37	-77.58	1,520.46	1,378.03	142.43	10.675	0			
17,400.00	7,520.00	17,118.77	7,190.00	73.18	73.07	-77.58	1,520.46	1,376.67	143.79	10.574	0			
17,500.00	7,520.00	17,218.84	7,190.00	73.88	73.76	-77.58	1,520.46	1,375.31	145.15	10.475	0			
17,544.78	7,520.00	17,263.62	7,190.00	74.19	74.07	-77.58	1,520.46	1,374.70	145.76	10.431	0			
17,568.49	7,520.00	17,273.45	7,190.00	74.35	74.14	-77.58	1,520.52	1,374.53	145.99	10.415	0		SF	





# Schlumberger

## Anticollision Risk Report



<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error: 0.00 usft	
Survey Program: 0-Pathfinder												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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	0.03	167.98				0	CC, ES	
100.00	100.00	97.00	97.00	0.15	0.14	0.03	167.95	167.67	0.29	581.524	0		
200.00	200.00	197.00	197.00	0.32	0.32	0.03	167.95	167.32	0.64	263.646	0		
300.00	300.00	297.00	297.00	0.50	0.49	0.03	167.95	166.97	0.99	170.320	0		
400.00	400.00	397.00	397.00	0.67	0.66	0.03	167.95	166.62	1.34	125.792	0		
500.00	500.00	497.00	497.00	0.84	0.84	0.03	167.95	166.27	1.68	99.721	0		
600.00	600.00	597.00	597.00	1.02	1.01	0.03	167.95	165.92	2.03	82.601	0		
700.00	700.00	697.00	697.00	1.19	1.19	0.03	167.95	165.57	2.38	70.499	0		
800.00	800.00	792.44	792.42	1.37	1.36	-0.25	169.26	166.54	2.72	62.147	0		
900.00	900.00	887.53	887.40	1.54	1.52	-1.09	173.38	170.32	3.06	56.573	0		
1,000.00	999.98	982.18	981.73	1.72	1.69	125.22	181.37	177.96	3.41	53.250	0		
1,100.00	1,099.84	1,076.07	1,074.99	1.89	1.86	124.54	194.18	190.44	3.75	51.848	0		
1,200.00	1,199.45	1,169.36	1,167.26	2.07	2.03	124.17	211.72	207.64	4.08	51.858	0		
1,229.56	1,228.83	1,198.32	1,195.85	2.12	2.08	124.14	217.61	213.43	4.18	52.000	0		
1,300.00	1,298.81	1,267.30	1,263.94	2.25	2.21	124.37	231.86	227.43	4.43	52.318	0		
1,400.00	1,398.15	1,365.23	1,360.60	2.43	2.39	124.66	252.09	247.30	4.78	52.704	0		
1,500.00	1,497.49	1,463.15	1,457.26	2.61	2.57	124.90	272.32	267.18	5.14	53.024	0		
1,600.00	1,596.83	1,561.08	1,553.92	2.79	2.76	125.11	292.55	287.06	5.49	53.293	0		
1,700.00	1,696.16	1,659.01	1,650.58	2.97	2.94	125.29	312.79	306.95	5.84	53.523	0		
1,800.00	1,795.50	1,756.93	1,747.24	3.15	3.13	125.45	333.03	326.84	6.20	53.723	0		
1,900.00	1,894.84	1,854.86	1,843.90	3.33	3.31	125.59	353.28	346.72	6.55	53.897	0		
2,000.00	1,994.18	1,952.78	1,940.57	3.51	3.50	125.72	373.52	366.61	6.91	54.050	0		
2,100.00	2,093.52	2,050.71	2,037.23	3.70	3.68	125.83	393.77	386.51	7.27	54.186	0		
2,200.00	2,192.86	2,148.64	2,133.89	3.88	3.87	125.93	414.02	406.40	7.62	54.307	0		
2,300.00	2,292.20	2,246.56	2,230.55	4.06	4.06	126.02	434.27	426.29	7.98	54.416	0		
2,400.00	2,391.54	2,344.49	2,327.21	4.24	4.25	126.11	454.52	446.18	8.34	54.514	0		
2,500.00	2,490.88	2,442.41	2,423.87	4.43	4.43	126.19	474.77	466.08	8.70	54.603	0		
2,600.00	2,590.22	2,540.34	2,520.53	4.61	4.62	126.26	495.03	485.97	9.05	54.684	0		
2,700.00	2,689.55	2,638.27	2,617.19	4.79	4.81	126.32	515.28	505.87	9.41	54.758	0		
2,800.00	2,788.89	2,736.19	2,713.85	4.98	5.00	126.38	535.53	525.77	9.77	54.825	0		
2,900.00	2,888.23	2,834.12	2,810.51	5.16	5.19	126.44	555.79	545.66	10.13	54.888	0		
3,000.00	2,987.57	2,932.04	2,907.17	5.34	5.37	126.49	576.04	565.56	10.48	54.945	0		
3,100.00	3,086.91	3,029.97	3,003.83	5.53	5.56	126.54	596.30	585.46	10.84	54.999	0		
3,200.00	3,186.25	3,127.89	3,100.49	5.71	5.75	126.58	616.55	605.35	11.20	55.048	0		
3,300.00	3,285.59	3,225.82	3,197.15	5.89	5.94	126.63	636.81	625.25	11.56	55.094	0		
3,400.00	3,384.93	3,323.75	3,293.81	6.08	6.13	126.67	657.07	645.15	11.92	55.137	0		
3,500.00	3,484.27	3,421.67	3,390.47	6.26	6.32	126.70	677.32	665.05	12.28	55.177	0		
3,600.00	3,583.61	3,519.60	3,487.13	6.45	6.50	126.74	697.58	684.95	12.63	55.215	0		
3,700.00	3,682.95	3,617.52	3,583.79	6.63	6.69	126.77	717.84	704.84	12.99	55.250	0		
3,800.00	3,782.28	3,715.45	3,680.45	6.81	6.88	126.80	738.09	724.74	13.35	55.283	0		
3,900.00	3,881.62	3,813.38	3,777.11	7.00	7.07	126.83	758.35	744.64	13.71	55.315	0		
4,000.00	3,980.96	3,911.30	3,873.78	7.18	7.26	126.86	778.61	764.54	14.07	55.344	0		
4,100.00	4,080.30	4,009.23	3,970.44	7.37	7.45	126.89	798.87	784.44	14.43	55.372	0		
4,200.00	4,179.64	4,107.15	4,067.10	7.55	7.64	126.91	819.13	804.34	14.79	55.398	0		
4,300.00	4,278.98	4,205.08	4,163.76	7.73	7.83	126.94	839.38	824.24	15.14	55.423	0		
4,400.00	4,378.32	4,303.01	4,260.42	7.92	8.02	126.96	859.64	844.14	15.50	55.447	0		
4,500.00	4,477.66	4,400.93	4,357.08	8.10	8.21	126.98	879.90	864.04	15.86	55.470	0		
4,600.00	4,577.00	4,498.86	4,453.74	8.29	8.39	127.00	900.16	883.94	16.22	55.491	0		
4,700.00	4,676.34	4,596.78	4,550.40	8.47	8.58	127.02	920.42	903.84	16.58	55.512	0		
4,800.00	4,775.67	4,694.71	4,647.06	8.66	8.77	127.04	940.68	923.74	16.94	55.531	0		
4,900.00	4,875.01	4,792.64	4,743.72	8.84	8.96	127.06	960.94	943.64	17.30	55.550	0		
5,000.00	4,974.35	4,890.56	4,840.38	9.02	9.15	127.08	981.20	963.54	17.66	55.568	0		
5,100.00	5,073.69	4,988.49	4,937.04	9.21	9.34	127.10	1,001.45	983.44	18.02	55.585	0		
5,200.00	5,173.03	5,086.41	5,033.70	9.39	9.53	127.11	1,021.71	1,003.34	18.38	55.601	0		

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



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision		
5,300.00	5,272.37	5,184.34	5,130.36	9.58	9.72	127.13	1,041.97	1,023.24	18.73	55.617	0			
5,400.00	5,371.71	5,282.27	5,227.02	9.76	9.91	127.14	1,062.23	1,043.14	19.09	55.632	0			
5,500.00	5,471.05	5,380.19	5,323.68	9.95	10.10	127.16	1,082.49	1,063.04	19.45	55.646	0			
5,600.00	5,570.39	5,478.12	5,420.34	10.13	10.29	127.17	1,102.75	1,082.94	19.81	55.660	0			
5,700.00	5,669.73	5,576.04	5,517.00	10.31	10.48	127.18	1,123.01	1,102.84	20.17	55.674	0			
5,800.00	5,769.07	5,673.97	5,613.66	10.50	10.67	127.20	1,143.27	1,122.74	20.53	55.686	0			
5,900.00	5,868.40	5,771.89	5,710.32	10.68	10.86	127.21	1,163.53	1,142.64	20.89	55.699	0			
6,000.00	5,967.74	5,869.82	5,806.99	10.87	11.04	127.22	1,183.79	1,162.54	21.25	55.711	0			
6,100.00	6,067.08	5,967.75	5,903.65	11.05	11.23	127.23	1,204.05	1,182.44	21.61	55.722	0			
6,200.00	6,166.42	6,065.67	6,000.31	11.24	11.42	127.24	1,224.31	1,202.34	21.97	55.733	0			
6,300.00	6,265.76	6,163.60	6,096.97	11.42	11.61	127.26	1,244.57	1,222.24	22.33	55.744	0			
6,400.00	6,365.10	6,261.52	6,193.63	11.60	11.80	127.27	1,264.83	1,242.14	22.69	55.754	0			
6,490.04	6,454.55	6,349.70	6,280.66	11.77	11.97	127.27	1,283.07	1,260.06	23.01	55.763	0			
6,500.00	6,464.44	6,359.45	6,290.29	11.79	11.99	127.31	1,285.08	1,262.03	23.05	55.756	0			
6,600.00	6,563.99	6,496.37	6,425.71	11.97	12.25	127.55	1,303.15	1,279.64	23.50	55.449	0			
6,700.00	6,663.81	6,656.57	6,585.13	12.14	12.53	127.68	1,314.83	1,290.85	23.98	54.834	0			
6,800.00	6,763.78	6,818.33	6,746.73	12.31	12.80	127.74	1,319.73	1,295.29	24.44	53.998	0			
6,819.60	6,783.38	6,850.11	6,778.52	12.34	12.85	0.41	1,319.89	1,295.16	24.73	53.381	0			
6,900.00	6,863.78	6,932.37	6,860.78	12.48	12.99	0.41	1,319.89	1,294.89	25.00	52.797	0			
6,919.60	6,883.38	6,951.98	6,880.38	12.51	13.02	0.41	1,319.89	1,294.82	25.07	52.658	0			
6,950.00	6,913.77	6,981.98	6,910.37	12.56	13.07	-89.60	1,319.89	1,294.92	24.97	52.859	0			
7,000.00	6,963.56	7,031.27	6,959.49	12.64	13.14	-89.61	1,319.89	1,294.76	25.12	52.533	0			
7,050.00	7,012.87	7,080.58	7,008.17	12.71	13.21	-89.62	1,319.88	1,294.61	25.27	52.227	0			
7,100.00	7,061.37	7,129.92	7,056.13	12.78	13.28	-89.64	1,319.88	1,294.47	25.41	51.939	0			
7,150.00	7,108.78	7,179.30	7,103.09	12.85	13.34	-89.66	1,319.88	1,294.33	25.55	51.667	0			
7,200.00	7,154.80	7,228.71	7,148.75	12.91	13.40	-89.68	1,319.87	1,294.20	25.67	51.407	0			
7,250.00	7,199.14	7,278.16	7,192.86	12.97	13.46	-89.71	1,319.87	1,294.07	25.80	51.158	0			
7,300.00	7,241.54	7,327.65	7,235.13	13.03	13.52	-89.73	1,319.87	1,293.95	25.92	50.914	0			
7,350.00	7,281.73	7,377.19	7,275.32	13.09	13.58	-89.76	1,319.87	1,293.82	26.05	50.672	0			
7,400.00	7,319.47	7,426.78	7,313.16	13.16	13.64	-89.79	1,319.86	1,293.69	26.17	50.429	0			
7,450.00	7,354.51	7,476.42	7,348.44	13.22	13.70	-89.82	1,319.86	1,293.56	26.30	50.179	0			
7,500.00	7,386.65	7,526.11	7,380.93	13.28	13.76	-89.85	1,319.86	1,293.42	26.44	49.918	0			
7,550.00	7,415.69	7,575.87	7,410.42	13.35	13.83	-89.88	1,319.86	1,293.27	26.59	49.644	0			
7,600.00	7,441.45	7,625.67	7,436.71	13.42	13.90	-89.91	1,319.86	1,293.11	26.74	49.351	0			
7,650.00	7,463.76	7,675.54	7,459.65	13.50	13.97	-89.95	1,319.85	1,292.94	26.91	49.038	0			
7,700.00	7,482.50	7,725.47	7,479.08	13.58	14.05	-89.98	1,319.85	1,292.75	27.10	48.703	0			
7,728.91	7,491.65	7,754.37	7,488.65	13.63	14.10	-90.00	1,319.85	1,292.64	27.22	48.497	0			
7,750.00	7,497.54	7,775.46	7,494.86	13.67	14.13	-90.01	1,319.85	1,292.55	27.30	48.343	0			
7,800.00	7,508.80	7,825.51	7,506.88	13.77	14.23	-90.05	1,319.85	1,292.33	27.52	47.959	0			
7,850.00	7,516.20	7,875.62	7,515.06	13.89	14.33	-90.08	1,319.86	1,292.10	27.76	47.553	0			
7,900.00	7,519.70	7,925.79	7,519.33	14.02	14.44	-90.11	1,319.86	1,291.85	28.01	47.125	0			
7,919.60	7,520.00	7,945.48	7,519.93	14.07	14.49	-90.13	1,319.86	1,291.75	28.11	46.954	0			
8,000.00	7,520.00	8,025.92	7,520.00	14.30	14.69	-90.13	1,319.86	1,291.30	28.56	46.217	0			
8,100.00	7,520.00	8,125.92	7,520.00	14.60	14.98	-90.13	1,319.86	1,290.69	29.16	45.256	0			
8,200.00	7,520.00	8,225.92	7,520.00	14.94	15.30	-90.13	1,319.86	1,290.03	29.82	44.254	0			
8,300.00	7,520.00	8,325.92	7,520.00	15.30	15.65	-90.13	1,319.86	1,289.32	30.54	43.223	0			
8,400.00	7,520.00	8,425.92	7,520.00	15.68	16.02	-90.13	1,319.86	1,288.56	31.29	42.176	0			
8,500.00	7,520.00	8,525.92	7,520.00	16.08	16.41	-90.13	1,319.86	1,287.76	32.10	41.122	0			
8,600.00	7,520.00	8,625.92	7,520.00	16.50	16.83	-90.13	1,319.86	1,286.92	32.94	40.070	0			
8,700.00	7,520.00	8,725.92	7,520.00	16.94	17.26	-90.13	1,319.86	1,286.04	33.82	39.027	0			
8,800.00	7,520.00	8,825.92	7,520.00	17.40	17.71	-90.13	1,319.86	1,285.12	34.73	37.999	0			
8,900.00	7,520.00	8,925.92	7,520.00	17.87	18.18	-90.13	1,319.86	1,284.18	35.68	36.991	0			
9,000.00	7,520.00	9,025.92	7,520.00	18.36	18.66	-90.13	1,319.86	1,283.20	36.66	36.005	0			
9,100.00	7,520.00	9,125.92	7,520.00	18.86	19.15	-90.13	1,319.86	1,282.20	37.66	35.046	0			

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



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder												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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision	
9,200.00	7,520.00	9,225.92	7,520.00	19.38	19.66	-90.13	1,319.86	1,281.17	38.69	34.114	0		
9,300.00	7,520.00	9,325.92	7,520.00	19.90	20.18	-90.13	1,319.86	1,280.12	39.74	33.210	0		
9,400.00	7,520.00	9,425.92	7,520.00	20.44	20.71	-90.13	1,319.86	1,279.04	40.82	32.337	0		
9,500.00	7,520.00	9,525.92	7,520.00	20.99	21.25	-90.13	1,319.86	1,277.95	41.91	31.493	0		
9,600.00	7,520.00	9,625.92	7,520.00	21.54	21.80	-90.13	1,319.86	1,276.84	43.02	30.680	0		
9,700.00	7,520.00	9,725.92	7,520.00	22.11	22.35	-90.13	1,319.86	1,275.71	44.15	29.896	0		
9,800.00	7,520.00	9,825.92	7,520.00	22.68	22.92	-90.13	1,319.86	1,274.56	45.29	29.140	0		
9,900.00	7,520.00	9,925.92	7,520.00	23.26	23.49	-90.13	1,319.86	1,273.41	46.45	28.414	0		
10,000.00	7,520.00	10,025.92	7,520.00	23.84	24.07	-90.13	1,319.86	1,272.23	47.62	27.715	0		
10,100.00	7,520.00	10,125.92	7,520.00	24.43	24.66	-90.13	1,319.86	1,271.05	48.81	27.042	0		
10,200.00	7,520.00	10,225.92	7,520.00	25.03	25.25	-90.13	1,319.86	1,269.85	50.00	26.395	0		
10,300.00	7,520.00	10,325.92	7,520.00	25.63	25.85	-90.13	1,319.86	1,268.65	51.21	25.773	0		
10,400.00	7,520.00	10,425.92	7,520.00	26.24	26.45	-90.13	1,319.86	1,267.43	52.43	25.175	0		
10,500.00	7,520.00	10,525.92	7,520.00	26.85	27.06	-90.13	1,319.86	1,266.21	53.65	24.600	0		
10,600.00	7,520.00	10,625.92	7,520.00	27.47	27.67	-90.13	1,319.86	1,264.97	54.89	24.047	0		
10,700.00	7,520.00	10,725.92	7,520.00	28.09	28.29	-90.13	1,319.86	1,263.73	56.13	23.514	0		
10,800.00	7,520.00	10,825.92	7,520.00	28.72	28.91	-90.13	1,319.86	1,262.48	57.38	23.002	0		
10,900.00	7,520.00	10,925.92	7,520.00	29.34	29.53	-90.13	1,319.86	1,261.22	58.64	22.509	0		
11,000.00	7,520.00	11,025.92	7,520.00	29.98	30.16	-90.13	1,319.86	1,259.96	59.90	22.034	0		
11,100.00	7,520.00	11,125.92	7,520.00	30.61	30.79	-90.13	1,319.86	1,258.69	61.17	21.576	0		
11,200.00	7,520.00	11,225.92	7,520.00	31.25	31.43	-90.13	1,319.86	1,257.41	62.45	21.135	0		
11,300.00	7,520.00	11,325.92	7,520.00	31.89	32.06	-90.13	1,319.86	1,256.13	63.73	20.710	0		
11,400.00	7,520.00	11,425.92	7,520.00	32.53	32.70	-90.13	1,319.86	1,254.84	65.02	20.300	0		
11,500.00	7,520.00	11,525.92	7,520.00	33.18	33.34	-90.13	1,319.86	1,253.55	66.31	19.905	0		
11,600.00	7,520.00	11,625.92	7,520.00	33.83	33.99	-90.13	1,319.86	1,252.25	67.61	19.523	0		
11,700.00	7,520.00	11,725.92	7,520.00	34.48	34.64	-90.13	1,319.86	1,250.95	68.91	19.155	0		
11,800.00	7,520.00	11,825.92	7,520.00	35.13	35.29	-90.13	1,319.86	1,249.65	70.21	18.799	0		
11,900.00	7,520.00	11,925.92	7,520.00	35.78	35.94	-90.13	1,319.86	1,248.34	71.52	18.455	0		
12,000.00	7,520.00	12,025.92	7,520.00	36.44	36.59	-90.13	1,319.86	1,247.03	72.83	18.122	0		
12,100.00	7,520.00	12,125.92	7,520.00	37.10	37.24	-90.13	1,319.86	1,245.71	74.15	17.800	0		
12,200.00	7,520.00	12,225.92	7,520.00	37.75	37.90	-90.13	1,319.86	1,244.39	75.47	17.489	0		
12,300.00	7,520.00	12,325.92	7,520.00	38.42	38.56	-90.13	1,319.86	1,243.07	76.79	17.188	0		
12,400.00	7,520.00	12,425.92	7,520.00	39.08	39.22	-90.13	1,319.86	1,241.74	78.11	16.896	0		
12,500.00	7,520.00	12,525.92	7,520.00	39.74	39.88	-90.13	1,319.86	1,240.42	79.44	16.614	0		
12,600.00	7,520.00	12,625.92	7,520.00	40.41	40.54	-90.13	1,319.86	1,239.08	80.77	16.340	0		
12,700.00	7,520.00	12,725.92	7,520.00	41.07	41.21	-90.13	1,319.86	1,237.75	82.11	16.075	0		
12,800.00	7,520.00	12,825.92	7,520.00	41.74	41.87	-90.13	1,319.86	1,236.42	83.44	15.818	0		
12,900.00	7,520.00	12,925.92	7,520.00	42.41	42.54	-90.13	1,319.86	1,235.08	84.78	15.568	0		
13,000.00	7,520.00	13,025.92	7,520.00	43.08	43.21	-90.13	1,319.86	1,233.74	86.12	15.326	0		
13,100.00	7,520.00	13,125.92	7,520.00	43.75	43.88	-90.13	1,319.86	1,232.39	87.46	15.091	0		
13,200.00	7,520.00	13,225.92	7,520.00	44.42	44.55	-90.13	1,319.86	1,231.05	88.81	14.862	0		
13,300.00	7,520.00	13,325.92	7,520.00	45.10	45.22	-90.13	1,319.86	1,229.70	90.15	14.640	0		
13,400.00	7,520.00	13,425.92	7,520.00	45.77	45.89	-90.13	1,319.86	1,228.36	91.50	14.424	0		
13,500.00	7,520.00	13,525.92	7,520.00	46.44	46.56	-90.13	1,319.86	1,227.01	92.85	14.215	0		
13,600.00	7,520.00	13,625.92	7,520.00	47.12	47.24	-90.13	1,319.86	1,225.65	94.20	14.011	0		
13,700.00	7,520.00	13,725.92	7,520.00	47.80	47.91	-90.13	1,319.86	1,224.30	95.56	13.812	0		
13,800.00	7,520.00	13,825.92	7,520.00	48.47	48.59	-90.13	1,319.86	1,222.95	96.91	13.619	0		
13,900.00	7,520.00	13,925.92	7,520.00	49.15	49.26	-90.13	1,319.86	1,221.59	98.27	13.431	0		
14,000.00	7,520.00	14,025.92	7,520.00	49.83	49.94	-90.13	1,319.86	1,220.23	99.62	13.248	0		
14,100.00	7,520.00	14,125.92	7,520.00	50.51	50.62	-90.13	1,319.86	1,218.87	100.98	13.070	0		
14,200.00	7,520.00	14,225.92	7,520.00	51.19	51.30	-90.13	1,319.86	1,217.51	102.34	12.896	0		
14,300.00	7,520.00	14,325.92	7,520.00	51.87	51.97	-90.13	1,319.86	1,216.15	103.70	12.727	0		
14,400.00	7,520.00	14,425.92	7,520.00	52.55	52.65	-90.13	1,319.86	1,214.79	105.07	12.562	0		
14,500.00	7,520.00	14,525.92	7,520.00	53.23	53.34	-90.13	1,319.86	1,213.43	106.43	12.401	0		

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



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision		
14,600.00	7,520.00	14,625.92	7,520.00	53.91	54.02	-90.13	1,319.86	1,212.06	107.80	12.244	0			
14,700.00	7,520.00	14,725.92	7,520.00	54.60	54.70	-90.13	1,319.86	1,210.70	109.16	12.091	0			
14,800.00	7,520.00	14,825.92	7,520.00	55.28	55.38	-90.13	1,319.86	1,209.33	110.53	11.941	0			
14,900.00	7,520.00	14,925.92	7,520.00	55.96	56.06	-90.13	1,319.86	1,207.96	111.90	11.795	0			
15,000.00	7,520.00	15,025.92	7,520.00	56.65	56.75	-90.13	1,319.86	1,206.59	113.27	11.653	0			
15,100.00	7,520.00	15,125.92	7,520.00	57.33	57.43	-90.13	1,319.86	1,205.22	114.64	11.513	0			
15,200.00	7,520.00	15,225.92	7,520.00	58.02	58.11	-90.13	1,319.86	1,203.85	116.01	11.377	0			
15,300.00	7,520.00	15,325.92	7,520.00	58.70	58.80	-90.13	1,319.86	1,202.48	117.38	11.244	0			
15,400.00	7,520.00	15,425.92	7,520.00	59.39	59.48	-90.13	1,319.86	1,201.11	118.75	11.114	0			
15,500.00	7,520.00	15,525.92	7,520.00	60.08	60.17	-90.13	1,319.86	1,199.73	120.12	10.987	0			
15,600.00	7,520.00	15,625.92	7,520.00	60.76	60.85	-90.13	1,319.86	1,198.36	121.50	10.863	0			
15,700.00	7,520.00	15,725.92	7,520.00	61.45	61.54	-90.13	1,319.86	1,196.98	122.87	10.742	0			
15,800.00	7,520.00	15,825.92	7,520.00	62.14	62.23	-90.13	1,319.86	1,195.61	124.25	10.623	0			
15,900.00	7,520.00	15,925.92	7,520.00	62.83	62.91	-90.13	1,319.86	1,194.23	125.63	10.506	0			
16,000.00	7,520.00	16,025.92	7,520.00	63.52	63.60	-90.13	1,319.86	1,192.86	127.00	10.392	0			
16,100.00	7,520.00	16,125.92	7,520.00	64.20	64.29	-90.13	1,319.86	1,191.48	128.38	10.281	0			
16,200.00	7,520.00	16,225.92	7,520.00	64.89	64.98	-90.13	1,319.86	1,190.10	129.76	10.172	0			
16,300.00	7,520.00	16,325.92	7,520.00	65.58	65.67	-90.13	1,319.86	1,188.72	131.14	10.065	0			
16,400.00	7,520.00	16,425.92	7,520.00	66.27	66.35	-90.13	1,319.86	1,187.34	132.52	9.960	0			
16,500.00	7,520.00	16,525.92	7,520.00	66.96	67.04	-90.13	1,319.86	1,185.96	133.90	9.857	0			
16,600.00	7,520.00	16,625.92	7,520.00	67.65	67.73	-90.13	1,319.86	1,184.58	135.28	9.757	0			
16,700.00	7,520.00	16,725.92	7,520.00	68.34	68.42	-90.13	1,319.86	1,183.20	136.66	9.658	0			
16,800.00	7,520.00	16,825.92	7,520.00	69.03	69.11	-90.13	1,319.86	1,181.82	138.04	9.561	0			
16,900.00	7,520.00	16,925.92	7,520.00	69.72	69.80	-90.13	1,319.86	1,180.44	139.42	9.467	0			
17,000.00	7,520.00	17,025.92	7,520.00	70.42	70.49	-90.13	1,319.86	1,179.05	140.80	9.374	0			
17,100.00	7,520.00	17,125.92	7,520.00	71.11	71.18	-90.13	1,319.86	1,177.67	142.19	9.283	0			
17,200.00	7,520.00	17,225.92	7,520.00	71.80	71.87	-90.13	1,319.86	1,176.29	143.57	9.193	0			
17,300.00	7,520.00	17,325.92	7,520.00	72.49	72.56	-90.13	1,319.86	1,174.90	144.95	9.105	0			
17,400.00	7,520.00	17,425.92	7,520.00	73.18	73.26	-90.13	1,319.86	1,173.52	146.34	9.019	0			
17,500.00	7,520.00	17,526.00	7,520.00	73.88	73.95	-90.13	1,319.86	1,172.13	147.72	8.935	0			
17,545.67	7,520.00	17,571.67	7,520.00	74.19	74.26	-90.13	1,319.85	1,171.50	148.36	8.896	0			
17,568.49	7,520.00	17,582.23	7,520.00	74.35	74.34	-90.13	1,319.91	1,171.32	148.59	8.883	0	SF		



# Schlumberger

## Anticollision Risk Report



<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error: 0.00 usft	
Survey Program: 0-Pathfinder												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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision	Warning
0.00	0.00	0.00	0.00	0.00	0.00	0.01	139.93				0		
100.00	100.00	97.00	97.00	0.15	0.14	0.01	139.90	139.61	0.29	484.392	0		
200.00	200.00	197.00	197.00	0.32	0.32	0.01	139.90	139.26	0.64	219.609	0		
300.00	300.00	297.00	297.00	0.50	0.49	0.01	139.90	138.91	0.99	141.871	0		
400.00	400.00	397.00	397.00	0.67	0.66	0.01	139.90	138.57	1.34	104.781	0		
500.00	500.00	497.00	497.00	0.84	0.84	0.01	139.90	138.22	1.68	83.065	0		
600.00	600.00	597.00	597.00	1.02	1.01	0.01	139.90	137.87	2.03	68.805	0		
700.00	700.00	697.00	697.00	1.19	1.19	0.01	139.90	137.52	2.38	58.723	0		
800.00	800.00	797.00	797.00	1.37	1.36	0.01	139.90	137.17	2.73	51.219	0		CC, ES
900.00	900.00	893.41	893.39	1.54	1.53	-0.38	141.14	138.06	3.07	45.908	0		
1,000.00	999.98	989.48	989.34	1.72	1.70	126.24	146.07	142.65	3.42	42.748	0		
1,100.00	1,099.84	1,085.02	1,084.55	1.89	1.87	125.79	155.70	151.94	3.76	41.431	0		
1,200.00	1,199.45	1,179.72	1,178.61	2.07	2.04	125.57	169.99	165.89	4.10	41.482	0		
1,229.56	1,228.83	1,207.50	1,206.13	2.12	2.09	125.54	175.09	170.89	4.20	41.710	0		
1,300.00	1,298.81	1,275.25	1,273.11	2.25	2.21	125.59	188.17	183.72	4.44	42.355	0		
1,400.00	1,398.15	1,373.48	1,370.20	2.43	2.39	125.61	206.91	202.12	4.79	43.153	0		
1,500.00	1,497.49	1,471.70	1,467.28	2.61	2.57	125.63	225.66	220.51	5.15	43.833	0		
1,600.00	1,596.83	1,569.93	1,564.37	2.79	2.75	125.64	244.41	238.91	5.50	44.417	0		
1,700.00	1,696.16	1,668.16	1,661.45	2.97	2.94	125.66	263.16	257.30	5.86	44.925	0		
1,800.00	1,795.50	1,766.38	1,758.54	3.15	3.12	125.67	281.90	275.69	6.21	45.370	0		
1,900.00	1,894.84	1,864.61	1,855.62	3.33	3.30	125.68	300.65	294.08	6.57	45.764	0		
2,000.00	1,994.18	1,962.84	1,952.71	3.51	3.49	125.69	319.40	312.47	6.93	46.114	0		
2,100.00	2,093.52	2,061.07	2,049.79	3.70	3.67	125.69	338.15	330.86	7.28	46.427	0		
2,200.00	2,192.86	2,159.29	2,146.88	3.88	3.86	125.70	356.89	349.25	7.64	46.709	0		
2,300.00	2,292.20	2,257.52	2,243.96	4.06	4.04	125.71	375.64	367.64	8.00	46.964	0		
2,400.00	2,391.54	2,355.75	2,341.04	4.24	4.23	125.71	394.39	386.03	8.36	47.196	0		
2,500.00	2,490.88	2,453.97	2,438.13	4.43	4.42	125.72	413.14	404.42	8.71	47.407	0		
2,600.00	2,590.22	2,552.20	2,535.21	4.61	4.60	125.72	431.88	422.81	9.07	47.601	0		
2,700.00	2,689.55	2,650.43	2,632.30	4.79	4.79	125.73	450.63	441.20	9.43	47.780	0		
2,800.00	2,788.89	2,748.65	2,729.38	4.98	4.98	125.73	469.38	459.59	9.79	47.944	0		
2,900.00	2,888.23	2,846.88	2,826.47	5.16	5.16	125.73	488.13	477.98	10.15	48.096	0		
3,000.00	2,987.57	2,945.11	2,923.55	5.34	5.35	125.74	506.87	496.36	10.51	48.238	0		
3,100.00	3,086.91	3,043.33	3,020.64	5.53	5.54	125.74	525.62	514.75	10.87	48.369	0		
3,200.00	3,186.25	3,141.56	3,117.72	5.71	5.72	125.74	544.37	533.14	11.23	48.492	0		
3,300.00	3,285.59	3,239.79	3,214.81	5.89	5.91	125.75	563.11	551.53	11.59	48.606	0		
3,400.00	3,384.93	3,338.02	3,311.89	6.08	6.10	125.75	581.86	569.92	11.94	48.714	0		
3,500.00	3,484.27	3,436.24	3,408.98	6.26	6.29	125.75	600.61	588.31	12.30	48.815	0		
3,600.00	3,583.61	3,534.47	3,506.06	6.45	6.47	125.75	619.36	606.69	12.66	48.910	0		
3,700.00	3,682.95	3,632.70	3,603.15	6.63	6.66	125.75	638.10	625.08	13.02	48.999	0		
3,800.00	3,782.28	3,730.92	3,700.23	6.81	6.85	125.76	656.85	643.47	13.38	49.083	0		
3,900.00	3,881.62	3,829.15	3,797.32	7.00	7.04	125.76	675.60	661.86	13.74	49.163	0		
4,000.00	3,980.96	3,927.38	3,894.40	7.18	7.22	125.76	694.35	680.25	14.10	49.239	0		
4,100.00	4,080.30	4,025.60	3,991.49	7.37	7.41	125.76	713.09	698.63	14.46	49.310	0		
4,200.00	4,179.64	4,123.83	4,088.57	7.55	7.60	125.76	731.84	717.02	14.82	49.378	0		
4,300.00	4,278.98	4,222.06	4,185.66	7.73	7.79	125.77	750.59	735.41	15.18	49.443	0		
4,400.00	4,378.32	4,320.28	4,282.74	7.92	7.97	125.77	769.34	753.80	15.54	49.504	0		
4,500.00	4,477.66	4,418.51	4,379.82	8.10	8.16	125.77	788.08	772.18	15.90	49.563	0		
4,600.00	4,577.00	4,516.74	4,476.91	8.29	8.35	125.77	806.83	790.57	16.26	49.619	0		
4,700.00	4,676.34	4,614.97	4,573.99	8.47	8.54	125.77	825.58	808.96	16.62	49.673	0		
4,800.00	4,775.67	4,713.19	4,671.08	8.66	8.73	125.77	844.33	827.35	16.98	49.724	0		
4,900.00	4,875.01	4,811.42	4,768.16	8.84	8.91	125.77	863.07	845.73	17.34	49.773	0		
5,000.00	4,974.35	4,909.65	4,865.25	9.02	9.10	125.77	881.82	864.12	17.70	49.819	0		
5,100.00	5,073.69	5,007.87	4,962.33	9.21	9.29	125.78	900.57	882.51	18.06	49.864	0		
5,200.00	5,173.03	5,106.10	5,059.42	9.39	9.48	125.78	919.32	900.90	18.42	49.908	0		

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



# Schlumberger

## Anticollision Risk Report



<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error: 0.00 usft	
Survey Program: 0-Pathfinder												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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision	
5,300.00	5,272.37	5,204.33	5,156.50	9.58	9.67	125.78	938.06	919.28	18.78	49.949	0		
5,400.00	5,371.71	5,302.55	5,253.59	9.76	9.85	125.78	956.81	937.67	19.14	49.989	0		
5,500.00	5,471.05	5,400.78	5,350.67	9.95	10.04	125.78	975.56	956.06	19.50	50.027	0		
5,600.00	5,570.39	5,499.01	5,447.76	10.13	10.23	125.78	994.31	974.45	19.86	50.064	0		
5,700.00	5,669.73	5,597.24	5,544.84	10.31	10.42	125.78	1,013.05	992.83	20.22	50.099	0		
5,800.00	5,769.07	5,695.46	5,641.93	10.50	10.61	125.78	1,031.80	1,011.22	20.58	50.134	0		
5,900.00	5,868.40	5,793.69	5,739.01	10.68	10.79	125.78	1,050.55	1,029.61	20.94	50.167	0		
6,000.00	5,967.74	5,891.92	5,836.10	10.87	10.98	125.78	1,069.30	1,048.00	21.30	50.198	0		
6,100.00	6,067.08	5,990.14	5,933.18	11.05	11.17	125.78	1,088.04	1,066.38	21.66	50.229	0		
6,200.00	6,166.42	6,093.93	6,035.77	11.24	11.37	125.79	1,106.76	1,084.73	22.03	50.234	0		
6,300.00	6,265.76	6,236.44	6,177.21	11.42	11.63	125.93	1,123.08	1,100.61	22.47	49.990	0		
6,400.00	6,365.10	6,380.28	6,320.68	11.60	11.88	126.29	1,135.51	1,112.61	22.90	49.591	0		
6,490.04	6,454.55	6,510.37	6,450.71	11.77	12.09	126.80	1,143.36	1,120.08	23.28	49.106	0		
6,500.00	6,464.44	6,521.09	6,461.44	11.79	12.11	126.86	1,144.04	1,120.71	23.32	49.052	0		
6,600.00	6,563.99	6,620.63	6,560.97	11.97	12.27	127.32	1,149.72	1,126.02	23.70	48.515	0		
6,700.00	6,663.81	6,718.45	6,658.31	12.14	12.42	128.04	1,153.41	1,129.35	24.06	47.943	0		
6,800.00	6,763.78	6,811.15	6,748.31	12.31	12.55	129.24	1,155.50	1,131.09	24.41	47.333	0		
6,819.60	6,783.38	6,828.51	6,764.77	12.34	12.57	2.20	1,155.78	1,131.31	24.47	47.235	0		
6,900.00	6,863.78	6,896.22	6,827.32	12.48	12.65	3.48	1,157.44	1,132.72	24.71	46.833	0		
6,919.60	6,883.38	6,911.80	6,841.30	12.51	12.67	3.82	1,158.05	1,133.28	24.77	46.747	0		
6,950.00	6,913.77	6,935.51	6,862.24	12.56	12.70	-85.56	1,159.14	1,134.19	24.95	46.460	0		
7,000.00	6,963.56	6,973.86	6,895.20	12.64	12.74	-84.55	1,161.22	1,136.09	25.13	46.212	0		
7,050.00	7,012.87	7,011.48	6,926.31	12.71	12.79	-83.57	1,163.60	1,138.29	25.30	45.991	0		
7,100.00	7,061.37	7,050.00	6,956.84	12.78	12.83	-82.58	1,166.21	1,140.74	25.47	45.791	0		
7,150.00	7,108.78	7,084.85	6,983.17	12.85	12.87	-81.69	1,169.01	1,143.39	25.62	45.631	0		
7,200.00	7,154.80	7,120.74	7,008.96	12.91	12.92	-80.80	1,171.94	1,146.19	25.76	45.496	0		
7,250.00	7,199.14	7,150.00	7,028.90	12.97	12.95	-80.05	1,174.97	1,149.11	25.86	45.438	0		
7,300.00	7,241.54	7,191.25	7,055.31	13.03	13.01	-79.15	1,177.97	1,151.98	25.99	45.319	0		
7,350.00	7,281.73	7,225.96	7,075.91	13.09	13.05	-78.40	1,180.96	1,154.88	26.09	45.269	0		
7,400.00	7,319.47	7,260.36	7,094.79	13.16	13.10	-77.70	1,183.87	1,157.71	26.17	45.244	0		
7,450.00	7,354.51	7,300.00	7,114.58	13.22	13.15	-77.00	1,186.67	1,160.42	26.26	45.194	0		
7,500.00	7,386.65	7,328.40	7,127.42	13.28	13.20	-76.47	1,189.27	1,162.98	26.29	45.234	0		
7,550.00	7,415.69	7,362.10	7,141.18	13.35	13.25	-75.95	1,191.67	1,165.33	26.34	45.241	0		
7,600.00	7,441.45	7,400.00	7,154.69	13.42	13.31	-75.46	1,193.84	1,167.43	26.41	45.197	0		
7,650.00	7,463.76	7,429.01	7,163.59	13.50	13.36	-75.10	1,195.71	1,169.27	26.45	45.214	0		
7,700.00	7,482.50	7,462.28	7,172.23	13.58	13.42	-74.78	1,197.30	1,170.79	26.50	45.175	0		
7,750.00	7,497.54	7,500.00	7,179.99	13.67	13.50	-74.51	1,198.57	1,171.97	26.60	45.057	0		
7,800.00	7,508.80	7,528.55	7,184.40	13.77	13.56	-74.34	1,199.48	1,172.82	26.66	44.989	0		
7,850.00	7,516.20	7,561.61	7,187.92	13.89	13.63	-74.23	1,200.05	1,173.28	26.77	44.835	0		
7,900.00	7,519.70	7,600.00	7,189.87	14.02	13.73	-74.18	1,200.27	1,173.34	26.93	44.573	0		
7,919.60	7,520.00	7,607.59	7,189.98	14.07	13.75	-74.19	1,200.23	1,173.27	26.97	44.509	0		
7,949.46	7,520.00	7,634.66	7,190.00	14.15	13.82	-74.19	1,200.23	1,173.10	27.13	44.246	0		
8,000.00	7,520.00	7,685.20	7,190.00	14.30	13.96	-74.19	1,200.23	1,172.81	27.41	43.785	0		
8,100.00	7,520.00	7,785.20	7,190.00	14.60	14.26	-74.19	1,200.23	1,172.20	28.02	42.829	0		
8,200.00	7,520.00	7,885.20	7,190.00	14.94	14.59	-74.19	1,200.23	1,171.54	28.69	41.838	0		
8,300.00	7,520.00	7,985.20	7,190.00	15.30	14.95	-74.19	1,200.23	1,170.83	29.40	40.825	0		
8,400.00	7,520.00	8,085.20	7,190.00	15.68	15.33	-74.19	1,200.23	1,170.07	30.16	39.801	0		
8,500.00	7,520.00	8,185.20	7,190.00	16.08	15.74	-74.19	1,200.23	1,169.27	30.95	38.774	0		
8,600.00	7,520.00	8,285.20	7,190.00	16.50	16.16	-74.19	1,200.23	1,168.43	31.79	37.753	0		
8,700.00	7,520.00	8,385.20	7,190.00	16.94	16.61	-74.19	1,200.23	1,167.56	32.66	36.744	0		
8,800.00	7,520.00	8,485.20	7,190.00	17.40	17.07	-74.19	1,200.23	1,166.66	33.57	35.753	0		
8,900.00	7,520.00	8,585.20	7,190.00	17.87	17.54	-74.19	1,200.23	1,165.72	34.51	34.784	0		
9,000.00	7,520.00	8,685.20	7,190.00	18.36	18.03	-74.19	1,200.23	1,164.76	35.47	33.839	0		
9,100.00	7,520.00	8,785.20	7,190.00	18.86	18.54	-74.19	1,200.23	1,163.77	36.46	32.921	0		

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



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error: 0.00 usft	
Survey Program: 0-Pathfinder												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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risk Separation Factor	Probability of Collision	
9,200.00	7,520.00	8,885.20	7,190.00	19.38	19.06	-74.19	1,200.23	1,162.75	37.47	32.031	0		
9,300.00	7,520.00	8,985.20	7,190.00	19.90	19.59	-74.19	1,200.23	1,161.72	38.51	31.170	0		
9,400.00	7,520.00	9,085.20	7,190.00	20.44	20.13	-74.19	1,200.23	1,160.67	39.56	30.339	0		
9,500.00	7,520.00	9,185.20	7,190.00	20.99	20.68	-74.19	1,200.23	1,159.59	40.63	29.538	0		
9,600.00	7,520.00	9,285.20	7,190.00	21.54	21.23	-74.19	1,200.23	1,158.50	41.72	28.767	0		
9,700.00	7,520.00	9,385.20	7,190.00	22.11	21.80	-74.19	1,200.23	1,157.40	42.83	28.024	0		
9,800.00	7,520.00	9,485.20	7,190.00	22.68	22.38	-74.19	1,200.23	1,156.28	43.95	27.309	0		
9,900.00	7,520.00	9,585.20	7,190.00	23.26	22.96	-74.19	1,200.23	1,155.14	45.08	26.623	0		
10,000.00	7,520.00	9,685.20	7,190.00	23.84	23.55	-74.19	1,200.23	1,154.00	46.23	25.962	0		
10,100.00	7,520.00	9,785.20	7,190.00	24.43	24.14	-74.19	1,200.23	1,152.84	47.39	25.328	0		
10,200.00	7,520.00	9,885.20	7,190.00	25.03	24.74	-74.19	1,200.23	1,151.67	48.56	24.718	0		
10,300.00	7,520.00	9,985.20	7,190.00	25.63	25.35	-74.19	1,200.23	1,150.49	49.73	24.133	0		
10,400.00	7,520.00	10,085.20	7,190.00	26.24	25.96	-74.19	1,200.23	1,149.30	50.92	23.570	0		
10,500.00	7,520.00	10,185.20	7,190.00	26.85	26.57	-74.19	1,200.23	1,148.11	52.12	23.029	0		
10,600.00	7,520.00	10,285.20	7,190.00	27.47	27.19	-74.19	1,200.23	1,146.90	53.32	22.508	0		
10,700.00	7,520.00	10,385.20	7,190.00	28.09	27.81	-74.19	1,200.23	1,145.69	54.54	22.008	0		
10,800.00	7,520.00	10,485.20	7,190.00	28.72	28.44	-74.19	1,200.23	1,144.47	55.76	21.527	0		
10,900.00	7,520.00	10,585.20	7,190.00	29.34	29.07	-74.19	1,200.23	1,143.24	56.98	21.064	0		
11,000.00	7,520.00	10,685.20	7,190.00	29.98	29.70	-74.19	1,200.23	1,142.01	58.21	20.618	0		
11,100.00	7,520.00	10,785.20	7,190.00	30.61	30.34	-74.19	1,200.23	1,140.77	59.45	20.189	0		
11,200.00	7,520.00	10,885.20	7,190.00	31.25	30.98	-74.19	1,200.23	1,139.53	60.69	19.775	0		
11,300.00	7,520.00	10,985.20	7,190.00	31.89	31.62	-74.19	1,200.23	1,138.28	61.94	19.376	0		
11,400.00	7,520.00	11,085.20	7,190.00	32.53	32.27	-74.19	1,200.23	1,137.03	63.20	18.992	0		
11,500.00	7,520.00	11,185.20	7,190.00	33.18	32.92	-74.19	1,200.23	1,135.77	64.45	18.622	0		
11,600.00	7,520.00	11,285.20	7,190.00	33.83	33.57	-74.19	1,200.23	1,134.51	65.72	18.264	0		
11,700.00	7,520.00	11,385.20	7,190.00	34.48	34.22	-74.19	1,200.23	1,133.24	66.98	17.919	0		
11,800.00	7,520.00	11,485.20	7,190.00	35.13	34.87	-74.19	1,200.23	1,131.97	68.25	17.585	0		
11,900.00	7,520.00	11,585.20	7,190.00	35.78	35.53	-74.19	1,200.23	1,130.70	69.52	17.263	0		
12,000.00	7,520.00	11,685.20	7,190.00	36.44	36.18	-74.19	1,200.23	1,129.42	70.80	16.952	0		
12,100.00	7,520.00	11,785.20	7,190.00	37.10	36.84	-74.19	1,200.23	1,128.14	72.08	16.651	0		
12,200.00	7,520.00	11,885.20	7,190.00	37.75	37.50	-74.19	1,200.23	1,126.86	73.36	16.360	0		
12,300.00	7,520.00	11,985.20	7,190.00	38.42	38.17	-74.19	1,200.23	1,125.57	74.65	16.078	0		
12,400.00	7,520.00	12,085.20	7,190.00	39.08	38.83	-74.19	1,200.23	1,124.29	75.94	15.805	0		
12,500.00	7,520.00	12,185.20	7,190.00	39.74	39.50	-74.19	1,200.23	1,122.99	77.23	15.541	0		
12,600.00	7,520.00	12,285.20	7,190.00	40.41	40.16	-74.19	1,200.23	1,121.70	78.52	15.285	0		
12,700.00	7,520.00	12,385.20	7,190.00	41.07	40.83	-74.19	1,200.23	1,120.40	79.82	15.037	0		
12,800.00	7,520.00	12,485.20	7,190.00	41.74	41.50	-74.19	1,200.23	1,119.11	81.12	14.796	0		
12,900.00	7,520.00	12,585.20	7,190.00	42.41	42.17	-74.19	1,200.23	1,117.81	82.42	14.562	0		
13,000.00	7,520.00	12,685.20	7,190.00	43.08	42.84	-74.19	1,200.23	1,116.50	83.72	14.336	0		
13,100.00	7,520.00	12,785.20	7,190.00	43.75	43.51	-74.19	1,200.23	1,115.20	85.03	14.116	0		
13,200.00	7,520.00	12,885.20	7,190.00	44.42	44.18	-74.19	1,200.23	1,113.89	86.33	13.902	0		
13,300.00	7,520.00	12,985.20	7,190.00	45.10	44.86	-74.19	1,200.23	1,112.58	87.64	13.695	0		
13,400.00	7,520.00	13,085.20	7,190.00	45.77	45.53	-74.19	1,200.23	1,111.27	88.95	13.493	0		
13,500.00	7,520.00	13,185.20	7,190.00	46.44	46.21	-74.19	1,200.23	1,109.96	90.26	13.297	0		
13,600.00	7,520.00	13,285.20	7,190.00	47.12	46.89	-74.19	1,200.23	1,108.65	91.58	13.106	0		
13,700.00	7,520.00	13,385.20	7,190.00	47.80	47.56	-74.19	1,200.23	1,107.33	92.89	12.921	0		
13,800.00	7,520.00	13,485.20	7,190.00	48.47	48.24	-74.19	1,200.23	1,106.02	94.21	12.740	0		
13,900.00	7,520.00	13,585.20	7,190.00	49.15	48.92	-74.19	1,200.23	1,104.70	95.52	12.565	0		
14,000.00	7,520.00	13,685.20	7,190.00	49.83	49.60	-74.19	1,200.23	1,103.38	96.84	12.394	0		
14,100.00	7,520.00	13,785.20	7,190.00	50.51	50.28	-74.19	1,200.23	1,102.06	98.16	12.227	0		
14,200.00	7,520.00	13,885.20	7,190.00	51.19	50.96	-74.19	1,200.23	1,100.74	99.48	12.065	0		
14,300.00	7,520.00	13,985.20	7,190.00	51.87	51.64	-74.19	1,200.23	1,099.42	100.81	11.906	0		
14,400.00	7,520.00	14,085.20	7,190.00	52.55	52.32	-74.19	1,200.23	1,098.10	102.13	11.752	0		
14,500.00	7,520.00	14,185.20	7,190.00	53.23	53.01	-74.19	1,200.23	1,096.77	103.45	11.602	0		

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





# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision		
14,600.00	7,520.00	14,285.20	7,190.00	53.91	53.69	-74.19	1,200.23	1,095.45	104.78	11.455	0			
14,700.00	7,520.00	14,385.20	7,190.00	54.60	54.37	-74.19	1,200.23	1,094.12	106.11	11.312	0			
14,800.00	7,520.00	14,485.20	7,190.00	55.28	55.06	-74.19	1,200.23	1,092.79	107.43	11.172	0			
14,900.00	7,520.00	14,585.20	7,190.00	55.96	55.74	-74.19	1,200.23	1,091.46	108.76	11.035	0			
15,000.00	7,520.00	14,685.20	7,190.00	56.65	56.43	-74.19	1,200.23	1,090.13	110.09	10.902	0			
15,100.00	7,520.00	14,785.20	7,190.00	57.33	57.11	-74.19	1,200.23	1,088.80	111.42	10.772	0			
15,200.00	7,520.00	14,885.20	7,190.00	58.02	57.80	-74.19	1,200.23	1,087.47	112.75	10.645	0			
15,300.00	7,520.00	14,985.20	7,190.00	58.70	58.48	-74.19	1,200.23	1,086.14	114.08	10.521	0			
15,400.00	7,520.00	15,085.20	7,190.00	59.39	59.17	-74.19	1,200.23	1,084.81	115.42	10.399	0			
15,500.00	7,520.00	15,185.20	7,190.00	60.08	59.86	-74.19	1,200.23	1,083.48	116.75	10.280	0			
15,600.00	7,520.00	15,285.20	7,190.00	60.76	60.55	-74.19	1,200.23	1,082.14	118.08	10.164	0			
15,700.00	7,520.00	15,385.20	7,190.00	61.45	61.23	-74.19	1,200.23	1,080.81	119.42	10.051	0			
15,800.00	7,520.00	15,485.20	7,190.00	62.14	61.92	-74.19	1,200.23	1,079.47	120.75	9.939	0			
15,900.00	7,520.00	15,585.20	7,190.00	62.83	62.61	-74.19	1,200.23	1,078.14	122.09	9.831	0			
16,000.00	7,520.00	15,685.20	7,190.00	63.52	63.30	-74.19	1,200.23	1,076.80	123.43	9.724	0			
16,100.00	7,520.00	15,785.20	7,190.00	64.20	63.99	-74.19	1,200.23	1,075.46	124.76	9.620	0			
16,200.00	7,520.00	15,885.20	7,190.00	64.89	64.68	-74.19	1,200.23	1,074.12	126.10	9.518	0			
16,300.00	7,520.00	15,985.20	7,190.00	65.58	65.37	-74.19	1,200.23	1,072.79	127.44	9.418	0			
16,400.00	7,520.00	16,085.20	7,190.00	66.27	66.06	-74.19	1,200.23	1,071.45	128.78	9.320	0			
16,500.00	7,520.00	16,185.20	7,190.00	66.96	66.75	-74.19	1,200.23	1,070.11	130.12	9.224	0			
16,600.00	7,520.00	16,285.20	7,190.00	67.65	67.44	-74.19	1,200.23	1,068.77	131.46	9.130	0			
16,700.00	7,520.00	16,385.20	7,190.00	68.34	68.13	-74.19	1,200.23	1,067.43	132.80	9.038	0			
16,800.00	7,520.00	16,485.20	7,190.00	69.03	68.82	-74.19	1,200.23	1,066.09	134.14	8.948	0			
16,900.00	7,520.00	16,585.20	7,190.00	69.72	69.51	-74.19	1,200.23	1,064.74	135.48	8.859	0			
17,000.00	7,520.00	16,685.20	7,190.00	70.42	70.20	-74.19	1,200.23	1,063.40	136.82	8.772	0			
17,100.00	7,520.00	16,785.20	7,190.00	71.11	70.90	-74.19	1,200.23	1,062.06	138.17	8.687	0			
17,200.00	7,520.00	16,885.20	7,190.00	71.80	71.59	-74.19	1,200.23	1,060.72	139.51	8.603	0			
17,300.00	7,520.00	16,985.20	7,190.00	72.49	72.28	-74.19	1,200.23	1,059.37	140.85	8.521	0			
17,400.00	7,520.00	17,085.20	7,190.00	73.18	72.97	-74.19	1,200.23	1,058.03	142.20	8.441	0			
17,500.00	7,520.00	17,185.20	7,190.00	73.88	73.67	-74.19	1,200.23	1,056.69	143.54	8.362	0			
17,546.07	7,520.00	17,231.27	7,190.00	74.19	73.99	-74.19	1,200.23	1,056.07	144.16	8.326	0			
17,568.49	7,520.00	17,242.86	7,190.00	74.35	74.07	-74.19	1,200.28	1,055.89	144.39	8.313	0		SF	



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision		
0.00	0.00	0.00	0.00	0.00	0.00	0.12	111.87						CC, ES	
100.00	100.00	98.00	98.00	0.15	0.14	0.12	111.85	111.56	0.29	385.326	0			
200.00	200.00	198.00	198.00	0.32	0.32	0.12	111.85	111.22	0.64	175.102	0			
300.00	300.00	298.00	298.00	0.50	0.49	0.12	111.85	110.87	0.99	113.229	0			
400.00	400.00	398.00	398.00	0.67	0.67	0.12	111.85	110.52	1.34	83.665	0			
500.00	500.00	498.00	498.00	0.84	0.84	0.12	111.85	110.17	1.69	66.343	0			
600.00	600.00	598.00	598.00	1.02	1.02	0.12	111.85	109.82	2.04	54.964	0			
700.00	700.00	698.00	698.00	1.19	1.19	0.12	111.85	109.47	2.38	46.916	0			
800.00	800.00	798.00	798.00	1.37	1.36	0.12	111.85	109.12	2.73	40.924	0			
900.00	900.00	898.00	898.00	1.54	1.54	0.12	111.85	108.77	3.08	36.290	0			
1,000.00	999.98	995.95	995.93	1.72	1.71	127.42	113.80	110.37	3.43	33.203	0			
1,100.00	1,099.84	1,093.63	1,093.48	1.89	1.88	127.28	119.70	115.93	3.77	31.735	0		CC, ES	
1,200.00	1,199.45	1,190.86	1,190.36	2.07	2.05	127.05	129.53	125.41	4.12	31.470	0			
1,229.56	1,228.83	1,219.48	1,218.82	2.12	2.10	126.96	133.19	128.97	4.22	31.579	0			
1,300.00	1,298.81	1,289.12	1,288.01	2.25	2.23	126.85	142.40	137.94	4.47	31.888	0			
1,400.00	1,398.15	1,388.26	1,386.50	2.43	2.41	126.70	155.49	150.67	4.82	32.264	0			
1,500.00	1,497.49	1,487.40	1,484.99	2.61	2.58	126.58	168.58	163.41	5.17	32.581	0			
1,600.00	1,596.83	1,586.54	1,583.49	2.79	2.76	126.47	181.68	176.15	5.53	32.852	0			
1,700.00	1,696.16	1,685.68	1,681.98	2.97	2.94	126.38	194.77	188.88	5.89	33.087	0			
1,800.00	1,795.50	1,784.82	1,780.47	3.15	3.12	126.30	207.86	201.62	6.24	33.291	0			
1,900.00	1,894.84	1,883.96	1,878.96	3.33	3.30	126.23	220.96	214.35	6.60	33.471	0			
2,000.00	1,994.18	1,983.09	1,977.45	3.51	3.48	126.17	234.05	227.09	6.96	33.630	0		CC, ES	
2,100.00	2,093.52	2,082.23	2,075.95	3.70	3.66	126.11	247.14	239.83	7.32	33.772	0			
2,200.00	2,192.86	2,181.37	2,174.44	3.88	3.84	126.06	260.24	252.56	7.68	33.900	0			
2,300.00	2,292.20	2,280.51	2,272.93	4.06	4.02	126.01	273.33	265.30	8.04	34.015	0			
2,400.00	2,391.54	2,379.65	2,371.42	4.24	4.21	125.97	286.43	278.03	8.39	34.119	0			
2,500.00	2,490.88	2,478.79	2,469.92	4.43	4.39	125.94	299.52	290.77	8.75	34.214	0			
2,600.00	2,590.22	2,577.93	2,568.41	4.61	4.57	125.90	312.62	303.50	9.11	34.300	0			
2,700.00	2,689.55	2,677.07	2,666.90	4.79	4.75	125.87	325.71	316.24	9.47	34.380	0			
2,800.00	2,788.89	2,776.20	2,765.39	4.98	4.93	125.84	338.81	328.97	9.83	34.453	0			
2,900.00	2,888.23	2,875.34	2,863.89	5.16	5.11	125.81	351.90	341.71	10.19	34.521	0			
3,000.00	2,987.57	2,974.48	2,962.38	5.34	5.29	125.79	365.00	354.44	10.55	34.583	0		CC, ES	
3,100.00	3,086.91	3,073.62	3,060.67	5.53	5.48	125.76	378.09	367.18	10.91	34.641	0			
3,200.00	3,186.25	3,172.76	3,159.36	5.71	5.66	125.74	391.19	379.91	11.27	34.695	0			
3,300.00	3,285.59	3,271.90	3,257.86	5.89	5.84	125.72	404.28	392.65	11.64	34.746	0			
3,400.00	3,384.93	3,371.04	3,356.35	6.08	6.02	125.70	417.38	405.38	12.00	34.793	0			
3,500.00	3,484.27	3,470.17	3,454.84	6.26	6.21	125.68	430.48	418.12	12.36	34.837	0			
3,600.00	3,583.61	3,569.31	3,553.33	6.45	6.39	125.67	443.57	430.85	12.72	34.879	0			
3,700.00	3,682.95	3,668.45	3,651.83	6.63	6.57	125.65	456.67	443.59	13.08	34.918	0			
3,800.00	3,782.28	3,767.59	3,750.32	6.81	6.75	125.64	469.76	456.32	13.44	34.955	0			
3,900.00	3,881.62	3,866.73	3,848.81	7.00	6.93	125.62	482.86	469.06	13.80	34.990	0			
4,000.00	3,980.96	3,965.87	3,947.30	7.18	7.12	125.61	495.95	481.79	14.16	35.023	0		CC, ES	
4,100.00	4,080.30	4,065.01	4,045.79	7.37	7.30	125.60	509.05	494.53	14.52	35.054	0			
4,200.00	4,179.64	4,164.15	4,144.29	7.55	7.48	125.58	522.15	507.26	14.88	35.084	0			
4,300.00	4,278.98	4,263.28	4,242.78	7.73	7.66	125.57	535.24	520.00	15.24	35.112	0			
4,400.00	4,378.32	4,362.42	4,341.27	7.92	7.85	125.56	548.34	532.73	15.61	35.138	0			
4,500.00	4,477.66	4,461.56	4,439.76	8.10	8.03	125.55	561.43	545.47	15.97	35.164	0			
4,600.00	4,577.00	4,560.70	4,538.26	8.29	8.21	125.54	574.53	558.20	16.33	35.188	0			
4,700.00	4,676.34	4,659.84	4,636.75	8.47	8.39	125.53	587.63	570.94	16.69	35.211	0			
4,800.00	4,775.67	4,758.98	4,735.24	8.66	8.58	125.52	600.72	583.67	17.05	35.233	0			
4,900.00	4,875.01	4,858.12	4,833.73	8.84	8.76	125.51	613.82	596.41	17.41	35.255	0			
5,000.00	4,974.35	4,957.26	4,932.23	9.02	8.94	125.50	626.91	609.14	17.77	35.275	0		CC, ES	
5,100.00	5,073.69	5,056.39	5,030.72	9.21	9.12	125.50	640.01	621.88	18.13	35.294	0			
5,200.00	5,173.03	5,155.53	5,129.21	9.39	9.31	125.49	653.11	634.61	18.49	35.313	0			

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



# Schlumberger

## Anticollision Risk Report



<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision		
5,300.00	5,272.37	5,254.67	5,227.70	9.58	9.49	125.48	666.20	647.35	18.86	35.331	0			
5,400.00	5,371.71	5,353.81	5,326.20	9.76	9.67	125.47	679.30	660.08	19.22	35.348	0			
5,500.00	5,471.05	5,452.95	5,424.69	9.95	9.85	125.47	692.39	672.81	19.58	35.364	0			
5,600.00	5,570.39	5,552.09	5,523.18	10.13	10.04	125.46	705.49	685.55	19.94	35.380	0			
5,700.00	5,669.73	5,651.23	5,621.67	10.31	10.22	125.45	718.59	698.28	20.30	35.396	0			
5,800.00	5,769.07	5,750.37	5,720.17	10.50	10.40	125.45	731.68	711.02	20.66	35.410	0			
5,900.00	5,868.40	5,849.50	5,818.66	10.68	10.58	125.44	744.78	723.75	21.02	35.424	0			
6,000.00	5,967.74	5,948.64	5,917.15	10.87	10.77	125.44	757.87	736.49	21.39	35.438	0			
6,100.00	6,067.08	6,047.78	6,015.64	11.05	10.95	125.43	770.97	749.22	21.75	35.451	0			
6,200.00	6,166.42	6,146.92	6,114.13	11.24	11.13	125.42	784.07	761.96	22.11	35.464	0			
6,300.00	6,265.76	6,246.06	6,228.71	11.42	11.34	125.53	796.29	773.80	22.49	35.400	0			
6,400.00	6,365.10	6,379.88	6,346.33	11.60	11.54	125.91	806.26	783.38	22.88	35.240	0			
6,490.04	6,454.55	6,485.97	6,452.39	11.77	11.72	126.49	813.33	790.11	23.22	35.024	0			
6,500.00	6,464.44	6,496.02	6,462.44	11.79	11.74	126.57	814.01	790.75	23.26	34.997	0			
6,600.00	6,563.99	6,595.58	6,562.00	11.97	11.91	127.19	819.66	796.04	23.62	34.695	0			
6,700.00	6,663.81	6,693.73	6,659.65	12.14	12.06	128.18	823.35	799.38	23.97	34.344	0			
6,800.00	6,763.78	6,786.67	6,749.83	12.31	12.19	129.88	825.63	801.32	24.31	33.957	0			
6,819.60	6,783.38	6,804.07	6,766.31	12.34	12.21	2.95	825.99	801.88	24.12	34.252	0			
6,900.00	6,863.78	6,871.89	6,828.89	12.48	12.30	4.75	828.26	803.89	24.37	33.987	0			
6,919.60	6,883.38	6,887.49	6,842.87	12.51	12.32	5.23	829.10	804.67	24.43	33.937	0			
6,950.00	6,913.77	6,911.22	6,863.80	12.56	12.34	-83.90	830.61	805.77	24.84	33.444	0			
7,000.00	6,963.56	6,950.00	6,897.06	12.64	12.39	-82.49	833.48	808.48	25.00	33.334	0			
7,050.00	7,012.87	6,987.23	6,927.79	12.71	12.44	-81.13	836.77	811.61	25.16	33.252	0			
7,100.00	7,061.37	7,024.22	6,957.06	12.78	12.48	-79.80	840.40	815.08	25.31	33.199	0			
7,150.00	7,108.78	7,060.63	6,984.54	12.85	12.52	-78.52	844.28	818.84	25.45	33.179	0			
7,200.00	7,154.80	7,100.00	7,012.66	12.91	12.57	-77.22	848.35	822.78	25.57	33.176	0			
7,250.00	7,199.14	7,131.98	7,034.22	12.97	12.61	-76.14	852.50	826.85	25.66	33.227	0			
7,300.00	7,241.54	7,167.03	7,056.45	13.03	12.66	-75.04	856.69	830.96	25.73	33.295	0			
7,350.00	7,281.73	7,200.00	7,075.97	13.09	12.70	-74.05	860.83	835.05	25.77	33.399	0			
7,400.00	7,319.47	7,236.13	7,095.75	13.16	12.75	-73.06	864.85	839.03	25.82	33.500	0			
7,450.00	7,354.51	7,270.25	7,112.83	13.22	12.80	-72.19	868.69	842.86	25.83	33.625	0			
7,500.00	7,386.65	7,300.00	7,126.41	13.28	12.85	-71.46	872.31	846.49	25.82	33.784	0			
7,550.00	7,415.69	7,337.82	7,141.87	13.35	12.90	-70.70	875.62	849.78	25.84	33.887	0			
7,600.00	7,441.45	7,371.33	7,153.83	13.42	12.96	-70.09	878.60	852.76	25.84	34.002	0			
7,650.00	7,463.76	7,400.00	7,162.74	13.50	13.01	-69.60	881.23	855.41	25.82	34.134	0			
7,700.00	7,482.50	7,437.94	7,172.64	13.58	13.09	-69.12	883.41	857.55	25.86	34.161	0			
7,750.00	7,497.54	7,471.09	7,179.48	13.67	13.17	-68.78	885.16	859.27	25.90	34.183	0			
7,800.00	7,508.80	7,500.00	7,184.07	13.77	13.24	-68.54	886.47	860.55	25.93	34.192	0			
7,850.00	7,516.20	7,537.19	7,188.06	13.89	13.33	-68.37	887.28	861.24	26.04	34.075	0			
7,900.00	7,519.70	7,570.19	7,189.78	14.02	13.42	-68.31	887.61	861.45	26.16	33.936	0			
7,919.60	7,520.00	7,586.96	7,190.00	14.07	13.47	-68.31	887.61	861.38	26.24	33.832	0			
7,942.91	7,520.00	7,604.47	7,190.00	14.13	13.52	-68.31	887.59	861.25	26.34	33.694	0			
8,000.00	7,520.00	7,661.55	7,190.00	14.30	13.68	-68.31	887.59	860.93	26.67	33.283	0			
8,100.00	7,520.00	7,761.55	7,190.00	14.60	14.00	-68.31	887.59	860.32	27.28	32.538	0			
8,200.00	7,520.00	7,861.55	7,190.00	14.94	14.34	-68.31	887.59	859.66	27.94	31.769	0			
8,300.00	7,520.00	7,961.55	7,190.00	15.30	14.70	-68.31	887.59	858.95	28.65	30.986	0			
8,400.00	7,520.00	8,061.55	7,190.00	15.68	15.09	-68.31	887.59	858.20	29.39	30.196	0			
8,500.00	7,520.00	8,161.55	7,190.00	16.08	15.50	-68.31	887.60	857.41	30.18	29.406	0			
8,600.00	7,520.00	8,261.55	7,190.00	16.50	15.93	-68.31	887.60	856.58	31.01	28.622	0			
8,700.00	7,520.00	8,361.55	7,190.00	16.94	16.37	-68.31	887.60	855.73	31.87	27.850	0			
8,800.00	7,520.00	8,461.55	7,190.00	17.40	16.84	-68.31	887.60	854.83	32.76	27.092	0			
8,900.00	7,520.00	8,561.55	7,190.00	17.87	17.32	-68.31	887.60	853.91	33.68	26.352	0			
9,000.00	7,520.00	8,661.55	7,190.00	18.36	17.82	-68.31	887.60	852.97	34.63	25.632	0			
9,100.00	7,520.00	8,761.55	7,190.00	18.86	18.33	-68.31	887.60	852.00	35.60	24.932	0			

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



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error: 0.00 usft	
Survey Program: 0-Pathfinder												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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor		
9,200.00	7,520.00	8,861.55	7,190.00	19.38	18.85	-68.31	887.60	851.00	36.59	24.255	0		
9,300.00	7,520.00	8,961.55	7,190.00	19.90	19.38	-68.31	887.60	849.99	37.61	23.601	0		
9,400.00	7,520.00	9,061.55	7,190.00	20.44	19.93	-68.31	887.60	848.96	38.64	22.970	0		
9,500.00	7,520.00	9,161.55	7,190.00	20.99	20.48	-68.31	887.60	847.91	39.69	22.362	0		
9,600.00	7,520.00	9,261.55	7,190.00	21.54	21.05	-68.31	887.60	846.84	40.76	21.777	0		
9,700.00	7,520.00	9,361.55	7,190.00	22.11	21.62	-68.31	887.60	845.76	41.84	21.214	0		
9,800.00	7,520.00	9,461.55	7,190.00	22.68	22.20	-68.31	887.60	844.66	42.94	20.672	0		
9,900.00	7,520.00	9,561.55	7,190.00	23.26	22.78	-68.31	887.60	843.55	44.05	20.152	0		
10,000.00	7,520.00	9,661.55	7,190.00	23.84	23.37	-68.31	887.60	842.43	45.17	19.652	0		
10,100.00	7,520.00	9,761.55	7,190.00	24.43	23.97	-68.31	887.60	841.30	46.30	19.172	0		
10,200.00	7,520.00	9,861.55	7,190.00	25.03	24.58	-68.31	887.60	840.16	47.44	18.711	0		
10,300.00	7,520.00	9,961.55	7,190.00	25.63	25.18	-68.31	887.60	839.01	48.59	18.267	0		
10,400.00	7,520.00	10,061.55	7,190.00	26.24	25.80	-68.31	887.60	837.85	49.75	17.842	0		
10,500.00	7,520.00	10,161.55	7,190.00	26.85	26.42	-68.31	887.60	836.68	50.92	17.432	0		
10,600.00	7,520.00	10,261.55	7,190.00	27.47	27.04	-68.31	887.60	835.51	52.09	17.039	0		
10,700.00	7,520.00	10,361.55	7,190.00	28.09	27.67	-68.31	887.60	834.33	53.28	16.660	0		
10,800.00	7,520.00	10,461.55	7,190.00	28.72	28.30	-68.31	887.60	833.14	54.47	16.297	0		
10,900.00	7,520.00	10,561.55	7,190.00	29.34	28.93	-68.31	887.60	831.94	55.66	15.946	0		
11,000.00	7,520.00	10,661.55	7,190.00	29.98	29.57	-68.31	887.60	830.74	56.86	15.609	0		
11,100.00	7,520.00	10,761.55	7,190.00	30.61	30.20	-68.31	887.60	829.53	58.07	15.285	0		
11,200.00	7,520.00	10,861.55	7,190.00	31.25	30.85	-68.31	887.60	828.32	59.28	14.972	0		
11,300.00	7,520.00	10,961.55	7,190.00	31.89	31.49	-68.31	887.60	827.10	60.50	14.671	0		
11,400.00	7,520.00	11,061.55	7,190.00	32.53	32.14	-68.31	887.60	825.88	61.72	14.381	0		
11,500.00	7,520.00	11,161.55	7,190.00	33.18	32.79	-68.31	887.60	824.66	62.95	14.101	0		
11,600.00	7,520.00	11,261.55	7,190.00	33.83	33.44	-68.31	887.60	823.43	64.18	13.830	0		
11,700.00	7,520.00	11,361.55	7,190.00	34.48	34.09	-68.31	887.60	822.19	65.41	13.569	0		
11,800.00	7,520.00	11,461.55	7,190.00	35.13	34.75	-68.31	887.60	820.95	66.65	13.317	0		
11,900.00	7,520.00	11,561.55	7,190.00	35.78	35.41	-68.31	887.61	819.71	67.89	13.074	0		
12,000.00	7,520.00	11,661.55	7,190.00	36.44	36.07	-68.31	887.61	818.47	69.14	12.839	0		
12,100.00	7,520.00	11,761.55	7,190.00	37.10	36.73	-68.31	887.61	817.22	70.38	12.611	0		
12,200.00	7,520.00	11,861.55	7,190.00	37.75	37.39	-68.31	887.61	815.97	71.63	12.391	0		
12,300.00	7,520.00	11,961.55	7,190.00	38.42	38.06	-68.31	887.61	814.72	72.89	12.178	0		
12,400.00	7,520.00	12,061.55	7,190.00	39.08	38.72	-68.31	887.61	813.47	74.14	11.972	0		
12,500.00	7,520.00	12,161.55	7,190.00	39.74	39.39	-68.31	887.61	812.21	75.40	11.772	0		
12,600.00	7,520.00	12,261.55	7,190.00	40.41	40.06	-68.31	887.61	810.95	76.66	11.579	0		
12,700.00	7,520.00	12,361.55	7,190.00	41.07	40.72	-68.31	887.61	809.68	77.92	11.391	0		
12,800.00	7,520.00	12,461.55	7,190.00	41.74	41.39	-68.31	887.61	808.42	79.19	11.209	0		
12,900.00	7,520.00	12,561.55	7,190.00	42.41	42.07	-68.31	887.61	807.15	80.45	11.032	0		
13,000.00	7,520.00	12,661.55	7,190.00	43.08	42.74	-68.31	887.61	805.89	81.72	10.861	0		
13,100.00	7,520.00	12,761.55	7,190.00	43.75	43.41	-68.31	887.61	804.61	82.99	10.695	0		
13,200.00	7,520.00	12,861.55	7,190.00	44.42	44.09	-68.31	887.61	803.34	84.27	10.533	0		
13,300.00	7,520.00	12,961.55	7,190.00	45.10	44.76	-68.31	887.61	802.07	85.54	10.377	0		
13,400.00	7,520.00	13,061.55	7,190.00	45.77	45.44	-68.31	887.61	800.79	86.82	10.224	0		
13,500.00	7,520.00	13,161.55	7,190.00	46.44	46.12	-68.31	887.61	799.52	88.09	10.076	0		
13,600.00	7,520.00	13,261.55	7,190.00	47.12	46.79	-68.31	887.61	798.24	89.37	9.932	0		
13,700.00	7,520.00	13,361.55	7,190.00	47.80	47.47	-68.31	887.61	796.96	90.65	9.791	0		
13,800.00	7,520.00	13,461.55	7,190.00	48.47	48.15	-68.31	887.61	795.68	91.93	9.655	0		
13,900.00	7,520.00	13,561.55	7,190.00	49.15	48.83	-68.31	887.61	794.39	93.22	9.522	0		
14,000.00	7,520.00	13,661.55	7,190.00	49.83	49.51	-68.31	887.61	793.11	94.50	9.393	0		
14,100.00	7,520.00	13,761.55	7,190.00	50.51	50.19	-68.31	887.61	791.83	95.79	9.267	0		
14,200.00	7,520.00	13,861.55	7,190.00	51.19	50.87	-68.31	887.61	790.54	97.07	9.144	0		
14,300.00	7,520.00	13,961.55	7,190.00	51.87	51.56	-68.31	887.61	789.25	98.36	9.024	0		
14,400.00	7,520.00	14,061.55	7,190.00	52.55	52.24	-68.31	887.61	787.96	99.65	8.907	0		
14,500.00	7,520.00	14,161.55	7,190.00	53.23	52.92	-68.31	887.61	786.67	100.94	8.794	0		

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



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision		
14,600.00	7,520.00	14,261.55	7,190.00	53.91	53.61	-68.31	887.61	785.38	102.23	8.683	0			
14,700.00	7,520.00	14,361.55	7,190.00	54.60	54.29	-68.31	887.61	784.09	103.52	8.574	0			
14,800.00	7,520.00	14,461.55	7,190.00	55.28	54.98	-68.31	887.61	782.80	104.81	8.469	0			
14,900.00	7,520.00	14,561.55	7,190.00	55.96	55.66	-68.31	887.61	781.51	106.11	8.365	0			
15,000.00	7,520.00	14,661.55	7,190.00	56.65	56.35	-68.31	887.61	780.21	107.40	8.265	0			
15,100.00	7,520.00	14,761.55	7,190.00	57.33	57.03	-68.31	887.61	778.92	108.70	8.166	0			
15,200.00	7,520.00	14,861.55	7,190.00	58.02	57.72	-68.31	887.61	777.62	109.99	8.070	0			
15,300.00	7,520.00	14,961.55	7,190.00	58.70	58.41	-68.31	887.61	776.33	111.29	7.976	0			
15,400.00	7,520.00	15,061.55	7,190.00	59.39	59.10	-68.31	887.62	775.03	112.59	7.884	0			
15,500.00	7,520.00	15,161.55	7,190.00	60.08	59.78	-68.31	887.62	773.73	113.88	7.794	0			
15,600.00	7,520.00	15,261.55	7,190.00	60.76	60.47	-68.31	887.62	772.43	115.18	7.706	0			
15,700.00	7,520.00	15,361.55	7,190.00	61.45	61.16	-68.31	887.62	771.13	116.48	7.620	0			
15,800.00	7,520.00	15,461.55	7,190.00	62.14	61.85	-68.31	887.62	769.83	117.78	7.536	0			
15,900.00	7,520.00	15,561.55	7,190.00	62.83	62.54	-68.31	887.62	768.53	119.08	7.454	0			
16,000.00	7,520.00	15,661.55	7,190.00	63.52	63.23	-68.31	887.62	767.23	120.38	7.373	0			
16,100.00	7,520.00	15,761.55	7,190.00	64.20	63.92	-68.31	887.62	765.93	121.69	7.294	0			
16,200.00	7,520.00	15,861.55	7,190.00	64.89	64.61	-68.31	887.62	764.63	122.99	7.217	0			
16,300.00	7,520.00	15,961.55	7,190.00	65.58	65.30	-68.31	887.62	763.33	124.29	7.141	0			
16,400.00	7,520.00	16,061.55	7,190.00	66.27	65.99	-68.31	887.62	762.02	125.59	7.067	0			
16,500.00	7,520.00	16,161.55	7,190.00	66.96	66.68	-68.31	887.62	760.72	126.90	6.995	0			
16,600.00	7,520.00	16,261.55	7,190.00	67.65	67.37	-68.31	887.62	759.42	128.20	6.924	0			
16,700.00	7,520.00	16,361.55	7,190.00	68.34	68.06	-68.31	887.62	758.11	129.51	6.854	0			
16,800.00	7,520.00	16,461.55	7,190.00	69.03	68.76	-68.31	887.62	756.81	130.81	6.785	0			
16,900.00	7,520.00	16,561.55	7,190.00	69.72	69.45	-68.31	887.62	755.50	132.12	6.718	0			
17,000.00	7,520.00	16,661.55	7,190.00	70.42	70.14	-68.31	887.62	754.20	133.42	6.653	0			
17,100.00	7,520.00	16,761.55	7,190.00	71.11	70.83	-68.31	887.62	752.89	134.73	6.588	0			
17,200.00	7,520.00	16,861.55	7,190.00	71.80	71.53	-68.31	887.62	751.58	136.04	6.525	0			
17,300.00	7,520.00	16,961.55	7,190.00	72.49	72.22	-68.31	887.62	750.27	137.35	6.463	0			
17,400.00	7,520.00	17,061.55	7,190.00	73.18	72.91	-68.31	887.62	748.97	138.65	6.402	0			
17,500.00	7,520.00	17,161.55	7,190.00	73.88	73.60	-68.31	887.62	747.66	139.96	6.342	0			
17,549.89	7,520.00	17,212.46	7,190.00	74.22	73.96	-68.31	887.61	746.99	140.62	6.312	0			
17,568.49	7,520.00	17,222.47	7,190.00	74.35	74.03	-68.31	887.63	746.82	140.81	6.304	0		SF	



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Sec.08-T07N-R66W - Thornton 6 - Original Hole - Rev 0		Offset Site Error: 0.00 usft	
Survey Program: 0-Pathfinder													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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision				
0.00	0.00	0.00	0.00	0.00	0.00	0.12	83.80					0	CC, ES			
100.00	100.00	99.00	99.00	0.15	0.15	0.12	83.80	83.50	0.29	287.220	0					
200.00	200.00	199.00	199.00	0.32	0.32	0.12	83.80	83.16	0.64	130.822	0					
300.00	300.00	299.00	299.00	0.50	0.49	0.12	83.80	82.81	0.99	84.677	0					
400.00	400.00	399.00	399.00	0.67	0.67	0.12	83.80	82.46	1.34	62.597	0					
500.00	500.00	499.00	499.00	0.84	0.84	0.12	83.80	82.11	1.69	49.650	0					
600.00	600.00	599.00	599.00	1.02	1.02	0.12	83.80	81.76	2.04	41.141	0					
700.00	700.00	699.00	699.00	1.19	1.19	0.12	83.80	81.41	2.39	35.122	0					
800.00	800.00	799.00	799.00	1.37	1.37	0.12	83.80	81.06	2.73	30.639	0					
900.00	900.00	899.00	899.00	1.54	1.54	0.12	83.80	80.71	3.08	27.171	0					
1,000.00	999.98	998.98	998.98	1.72	1.72	128.37	84.87	81.44	3.43	24.725	0					
1,100.00	1,099.84	1,097.94	1,097.92	1.89	1.89	129.91	88.71	84.93	3.78	23.477	0					
1,200.00	1,199.45	1,196.74	1,196.58	2.07	2.06	130.87	95.88	91.75	4.12	23.249	0					
1,229.56	1,228.83	1,225.88	1,225.65	2.12	2.11	131.03	98.63	94.40	4.23	23.338	0					
1,300.00	1,298.81	1,295.43	1,294.91	2.25	2.24	131.03	105.74	101.27	4.47	23.639	0					
1,400.00	1,398.15	1,394.90	1,393.90	2.43	2.41	130.69	116.04	111.22	4.83	24.044	0					
1,500.00	1,497.49	1,494.36	1,492.89	2.61	2.59	130.39	126.35	121.17	5.18	24.388	0					
1,600.00	1,596.83	1,593.83	1,591.89	2.79	2.77	130.15	136.66	131.13	5.54	24.685	0					
1,700.00	1,696.16	1,693.29	1,690.88	2.97	2.94	129.93	146.98	141.08	5.89	24.944	0					
1,800.00	1,795.50	1,792.76	1,789.87	3.15	3.12	129.75	157.29	151.04	6.25	25.171	0					
1,900.00	1,894.84	1,892.22	1,888.86	3.33	3.30	129.59	167.61	161.00	6.61	25.371	0					
2,000.00	1,994.18	1,991.69	1,987.85	3.51	3.48	129.45	177.93	170.96	6.96	25.550	0					
2,100.00	2,093.52	2,091.15	2,086.84	3.70	3.66	129.32	188.24	180.92	7.32	25.709	0					
2,200.00	2,192.86	2,190.62	2,185.83	3.88	3.84	129.20	198.56	190.88	7.68	25.853	0					
2,300.00	2,292.20	2,290.08	2,284.82	4.06	4.02	129.10	208.88	200.84	8.04	25.984	0					
2,400.00	2,391.54	2,389.55	2,383.82	4.24	4.20	129.01	219.20	210.81	8.40	26.102	0					
2,500.00	2,490.88	2,489.02	2,482.81	4.43	4.38	128.92	229.53	220.77	8.76	26.210	0					
2,600.00	2,590.22	2,588.48	2,581.80	4.61	4.55	128.85	239.85	230.73	9.12	26.310	0					
2,700.00	2,689.55	2,687.95	2,680.79	4.79	4.73	128.77	250.17	240.69	9.48	26.401	0					
2,800.00	2,788.89	2,787.41	2,779.78	4.98	4.91	128.71	260.49	250.66	9.84	26.485	0					
2,900.00	2,888.23	2,886.88	2,878.77	5.16	5.09	128.65	270.81	260.62	10.20	26.563	0					
3,000.00	2,987.57	2,986.34	2,977.76	5.34	5.27	128.59	281.14	270.58	10.56	26.635	0					
3,100.00	3,086.91	3,085.81	3,076.75	5.53	5.45	128.54	291.46	280.55	10.92	26.702	0					
3,200.00	3,186.25	3,185.27	3,175.75	5.71	5.63	128.49	301.78	290.51	11.28	26.765	0					
3,300.00	3,285.59	3,284.74	3,274.74	5.89	5.81	128.45	312.11	300.47	11.64	26.824	0					
3,400.00	3,384.93	3,384.20	3,373.73	6.08	5.99	128.40	322.43	310.44	12.00	26.879	0					
3,500.00	3,484.27	3,483.67	3,472.72	6.26	6.17	128.36	332.76	320.40	12.36	26.931	0					
3,600.00	3,583.61	3,583.13	3,571.71	6.45	6.36	128.33	343.08	330.36	12.72	26.979	0					
3,700.00	3,682.95	3,682.60	3,670.70	6.63	6.54	128.29	353.40	340.33	13.08	27.025	0					
3,800.00	3,782.28	3,782.07	3,769.69	6.81	6.72	128.26	363.73	350.29	13.44	27.068	0					
3,900.00	3,881.62	3,881.53	3,868.69	7.00	6.90	128.23	374.05	360.25	13.80	27.109	0					
4,000.00	3,980.96	3,981.00	3,967.68	7.18	7.08	128.20	384.38	370.22	14.16	27.148	0					
4,100.00	4,080.30	4,080.46	4,066.67	7.37	7.26	128.17	394.70	380.18	14.52	27.185	0					
4,200.00	4,179.64	4,179.93	4,165.66	7.55	7.44	128.14	405.03	390.15	14.88	27.220	0					
4,300.00	4,278.98	4,279.39	4,264.65	7.73	7.62	128.12	415.35	400.11	15.24	27.253	0					
4,400.00	4,378.32	4,378.86	4,363.64	7.92	7.80	128.09	425.68	410.08	15.60	27.284	0					
4,500.00	4,477.66	4,478.32	4,462.63	8.10	7.98	128.07	436.00	420.04	15.96	27.314	0					
4,600.00	4,577.00	4,577.79	4,561.62	8.29	8.16	128.05	446.33	430.00	16.32	27.343	0					
4,700.00	4,676.34	4,677.25	4,660.62	8.47	8.34	128.03	456.65	439.97	16.68	27.371	0					
4,800.00	4,775.67	4,776.72	4,759.61	8.66	8.52	128.01	466.98	449.93	17.04	27.397	0					
4,900.00	4,875.01	4,876.18	4,858.60	8.84	8.70	127.99	477.30	459.90	17.41	27.422	0					
5,000.00	4,974.35	4,975.65	4,957.59	9.02	8.88	127.97	487.63	469.86	17.77	27.446	0					
5,100.00	5,073.69	5,075.12	5,056.58	9.21	9.06	127.95	497.95	479.83	18.13	27.469	0					
5,200.00	5,173.03	5,174.58	5,155.57	9.39	9.24	127.94	508.28	489.79	18.49	27.491	0					

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



# Schlumberger

## Anticollision Risk Report



<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error: 0.00 usft	
Survey Program: 0-Pathfinder												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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor		
5,300.00	5,272.37	5,274.05	5,254.56	9.58	9.42	127.92	518.60	499.75	18.85	27.512	0		
5,400.00	5,371.71	5,373.51	5,353.55	9.76	9.60	127.90	528.93	509.72	19.21	27.533	0		
5,500.00	5,471.05	5,472.98	5,452.55	9.95	9.78	127.89	539.26	519.68	19.57	27.552	0		
5,600.00	5,570.39	5,572.44	5,551.54	10.13	9.97	127.88	549.58	529.65	19.93	27.571	0		
5,700.00	5,669.73	5,671.91	5,650.53	10.31	10.15	127.86	559.91	539.61	20.29	27.589	0		
5,800.00	5,769.07	5,771.37	5,749.52	10.50	10.33	127.85	570.23	549.58	20.66	27.607	0		
5,900.00	5,868.40	5,870.84	5,848.51	10.68	10.51	127.84	580.56	559.54	21.02	27.624	0		
6,000.00	5,967.74	5,970.30	5,947.50	10.87	10.69	127.82	590.88	569.51	21.38	27.640	0		
6,100.00	6,067.08	6,069.77	6,046.49	11.05	10.87	127.81	601.21	579.47	21.74	27.656	0		
6,200.00	6,166.42	6,169.24	6,145.49	11.24	11.05	127.80	611.53	589.43	22.10	27.671	0		
6,300.00	6,265.76	6,268.70	6,244.48	11.42	11.23	127.79	621.86	599.40	22.46	27.686	0		
6,400.00	6,365.10	6,368.17	6,343.47	11.60	11.41	127.78	632.19	609.36	22.82	27.700	0		
6,490.04	6,454.55	6,457.73	6,432.60	11.77	11.57	127.77	641.48	618.34	23.15	27.713	0		
6,500.00	6,464.44	6,467.63	6,442.46	11.79	11.59	127.78	642.50	619.32	23.19	27.712	0		
6,600.00	6,563.99	6,570.33	6,544.70	11.97	11.78	127.78	651.46	627.90	23.56	27.649	0		
6,700.00	6,663.81	6,678.51	6,652.64	12.14	11.97	127.74	657.27	633.34	23.93	27.463	0		
6,800.00	6,763.78	6,786.94	6,761.03	12.31	12.15	127.73	659.66	635.37	24.29	27.159	0		
6,819.60	6,783.38	6,808.21	6,782.30	12.34	12.19	0.40	659.73	635.68	24.05	27.435	0		
6,900.00	6,863.78	6,888.69	6,862.78	12.48	12.32	0.40	659.73	635.41	24.32	27.122	0		
6,919.60	6,883.38	6,908.29	6,882.38	12.51	12.36	0.40	659.73	635.34	24.39	27.047	0		
6,950.00	6,913.77	6,938.48	6,912.56	12.56	12.41	-89.61	659.73	634.93	24.80	26.605	0		
7,000.00	6,963.56	6,988.13	6,962.02	12.64	12.48	-89.62	659.73	634.78	24.95	26.439	0		
7,050.00	7,012.87	7,037.79	7,011.01	12.71	12.56	-89.63	659.73	634.63	25.10	26.283	0		
7,100.00	7,061.37	7,087.46	7,059.23	12.78	12.63	-89.64	659.73	634.49	25.24	26.137	0		
7,150.00	7,108.78	7,137.14	7,106.40	12.85	12.70	-89.66	659.73	634.35	25.37	26.000	0		
7,200.00	7,154.80	7,186.84	7,152.22	12.91	12.76	-89.68	659.73	634.22	25.50	25.868	0		
7,250.00	7,199.14	7,236.56	7,196.42	12.97	12.82	-89.70	659.73	634.10	25.63	25.741	0		
7,300.00	7,241.54	7,286.30	7,238.73	13.03	12.88	-89.72	659.72	633.97	25.75	25.617	0		
7,350.00	7,281.73	7,336.05	7,278.89	13.09	12.95	-89.74	659.72	633.85	25.88	25.494	0		
7,400.00	7,319.47	7,385.83	7,316.65	13.16	13.01	-89.77	659.72	633.72	26.00	25.370	0		
7,450.00	7,354.51	7,435.63	7,351.77	13.22	13.07	-89.79	659.72	633.59	26.13	25.243	0		
7,500.00	7,386.65	7,485.46	7,384.05	13.28	13.14	-89.82	659.72	633.45	26.27	25.111	0		
7,550.00	7,415.69	7,535.31	7,413.28	13.35	13.21	-89.85	659.72	633.30	26.42	24.971	0		
7,600.00	7,441.45	7,585.19	7,439.27	13.42	13.28	-89.88	659.72	633.14	26.58	24.822	0		
7,650.00	7,463.76	7,635.10	7,461.86	13.50	13.36	-89.91	659.72	632.97	26.75	24.662	0		
7,700.00	7,482.50	7,685.04	7,480.91	13.58	13.44	-89.95	659.72	632.78	26.94	24.491	0		
7,750.00	7,497.54	7,735.00	7,496.29	13.67	13.55	-89.98	659.72	632.58	27.14	24.308	0		
7,785.43	7,505.91	7,770.42	7,504.91	13.74	13.63	-90.00	659.72	632.42	27.29	24.170	0		
7,800.00	7,508.80	7,784.99	7,507.90	13.77	13.66	-90.01	659.72	632.36	27.36	24.113	0		
7,850.00	7,516.20	7,835.01	7,515.67	13.89	13.78	-90.04	659.72	632.12	27.60	23.906	0		
7,900.00	7,519.70	7,885.06	7,519.54	14.02	13.91	-90.07	659.72	631.87	27.85	23.689	0		
7,919.60	7,520.00	7,904.69	7,519.98	14.07	13.96	-90.09	659.72	631.77	27.95	23.602	0		
8,000.00	7,520.00	7,985.10	7,520.00	14.30	14.19	-90.09	659.72	631.32	28.40	23.228	0		
8,100.00	7,520.00	8,085.10	7,520.00	14.60	14.50	-90.09	659.72	630.71	29.01	22.740	0		
8,200.00	7,520.00	8,185.10	7,520.00	14.94	14.83	-90.09	659.72	630.04	29.67	22.232	0		
8,300.00	7,520.00	8,285.10	7,520.00	15.30	15.19	-90.09	659.72	629.33	30.39	21.710	0		
8,400.00	7,520.00	8,385.10	7,520.00	15.68	15.57	-90.09	659.72	628.57	31.15	21.179	0		
8,500.00	7,520.00	8,485.10	7,520.00	16.08	15.97	-90.09	659.72	627.76	31.95	20.645	0		
8,600.00	7,520.00	8,585.10	7,520.00	16.50	16.40	-90.09	659.72	626.92	32.80	20.113	0		
8,700.00	7,520.00	8,685.10	7,520.00	16.94	16.84	-90.09	659.72	626.03	33.68	19.585	0		
8,800.00	7,520.00	8,785.10	7,520.00	17.40	17.30	-90.09	659.72	625.11	34.60	19.066	0		
8,900.00	7,520.00	8,885.10	7,520.00	17.87	17.77	-90.09	659.72	624.16	35.55	18.556	0		
9,000.00	7,520.00	8,985.10	7,520.00	18.36	18.26	-90.09	659.72	623.19	36.53	18.059	0		
9,100.00	7,520.00	9,085.10	7,520.00	18.86	18.76	-90.09	659.72	622.18	37.54	17.574	0		

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





# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision		
9,200.00	7,520.00	9,185.10	7,520.00	19.38	19.28	-90.09	659.72	621.15	38.57	17.104	0			
9,300.00	7,520.00	9,285.10	7,520.00	19.90	19.81	-90.09	659.72	620.09	39.63	16.649	0			
9,400.00	7,520.00	9,385.10	7,520.00	20.44	20.35	-90.09	659.72	619.02	40.70	16.209	0			
9,500.00	7,520.00	9,485.10	7,520.00	20.99	20.89	-90.09	659.72	617.92	41.80	15.784	0			
9,600.00	7,520.00	9,585.10	7,520.00	21.54	21.45	-90.09	659.72	616.81	42.91	15.374	0			
9,700.00	7,520.00	9,685.10	7,520.00	22.11	22.02	-90.09	659.72	615.67	44.04	14.979	0			
9,800.00	7,520.00	9,785.10	7,520.00	22.68	22.59	-90.09	659.72	614.53	45.19	14.599	0			
9,900.00	7,520.00	9,885.10	7,520.00	23.26	23.17	-90.09	659.72	613.37	46.35	14.234	0			
10,000.00	7,520.00	9,985.10	7,520.00	23.84	23.76	-90.09	659.72	612.19	47.52	13.882	0			
10,100.00	7,520.00	10,085.10	7,520.00	24.43	24.35	-90.09	659.72	611.01	48.71	13.544	0			
10,200.00	7,520.00	10,185.10	7,520.00	25.03	24.95	-90.09	659.72	609.81	49.91	13.219	0			
10,300.00	7,520.00	10,285.10	7,520.00	25.63	25.55	-90.09	659.72	608.60	51.12	12.906	0			
10,400.00	7,520.00	10,385.10	7,520.00	26.24	26.16	-90.09	659.72	607.38	52.33	12.606	0			
10,500.00	7,520.00	10,485.10	7,520.00	26.85	26.78	-90.09	659.72	606.15	53.56	12.317	0			
10,600.00	7,520.00	10,585.10	7,520.00	27.47	27.39	-90.09	659.72	604.92	54.80	12.039	0			
10,700.00	7,520.00	10,685.10	7,520.00	28.09	28.02	-90.09	659.72	603.67	56.04	11.772	0			
10,800.00	7,520.00	10,785.10	7,520.00	28.72	28.64	-90.09	659.72	602.42	57.30	11.514	0			
10,900.00	7,520.00	10,885.10	7,520.00	29.34	29.27	-90.09	659.72	601.16	58.55	11.267	0			
11,000.00	7,520.00	10,985.10	7,520.00	29.98	29.90	-90.09	659.72	599.90	59.82	11.028	0			
11,100.00	7,520.00	11,085.10	7,520.00	30.61	30.54	-90.09	659.72	598.63	61.09	10.799	0			
11,200.00	7,520.00	11,185.10	7,520.00	31.25	31.18	-90.09	659.72	597.35	62.37	10.578	0			
11,300.00	7,520.00	11,285.10	7,520.00	31.89	31.82	-90.09	659.72	596.06	63.65	10.364	0			
11,400.00	7,520.00	11,385.10	7,520.00	32.53	32.46	-90.09	659.72	594.78	64.94	10.159	0			
11,500.00	7,520.00	11,485.10	7,520.00	33.18	33.11	-90.09	659.72	593.48	66.23	9.960	0			
11,600.00	7,520.00	11,585.10	7,520.00	33.83	33.76	-90.09	659.72	592.19	67.53	9.769	0			
11,700.00	7,520.00	11,685.10	7,520.00	34.48	34.41	-90.09	659.72	590.88	68.83	9.584	0			
11,800.00	7,520.00	11,785.10	7,520.00	35.13	35.06	-90.09	659.72	589.58	70.14	9.406	0			
11,900.00	7,520.00	11,885.10	7,520.00	35.78	35.72	-90.09	659.72	588.27	71.45	9.233	0			
12,000.00	7,520.00	11,985.10	7,520.00	36.44	36.37	-90.09	659.72	586.95	72.76	9.067	0			
12,100.00	7,520.00	12,085.10	7,520.00	37.10	37.03	-90.09	659.72	585.64	74.08	8.906	0			
12,200.00	7,520.00	12,185.10	7,520.00	37.75	37.69	-90.09	659.72	584.32	75.40	8.750	0			
12,300.00	7,520.00	12,285.10	7,520.00	38.42	38.35	-90.09	659.72	582.99	76.72	8.599	0			
12,400.00	7,520.00	12,385.10	7,520.00	39.08	39.02	-90.09	659.72	581.67	78.05	8.453	0			
12,500.00	7,520.00	12,485.10	7,520.00	39.74	39.68	-90.09	659.72	580.34	79.38	8.311	0			
12,600.00	7,520.00	12,585.10	7,520.00	40.41	40.35	-90.09	659.72	579.01	80.71	8.174	0			
12,700.00	7,520.00	12,685.10	7,520.00	41.07	41.01	-90.09	659.72	577.67	82.04	8.041	0			
12,800.00	7,520.00	12,785.10	7,520.00	41.74	41.68	-90.09	659.72	576.34	83.38	7.912	0			
12,900.00	7,520.00	12,885.10	7,520.00	42.41	42.35	-90.09	659.72	575.00	84.72	7.787	0			
13,000.00	7,520.00	12,985.10	7,520.00	43.08	43.02	-90.09	659.72	573.66	86.06	7.666	0			
13,100.00	7,520.00	13,085.10	7,520.00	43.75	43.69	-90.09	659.72	572.31	87.40	7.548	0			
13,200.00	7,520.00	13,185.10	7,520.00	44.42	44.37	-90.09	659.72	570.97	88.75	7.434	0			
13,300.00	7,520.00	13,285.10	7,520.00	45.10	45.04	-90.09	659.72	569.62	90.10	7.322	0			
13,400.00	7,520.00	13,385.10	7,520.00	45.77	45.71	-90.09	659.72	568.27	91.44	7.214	0			
13,500.00	7,520.00	13,485.10	7,520.00	46.44	46.39	-90.09	659.72	566.92	92.79	7.109	0			
13,600.00	7,520.00	13,585.10	7,520.00	47.12	47.07	-90.09	659.72	565.57	94.15	7.007	0			
13,700.00	7,520.00	13,685.10	7,520.00	47.80	47.74	-90.09	659.72	564.22	95.50	6.908	0			
13,800.00	7,520.00	13,785.10	7,520.00	48.47	48.42	-90.09	659.72	562.86	96.86	6.811	0			
13,900.00	7,520.00	13,885.10	7,520.00	49.15	49.10	-90.09	659.72	561.50	98.21	6.717	0			
14,000.00	7,520.00	13,985.10	7,520.00	49.83	49.78	-90.09	659.72	560.15	99.57	6.626	0			
14,100.00	7,520.00	14,085.10	7,520.00	50.51	50.46	-90.09	659.72	558.79	100.93	6.536	0			
14,200.00	7,520.00	14,185.10	7,520.00	51.19	51.14	-90.09	659.72	557.43	102.29	6.449	0			
14,300.00	7,520.00	14,285.10	7,520.00	51.87	51.82	-90.09	659.72	556.06	103.65	6.365	0			
14,400.00	7,520.00	14,385.10	7,520.00	52.55	52.50	-90.09	659.72	554.70	105.02	6.282	0			
14,500.00	7,520.00	14,485.10	7,520.00	53.23	53.18	-90.09	659.72	553.34	106.38	6.201	0			

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



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Sec.08-T07N-R66W - Thornton 6 - Original Hole - Rev 0		Offset Site Error:		0.00 usft
Survey Program: 0-Pathfinder													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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision					
14,600.00	7,520.00	14,585.10	7,520.00	53.91	53.86	-90.09	659.72	551.97	107.75	6.123	0						
14,700.00	7,520.00	14,685.10	7,520.00	54.60	54.55	-90.09	659.72	550.60	109.11	6.046	0						
14,800.00	7,520.00	14,785.10	7,520.00	55.28	55.23	-90.09	659.72	549.24	110.48	5.971	0						
14,900.00	7,520.00	14,885.10	7,520.00	55.96	55.92	-90.09	659.72	547.87	111.85	5.898	0						
15,000.00	7,520.00	14,985.10	7,520.00	56.65	56.60	-90.09	659.72	546.50	113.22	5.827	0						
15,100.00	7,520.00	15,085.10	7,520.00	57.33	57.29	-90.09	659.72	545.13	114.59	5.757	0						
15,200.00	7,520.00	15,185.10	7,520.00	58.02	57.97	-90.09	659.72	543.76	115.96	5.689	0						
15,300.00	7,520.00	15,285.10	7,520.00	58.70	58.66	-90.09	659.72	542.39	117.33	5.623	0						
15,400.00	7,520.00	15,385.10	7,520.00	59.39	59.34	-90.09	659.72	541.01	118.70	5.558	0						
15,500.00	7,520.00	15,485.10	7,520.00	60.08	60.03	-90.09	659.72	539.64	120.08	5.494	0						
15,600.00	7,520.00	15,585.10	7,520.00	60.76	60.72	-90.09	659.72	538.26	121.45	5.432	0						
15,700.00	7,520.00	15,685.10	7,520.00	61.45	61.41	-90.09	659.72	536.89	122.83	5.371	0						
15,800.00	7,520.00	15,785.10	7,520.00	62.14	62.09	-90.09	659.72	535.51	124.20	5.312	0						
15,900.00	7,520.00	15,885.10	7,520.00	62.83	62.78	-90.09	659.72	534.14	125.58	5.253	0						
16,000.00	7,520.00	15,985.10	7,520.00	63.52	63.47	-90.09	659.72	532.76	126.96	5.196	0						
16,100.00	7,520.00	16,085.10	7,520.00	64.20	64.16	-90.09	659.72	531.38	128.34	5.141	0						
16,200.00	7,520.00	16,185.10	7,520.00	64.89	64.85	-90.09	659.72	530.00	129.71	5.086	0						
16,300.00	7,520.00	16,285.10	7,520.00	65.58	65.54	-90.09	659.72	528.62	131.09	5.032	0						
16,400.00	7,520.00	16,385.10	7,520.00	66.27	66.23	-90.09	659.72	527.24	132.47	4.980	0						
16,500.00	7,520.00	16,485.10	7,520.00	66.96	66.92	-90.09	659.72	525.86	133.85	4.929	0						
16,600.00	7,520.00	16,585.10	7,520.00	67.65	67.61	-90.09	659.72	524.48	135.23	4.878	0						
16,700.00	7,520.00	16,685.10	7,520.00	68.34	68.30	-90.09	659.72	523.10	136.62	4.829	0						
16,800.00	7,520.00	16,785.10	7,520.00	69.03	68.99	-90.09	659.72	521.72	138.00	4.781	0						
16,900.00	7,520.00	16,885.10	7,520.00	69.72	69.68	-90.09	659.72	520.34	139.38	4.733	0						
17,000.00	7,520.00	16,985.10	7,520.00	70.42	70.37	-90.09	659.72	518.95	140.76	4.687	0						
17,100.00	7,520.00	17,085.10	7,520.00	71.11	71.06	-90.09	659.72	517.57	142.15	4.641	0						
17,200.00	7,520.00	17,185.10	7,520.00	71.80	71.76	-90.09	659.72	516.19	143.53	4.596	0						
17,300.00	7,520.00	17,285.10	7,520.00	72.49	72.45	-90.09	659.72	514.80	144.91	4.552	0						
17,400.00	7,520.00	17,385.10	7,520.00	73.18	73.14	-90.09	659.72	513.42	146.30	4.509	0						
17,500.00	7,520.00	17,485.10	7,520.00	73.88	73.83	-90.09	659.72	512.03	147.68	4.467	0						
17,535.04	7,520.00	17,519.79	7,520.00	74.12	74.07	-90.09	659.73	511.56	148.17	4.453	0						
17,568.49	7,520.00	17,547.64	7,520.00	74.35	74.27	-90.09	659.77	511.18	148.59	4.440	0	SF					



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder												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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision	Warning
0.00	0.00	0.00	0.00	0.00	0.00	0.13	55.75				0		
100.00	100.00	99.00	99.00	0.15	0.15	0.13	55.74	55.45	0.29	191.064	0		
200.00	200.00	199.00	199.00	0.32	0.32	0.13	55.74	55.10	0.64	87.025	0		
300.00	300.00	299.00	299.00	0.50	0.49	0.13	55.74	54.75	0.99	56.328	0		
400.00	400.00	399.00	399.00	0.67	0.67	0.13	55.74	54.40	1.34	41.640	0		
500.00	500.00	499.00	499.00	0.84	0.84	0.13	55.74	54.06	1.69	33.028	0		
600.00	600.00	599.00	599.00	1.02	1.02	0.13	55.74	53.71	2.04	27.368	0		
700.00	700.00	699.00	699.00	1.19	1.19	0.13	55.74	53.36	2.39	23.364	0		
800.00	800.00	799.00	799.00	1.37	1.37	0.13	55.74	53.01	2.73	20.382	0		
900.00	900.00	899.00	899.00	1.54	1.54	0.13	55.74	52.66	3.08	18.075	0		
1,000.00	999.98	998.98	998.98	1.72	1.72	128.83	56.82	53.39	3.43	16.553	0		CC, ES
1,100.00	1,099.84	1,098.84	1,098.84	1.89	1.89	132.66	60.24	56.46	3.78	15.938	0		
1,200.00	1,199.45	1,198.62	1,198.61	2.07	2.06	136.65	66.33	62.20	4.13	16.079	0		
1,229.56	1,228.83	1,228.13	1,228.09	2.12	2.12	137.50	68.62	64.39	4.23	16.234	0		
1,300.00	1,298.81	1,298.49	1,298.33	2.25	2.24	138.64	74.28	69.81	4.47	16.602	0		
1,400.00	1,398.15	1,398.42	1,397.88	2.43	2.42	137.93	82.05	77.22	4.83	16.995	0		
1,500.00	1,497.49	1,498.10	1,497.07	2.61	2.59	136.47	89.73	84.54	5.18	17.313	0		
1,600.00	1,596.83	1,597.78	1,596.25	2.79	2.77	135.25	97.45	91.91	5.54	17.596	0		
1,700.00	1,696.16	1,697.47	1,695.43	2.97	2.95	134.20	105.21	99.32	5.90	17.848	0		
1,800.00	1,795.50	1,797.15	1,794.61	3.15	3.12	133.30	113.00	106.75	6.25	18.073	0		
1,900.00	1,894.84	1,896.83	1,893.79	3.33	3.30	132.52	120.82	114.21	6.61	18.275	0		
2,000.00	1,994.18	1,996.51	1,992.97	3.51	3.48	131.83	128.66	121.69	6.97	18.457	0		
2,100.00	2,093.52	2,096.19	2,092.16	3.70	3.66	131.22	136.51	129.18	7.33	18.623	0		
2,200.00	2,192.86	2,195.87	2,191.34	3.88	3.84	130.68	144.38	136.69	7.69	18.773	0		
2,300.00	2,292.20	2,295.55	2,290.52	4.06	4.02	130.19	152.25	144.20	8.05	18.911	0		
2,400.00	2,391.54	2,395.23	2,389.70	4.24	4.20	129.75	160.14	151.73	8.41	19.038	0		
2,500.00	2,490.88	2,494.92	2,488.88	4.43	4.38	129.35	168.04	159.27	8.77	19.154	0		
2,600.00	2,590.22	2,594.60	2,588.06	4.61	4.56	128.99	175.94	166.81	9.13	19.262	0		
2,700.00	2,689.55	2,694.28	2,687.24	4.79	4.74	128.66	183.85	174.36	9.50	19.362	0		
2,800.00	2,788.89	2,793.96	2,786.43	4.98	4.92	128.36	191.77	181.91	9.86	19.454	0		
2,900.00	2,888.23	2,893.64	2,885.61	5.16	5.10	128.08	199.69	189.47	10.22	19.541	0		
3,000.00	2,987.57	2,993.32	2,984.79	5.34	5.28	127.82	207.61	197.03	10.58	19.621	0		
3,100.00	3,086.91	3,093.00	3,083.97	5.53	5.46	127.58	215.54	204.60	10.94	19.696	0		
3,200.00	3,186.25	3,192.68	3,183.15	5.71	5.64	127.36	223.47	212.17	11.31	19.767	0		
3,300.00	3,285.59	3,292.37	3,282.33	5.89	5.82	127.15	231.41	219.74	11.67	19.833	0		
3,400.00	3,384.93	3,392.05	3,381.52	6.08	6.00	126.96	239.35	227.32	12.03	19.895	0		
3,500.00	3,484.27	3,491.73	3,480.70	6.26	6.19	126.78	247.29	234.90	12.39	19.954	0		
3,600.00	3,583.61	3,591.41	3,579.88	6.45	6.37	126.61	255.23	242.48	12.76	20.010	0		
3,700.00	3,682.95	3,691.09	3,679.06	6.63	6.55	126.45	263.18	250.06	13.12	20.062	0		
3,800.00	3,782.28	3,790.77	3,778.24	6.81	6.73	126.30	271.12	257.64	13.48	20.112	0		
3,900.00	3,881.62	3,890.45	3,877.42	7.00	6.91	126.16	279.07	265.23	13.84	20.159	0		
4,000.00	3,980.96	3,990.13	3,976.61	7.18	7.09	126.02	287.02	272.82	14.21	20.203	0		
4,100.00	4,080.30	4,089.82	4,075.79	7.37	7.27	125.90	294.97	280.40	14.57	20.246	0		
4,200.00	4,179.64	4,189.50	4,174.97	7.55	7.45	125.78	302.93	287.99	14.93	20.286	0		
4,300.00	4,278.98	4,289.18	4,274.15	7.73	7.63	125.66	310.88	295.59	15.30	20.325	0		
4,400.00	4,378.32	4,388.86	4,373.33	7.92	7.81	125.55	318.84	303.18	15.66	20.361	0		
4,500.00	4,477.66	4,488.54	4,472.51	8.10	8.00	125.45	326.79	310.77	16.02	20.397	0		
4,600.00	4,577.00	4,588.22	4,571.70	8.29	8.18	125.35	334.75	318.37	16.39	20.430	0		
4,700.00	4,676.34	4,687.90	4,670.88	8.47	8.36	125.26	342.71	325.96	16.75	20.462	0		
4,800.00	4,775.67	4,787.59	4,770.06	8.66	8.54	125.17	350.67	333.56	17.11	20.493	0		
4,900.00	4,875.01	4,887.27	4,869.24	8.84	8.72	125.09	358.63	341.15	17.48	20.522	0		
5,000.00	4,974.35	4,986.95	4,968.42	9.02	8.90	125.00	366.59	348.75	17.84	20.551	0		
5,100.00	5,073.69	5,086.63	5,067.60	9.21	9.08	124.93	374.55	356.35	18.20	20.578	0		
5,200.00	5,173.03	5,186.31	5,166.78	9.39	9.26	124.85	382.51	363.95	18.57	20.604	0		

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



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Sec.08-T07N-R66W - Thornton 7 - Original Hole - Rev 0		Offset Site Error:		0.00 usft
Survey Program: 0-Pathfinder														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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision	Warning				
5,300.00	5,272.37	5,285.99	5,265.97	9.58	9.45	124.78	390.48	371.55	18.93	20.629	0						
5,400.00	5,371.71	5,385.67	5,365.15	9.76	9.63	124.71	398.44	379.15	19.29	20.653	0						
5,500.00	5,471.05	5,485.35	5,464.33	9.95	9.81	124.64	406.41	386.75	19.66	20.677	0						
5,600.00	5,570.39	5,585.04	5,563.51	10.13	9.99	124.58	414.37	394.35	20.02	20.699	0						
5,700.00	5,669.73	5,684.72	5,662.69	10.31	10.17	124.52	422.34	401.95	20.38	20.721	0						
5,800.00	5,769.07	5,784.40	5,761.87	10.50	10.35	124.46	430.30	409.55	20.75	20.742	0						
5,900.00	5,868.40	5,884.08	5,861.06	10.68	10.53	124.40	438.27	417.16	21.11	20.762	0						
6,000.00	5,967.74	5,983.76	5,960.24	10.87	10.72	124.35	446.23	424.76	21.47	20.781	0						
6,100.00	6,067.08	6,083.44	6,059.42	11.05	10.90	124.30	454.20	432.36	21.84	20.800	0						
6,200.00	6,166.42	6,183.12	6,158.60	11.24	11.08	124.25	462.17	439.97	22.20	20.818	0						
6,300.00	6,265.76	6,285.05	6,260.15	11.42	11.26	124.38	469.92	447.35	22.56	20.828	0						
6,400.00	6,365.10	6,387.06	6,362.03	11.60	11.44	124.94	477.17	454.26	22.92	20.823	0						
6,490.04	6,454.55	6,478.59	6,453.55	11.77	11.59	125.79	483.37	460.14	23.23	20.807	0						
6,500.00	6,464.44	6,488.48	6,463.44	11.79	11.61	125.91	484.03	460.76	23.27	20.804	0						
6,600.00	6,563.99	6,588.08	6,563.04	11.97	11.78	126.90	489.62	466.00	23.62	20.729	0						
6,700.00	6,663.81	6,686.52	6,660.96	12.14	11.93	128.55	493.32	469.37	23.95	20.594	0						
6,800.00	6,763.78	6,779.66	6,751.28	12.31	12.06	131.38	496.05	471.78	24.27	20.435	0						
6,819.60	6,783.38	6,797.09	6,767.77	12.34	12.08	4.72	496.61	472.60	24.01	20.684	0						
6,900.00	6,863.78	6,864.99	6,830.37	12.48	12.17	7.72	500.29	476.01	24.28	20.605	0						
6,919.60	6,883.38	6,880.60	6,844.34	12.51	12.19	8.51	501.67	477.32	24.34	20.607	0						
6,950.00	6,913.77	6,904.35	6,865.25	12.56	12.22	-80.06	504.13	479.37	24.76	20.360	0						
7,000.00	6,963.56	6,942.74	6,898.14	12.64	12.27	-77.76	508.82	483.91	24.91	20.429	0						
7,050.00	7,012.87	6,980.39	6,929.17	12.71	12.31	-75.54	514.17	489.13	25.04	20.537	0						
7,100.00	7,061.37	7,017.39	6,958.38	12.78	12.36	-73.42	520.04	494.90	25.14	20.683	0						
7,150.00	7,108.78	7,050.00	6,983.00	12.85	12.40	-71.55	526.32	501.11	25.21	20.878	0						
7,200.00	7,154.80	7,089.70	7,011.44	12.91	12.45	-69.50	532.81	507.54	25.27	21.088	0						
7,250.00	7,199.14	7,125.15	7,035.34	12.97	12.49	-67.71	539.43	514.16	25.28	21.342	0						
7,300.00	7,241.54	7,160.19	7,057.49	13.03	12.54	-66.05	546.06	520.81	25.25	21.629	0						
7,350.00	7,281.73	7,200.00	7,080.80	13.09	12.60	-64.38	552.60	527.40	25.20	21.931	0						
7,400.00	7,319.47	7,229.27	7,096.63	13.16	12.65	-63.13	558.86	533.77	25.09	22.272	0						
7,450.00	7,354.51	7,263.37	7,113.62	13.22	12.70	-61.86	564.84	539.87	24.97	22.617	0						
7,500.00	7,386.65	7,300.00	7,130.08	13.28	12.76	-60.67	570.44	545.60	24.85	22.958	0						
7,550.00	7,415.69	7,330.91	7,142.49	13.35	12.82	-59.73	575.56	550.86	24.70	23.302	0						
7,600.00	7,441.45	7,364.39	7,154.36	13.42	12.88	-58.86	580.16	555.59	24.56	23.618	0						
7,650.00	7,463.76	7,400.00	7,165.16	13.50	12.95	-58.10	584.17	559.72	24.45	23.892	0						
7,700.00	7,482.50	7,430.95	7,173.00	13.58	13.02	-57.52	587.55	563.20	24.35	24.130	0						
7,750.00	7,497.54	7,464.08	7,179.76	13.67	13.10	-57.04	590.25	565.96	24.29	24.299	0						
7,800.00	7,508.80	7,500.00	7,185.18	13.77	13.18	-56.68	592.28	567.98	24.29	24.381	0						
7,850.00	7,516.20	7,530.12	7,188.17	13.89	13.26	-56.47	593.55	569.24	24.32	24.409	0						
7,900.00	7,519.70	7,563.09	7,189.82	14.02	13.35	-56.38	594.11	569.70	24.41	24.336	0						
7,919.60	7,520.00	7,578.42	7,190.00	14.07	13.39	-56.37	594.13	569.65	24.48	24.268	0						
7,947.68	7,520.00	7,602.85	7,190.00	14.15	13.45	-56.37	594.12	569.51	24.62	24.136	0						
8,000.00	7,520.00	7,655.17	7,190.00	14.30	13.61	-56.37	594.12	569.21	24.92	23.845	0						
8,100.00	7,520.00	7,755.17	7,190.00	14.60	13.92	-56.37	594.12	568.60	25.52	23.278	0						
8,200.00	7,520.00	7,855.17	7,190.00	14.94	14.25	-56.37	594.12	567.95	26.17	22.700	0						
8,300.00	7,520.00	7,955.17	7,190.00	15.30	14.62	-56.37	594.12	567.26	26.86	22.117	0						
8,400.00	7,520.00	8,055.17	7,190.00	15.68	15.01	-56.37	594.12	566.53	27.59	21.535	0						
8,500.00	7,520.00	8,155.17	7,190.00	16.08	15.42	-56.37	594.12	565.77	28.35	20.957	0						
8,600.00	7,520.00	8,255.17	7,190.00	16.50	15.85	-56.37	594.12	564.98	29.14	20.387	0						
8,700.00	7,520.00	8,355.17	7,190.00	16.94	16.30	-56.37	594.12	564.16	29.96	19.829	0						
8,800.00	7,520.00	8,455.17	7,190.00	17.40	16.76	-56.37	594.12	563.31	30.81	19.283	0						
8,900.00	7,520.00	8,555.17	7,190.00	17.87	17.25	-56.37	594.12	562.44	31.68	18.752	0						
9,000.00	7,520.00	8,655.17	7,190.00	18.36	17.74	-56.37	594.12	561.55	32.58	18.237	0						
9,100.00	7,520.00	8,755.17	7,190.00	18.86	18.26	-56.37	594.12	560.63	33.49	17.739	0						

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



# Schlumberger

## Anticollision Risk Report



<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision		
9,200.00	7,520.00	8,855.17	7,190.00	19.38	18.78	-56.37	594.12	559.69	34.43	17.257	0			
9,300.00	7,520.00	8,955.17	7,190.00	19.90	19.31	-56.37	594.12	558.74	35.38	16.793	0			
9,400.00	7,520.00	9,055.17	7,190.00	20.44	19.86	-56.37	594.12	557.77	36.35	16.345	0			
9,500.00	7,520.00	9,155.17	7,190.00	20.99	20.42	-56.37	594.12	556.79	37.33	15.915	0			
9,600.00	7,520.00	9,255.17	7,190.00	21.54	20.98	-56.37	594.12	555.79	38.33	15.501	0			
9,700.00	7,520.00	9,355.17	7,190.00	22.11	21.55	-56.37	594.12	554.78	39.34	15.103	0			
9,800.00	7,520.00	9,455.17	7,190.00	22.68	22.13	-56.37	594.12	553.76	40.36	14.721	0			
9,900.00	7,520.00	9,555.17	7,190.00	23.26	22.72	-56.37	594.12	552.73	41.39	14.354	0			
10,000.00	7,520.00	9,655.17	7,190.00	23.84	23.31	-56.37	594.12	551.69	42.43	14.001	0			
10,100.00	7,520.00	9,755.17	7,190.00	24.43	23.91	-56.37	594.12	550.64	43.49	13.662	0			
10,200.00	7,520.00	9,855.17	7,190.00	25.03	24.52	-56.37	594.12	549.58	44.55	13.337	0			
10,300.00	7,520.00	9,955.17	7,190.00	25.63	25.13	-56.37	594.12	548.51	45.62	13.025	0			
10,400.00	7,520.00	10,055.17	7,190.00	26.24	25.74	-56.37	594.12	547.43	46.69	12.724	0			
10,500.00	7,520.00	10,155.17	7,190.00	26.85	26.36	-56.37	594.12	546.35	47.77	12.436	0			
10,600.00	7,520.00	10,255.17	7,190.00	27.47	26.99	-56.37	594.12	545.26	48.86	12.159	0			
10,700.00	7,520.00	10,355.17	7,190.00	28.09	27.61	-56.37	594.12	544.16	49.96	11.892	0			
10,800.00	7,520.00	10,455.17	7,190.00	28.72	28.24	-56.37	594.12	543.06	51.06	11.635	0			
10,900.00	7,520.00	10,555.17	7,190.00	29.34	28.88	-56.37	594.12	541.95	52.17	11.388	0			
11,000.00	7,520.00	10,655.17	7,190.00	29.98	29.52	-56.37	594.12	540.84	53.28	11.151	0			
11,100.00	7,520.00	10,755.17	7,190.00	30.61	30.16	-56.37	594.12	539.72	54.40	10.922	0			
11,200.00	7,520.00	10,855.17	7,190.00	31.25	30.80	-56.37	594.12	538.60	55.52	10.701	0			
11,300.00	7,520.00	10,955.17	7,190.00	31.89	31.45	-56.37	594.12	537.48	56.64	10.489	0			
11,400.00	7,520.00	11,055.17	7,190.00	32.53	32.09	-56.37	594.12	536.35	57.77	10.284	0			
11,500.00	7,520.00	11,155.17	7,190.00	33.18	32.74	-56.37	594.12	535.22	58.91	10.086	0			
11,600.00	7,520.00	11,255.17	7,190.00	33.83	33.40	-56.37	594.12	534.08	60.04	9.895	0			
11,700.00	7,520.00	11,355.17	7,190.00	34.48	34.05	-56.37	594.12	532.94	61.18	9.710	0			
11,800.00	7,520.00	11,455.17	7,190.00	35.13	34.71	-56.37	594.12	531.80	62.33	9.532	0			
11,900.00	7,520.00	11,555.17	7,190.00	35.78	35.37	-56.37	594.12	530.65	63.47	9.360	0			
12,000.00	7,520.00	11,655.17	7,190.00	36.44	36.03	-56.37	594.12	529.50	64.62	9.194	0			
12,100.00	7,520.00	11,755.17	7,190.00	37.10	36.69	-56.37	594.12	528.35	65.77	9.033	0			
12,200.00	7,520.00	11,855.17	7,190.00	37.75	37.35	-56.37	594.12	527.20	66.93	8.877	0			
12,300.00	7,520.00	11,955.17	7,190.00	38.42	38.02	-56.37	594.12	526.04	68.08	8.726	0			
12,400.00	7,520.00	12,055.17	7,190.00	39.08	38.68	-56.37	594.12	524.88	69.24	8.580	0			
12,500.00	7,520.00	12,155.17	7,190.00	39.74	39.35	-56.37	594.12	523.72	70.40	8.439	0			
12,600.00	7,520.00	12,255.17	7,190.00	40.41	40.02	-56.37	594.12	522.56	71.57	8.302	0			
12,700.00	7,520.00	12,355.17	7,190.00	41.07	40.69	-56.37	594.12	521.39	72.73	8.169	0			
12,800.00	7,520.00	12,455.17	7,190.00	41.74	41.36	-56.37	594.12	520.23	73.90	8.040	0			
12,900.00	7,520.00	12,555.17	7,190.00	42.41	42.03	-56.37	594.12	519.06	75.07	7.915	0			
13,000.00	7,520.00	12,655.17	7,190.00	43.08	42.70	-56.37	594.12	517.89	76.24	7.793	0			
13,100.00	7,520.00	12,755.17	7,190.00	43.75	43.38	-56.37	594.12	516.72	77.41	7.675	0			
13,200.00	7,520.00	12,855.17	7,190.00	44.42	44.05	-56.37	594.12	515.54	78.58	7.561	0			
13,300.00	7,520.00	12,955.17	7,190.00	45.10	44.73	-56.37	594.12	514.37	79.76	7.449	0			
13,400.00	7,520.00	13,055.17	7,190.00	45.77	45.41	-56.37	594.12	513.19	80.93	7.341	0			
13,500.00	7,520.00	13,155.17	7,190.00	46.44	46.08	-56.37	594.12	512.01	82.11	7.236	0			
13,600.00	7,520.00	13,255.17	7,190.00	47.12	46.76	-56.37	594.12	510.83	83.29	7.133	0			
13,700.00	7,520.00	13,355.17	7,190.00	47.80	47.44	-56.37	594.12	509.65	84.47	7.034	0			
13,800.00	7,520.00	13,455.17	7,190.00	48.47	48.12	-56.37	594.12	508.47	85.65	6.937	0			
13,900.00	7,520.00	13,555.17	7,190.00	49.15	48.80	-56.37	594.12	507.29	86.83	6.842	0			
14,000.00	7,520.00	13,655.17	7,190.00	49.83	49.48	-56.37	594.12	506.11	88.02	6.750	0			
14,100.00	7,520.00	13,755.17	7,190.00	50.51	50.16	-56.37	594.12	504.92	89.20	6.661	0			
14,200.00	7,520.00	13,855.17	7,190.00	51.19	50.84	-56.37	594.12	503.74	90.39	6.573	0			
14,300.00	7,520.00	13,955.17	7,190.00	51.87	51.53	-56.37	594.12	502.55	91.57	6.488	0			
14,400.00	7,520.00	14,055.17	7,190.00	52.55	52.21	-56.37	594.12	501.36	92.76	6.405	0			
14,500.00	7,520.00	14,155.17	7,190.00	53.23	52.89	-56.37	594.12	500.17	93.95	6.324	0			

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



**Schlumberger**  
Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision		
14,600.00	7,520.00	14,255.17	7,190.00	53.91	53.58	-56.37	594.12	498.99	95.14	6.245	0			
14,665.78	7,520.00	14,320.95	7,190.00	54.36	54.03	-56.37	594.12	498.20	95.92	6.194	0			
14,700.00	7,520.00	14,355.17	7,190.00	54.60	54.26	-56.37	594.12	497.80	96.33	6.168	0			
14,800.00	7,520.00	14,455.17	7,190.00	55.28	54.95	-56.37	594.12	496.60	97.52	6.092	0			
14,900.00	7,520.00	14,555.17	7,190.00	55.96	55.63	-56.37	594.12	495.41	98.71	6.019	0			
15,000.00	7,520.00	14,655.17	7,190.00	56.65	56.32	-56.37	594.12	494.22	99.90	5.947	0			
15,100.00	7,520.00	14,755.17	7,190.00	57.33	57.01	-56.37	594.12	493.03	101.09	5.877	0			
15,200.00	7,520.00	14,855.17	7,190.00	58.02	57.69	-56.37	594.12	491.83	102.29	5.808	0			
15,300.00	7,520.00	14,955.17	7,190.00	58.70	58.38	-56.37	594.12	490.64	103.48	5.741	0			
15,400.00	7,520.00	15,055.17	7,190.00	59.39	59.07	-56.37	594.12	489.44	104.68	5.676	0			
15,500.00	7,520.00	15,155.17	7,190.00	60.08	59.76	-56.37	594.12	488.25	105.87	5.612	0			
15,600.00	7,520.00	15,255.17	7,190.00	60.76	60.45	-56.37	594.12	487.05	107.07	5.549	0			
15,700.00	7,520.00	15,355.17	7,190.00	61.45	61.14	-56.37	594.12	485.86	108.27	5.488	0			
15,800.00	7,520.00	15,455.17	7,190.00	62.14	61.82	-56.37	594.12	484.66	109.46	5.428	0			
15,900.00	7,520.00	15,555.17	7,190.00	62.83	62.51	-56.37	594.12	483.46	110.66	5.369	0			
16,000.00	7,520.00	15,655.17	7,190.00	63.52	63.20	-56.37	594.12	482.26	111.86	5.311	0			
16,100.00	7,520.00	15,755.17	7,190.00	64.20	63.89	-56.37	594.12	481.06	113.06	5.255	0			
16,200.00	7,520.00	15,855.17	7,190.00	64.89	64.58	-56.37	594.12	479.86	114.26	5.200	0			
16,300.00	7,520.00	15,955.17	7,190.00	65.58	65.28	-56.37	594.12	478.66	115.46	5.146	0			
16,400.00	7,520.00	16,055.17	7,190.00	66.27	65.97	-56.37	594.12	477.46	116.66	5.093	0			
16,500.00	7,520.00	16,155.17	7,190.00	66.96	66.66	-56.37	594.12	476.26	117.86	5.041	0			
16,600.00	7,520.00	16,255.17	7,190.00	67.65	67.35	-56.37	594.12	475.06	119.06	4.990	0			
16,700.00	7,520.00	16,355.17	7,190.00	68.34	68.04	-56.37	594.12	473.86	120.26	4.940	0			
16,800.00	7,520.00	16,455.17	7,190.00	69.03	68.73	-56.37	594.12	472.66	121.47	4.891	0			
16,900.00	7,520.00	16,555.17	7,190.00	69.72	69.43	-56.37	594.12	471.45	122.67	4.843	0			
17,000.00	7,520.00	16,655.17	7,190.00	70.42	70.12	-56.37	594.12	470.25	123.87	4.796	0			
17,100.00	7,520.00	16,755.17	7,190.00	71.11	70.81	-56.37	594.12	469.05	125.08	4.750	0			
17,200.00	7,520.00	16,855.17	7,190.00	71.80	71.50	-56.37	594.12	467.84	126.28	4.705	0			
17,300.00	7,520.00	16,955.17	7,190.00	72.49	72.20	-56.37	594.12	466.64	127.48	4.660	0			
17,400.00	7,520.00	17,055.17	7,190.00	73.18	72.89	-56.37	594.12	465.44	128.69	4.617	0			
17,500.00	7,520.00	17,155.17	7,190.00	73.88	73.58	-56.37	594.12	464.23	129.89	4.574	0			
17,538.67	7,520.00	17,193.84	7,190.00	74.14	73.85	-56.37	594.12	463.77	130.36	4.558	0			
17,568.49	7,520.00	17,219.06	7,190.00	74.35	74.03	-56.38	594.14	463.45	130.69	4.546	0		SF	



# Schlumberger

## Anticollision Risk Report



<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Riskd Separation Factor	Probability of Collision		
0.00	0.00	0.00	0.00	0.00	0.00	0.13	27.71						CC, ES	
100.00	100.00	99.00	99.00	0.15	0.15	0.13	27.69	27.40	0.29	94.908	0			
200.00	200.00	199.00	199.00	0.32	0.32	0.13	27.69	27.05	0.64	43.228	0			
300.00	300.00	299.00	299.00	0.50	0.49	0.13	27.69	26.70	0.99	27.980	0			
400.00	400.00	399.00	399.00	0.67	0.67	0.13	27.69	26.35	1.34	20.684	0			
500.00	500.00	499.00	499.00	0.84	0.84	0.13	27.69	26.00	1.69	16.406	0			
600.00	600.00	599.00	599.00	1.02	1.02	0.13	27.69	25.65	2.04	13.594	0			
700.00	700.00	699.00	699.00	1.19	1.19	0.13	27.69	25.30	2.39	11.606	0			
800.00	800.00	799.00	799.00	1.37	1.37	0.13	27.69	24.95	2.73	10.124	0			
900.00	900.00	899.00	899.00	1.54	1.54	0.13	27.69	24.61	3.08	8.978	0			
1,000.00	999.98	998.98	998.98	1.72	1.72	130.20	28.78	25.35	3.43	8.386	0			
1,100.00	1,099.84	1,099.46	1,099.44	1.89	1.89	134.74	31.42	27.64	3.78	8.312	0			
1,200.00	1,199.45	1,200.07	1,199.90	2.07	2.07	137.78	34.71	30.58	4.13	8.409	0			
1,229.56	1,228.83	1,229.82	1,229.58	2.12	2.12	138.42	35.79	31.56	4.23	8.460	0			
1,300.00	1,298.81	1,300.79	1,300.24	2.25	2.25	138.72	37.89	33.41	4.48	8.457	0			
1,400.00	1,398.15	1,400.89	1,399.73	2.43	2.42	137.15	39.83	35.00	4.84	8.237	0			
1,500.00	1,497.49	1,500.86	1,499.10	2.61	2.60	135.69	41.78	36.59	5.19	8.047	0			
1,600.00	1,596.83	1,600.84	1,598.47	2.79	2.78	134.35	43.76	38.21	5.55	7.885	0			
1,700.00	1,696.16	1,700.81	1,697.84	2.97	2.96	133.14	45.75	39.84	5.91	7.743	0			
1,800.00	1,795.50	1,800.79	1,797.21	3.15	3.14	132.03	47.76	41.50	6.27	7.620	0			
1,900.00	1,894.84	1,900.76	1,896.58	3.33	3.32	131.00	49.80	43.17	6.63	7.512	0			
2,000.00	1,994.18	2,000.74	1,995.95	3.51	3.50	130.06	51.84	44.85	6.99	7.417	0			
2,100.00	2,093.52	2,100.72	2,095.32	3.70	3.68	129.19	53.90	46.55	7.35	7.332	0			
2,200.00	2,192.86	2,200.69	2,194.69	3.88	3.86	128.38	55.97	48.26	7.71	7.256	0			
2,300.00	2,292.20	2,300.67	2,294.06	4.06	4.05	127.63	58.05	49.97	8.08	7.187	0			
2,400.00	2,391.54	2,400.64	2,393.43	4.24	4.23	126.94	60.14	51.70	8.44	7.126	0			
2,500.00	2,490.88	2,500.62	2,492.80	4.43	4.41	126.29	62.24	53.43	8.80	7.070	0			
2,600.00	2,590.22	2,600.59	2,592.17	4.61	4.59	125.68	64.34	55.17	9.17	7.019	0			
2,700.00	2,689.55	2,700.57	2,691.54	4.79	4.77	125.11	66.45	56.92	9.53	6.972	0			
2,800.00	2,788.89	2,800.55	2,790.91	4.98	4.96	124.58	68.57	58.68	9.90	6.929	0			
2,900.00	2,888.23	2,900.52	2,890.28	5.16	5.14	124.07	70.70	60.44	10.26	6.890	0			
3,000.00	2,987.57	3,000.50	2,989.65	5.34	5.32	123.60	72.82	62.20	10.63	6.854	0			
3,100.00	3,086.91	3,100.47	3,089.03	5.53	5.50	123.16	74.96	63.97	10.99	6.820	0			
3,200.00	3,186.25	3,200.45	3,188.40	5.71	5.69	122.73	77.10	65.74	11.36	6.789	0			
3,300.00	3,285.59	3,300.42	3,287.77	5.89	5.87	122.34	79.24	67.52	11.72	6.760	0			
3,400.00	3,384.93	3,400.40	3,387.14	6.08	6.05	121.96	81.38	69.30	12.09	6.733	0			
3,500.00	3,484.27	3,500.37	3,486.51	6.26	6.24	121.60	83.53	71.08	12.45	6.708	0			
3,600.00	3,583.61	3,600.35	3,585.88	6.45	6.42	121.26	85.68	72.87	12.82	6.684	0			
3,700.00	3,682.95	3,700.33	3,685.25	6.63	6.60	120.94	87.84	74.65	13.18	6.662	0			
3,800.00	3,782.28	3,800.30	3,784.62	6.81	6.79	120.63	90.00	76.45	13.55	6.642	0			
3,900.00	3,881.62	3,900.28	3,883.99	7.00	6.97	120.34	92.16	78.24	13.92	6.622	0			
4,000.00	3,980.96	4,000.25	3,983.36	7.18	7.15	120.06	94.32	80.04	14.28	6.604	0			
4,100.00	4,080.30	4,100.23	4,082.73	7.37	7.33	119.79	96.48	81.83	14.65	6.586	0			
4,200.00	4,179.64	4,200.20	4,182.10	7.55	7.52	119.53	98.65	83.63	15.02	6.570	0			
4,300.00	4,278.98	4,300.18	4,281.47	7.73	7.70	119.29	100.82	85.43	15.38	6.554	0			
4,400.00	4,378.32	4,400.15	4,380.84	7.92	7.88	119.05	102.99	87.24	15.75	6.539	0			
4,500.00	4,477.66	4,500.13	4,480.21	8.10	8.07	118.83	105.16	89.04	16.12	6.525	0			
4,600.00	4,577.00	4,600.11	4,579.58	8.29	8.25	118.61	107.33	90.85	16.48	6.512	0			
4,700.00	4,676.34	4,700.08	4,678.95	8.47	8.43	118.41	109.51	92.66	16.85	6.499	0			
4,800.00	4,775.67	4,800.06	4,778.32	8.66	8.62	118.21	111.68	94.47	17.22	6.487	0			
4,900.00	4,875.01	4,900.03	4,877.69	8.84	8.80	118.02	113.86	96.28	17.58	6.476	0			
5,000.00	4,974.35	5,000.01	4,977.06	9.02	8.98	117.83	116.04	98.09	17.95	6.465	0			
5,100.00	5,073.69	5,099.98	5,076.43	9.21	9.17	117.65	118.22	99.90	18.32	6.454	0			
5,200.00	5,173.03	5,199.96	5,175.80	9.39	9.35	117.48	120.40	101.72	18.68	6.444	0			

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





# Schlumberger

## Anticollision Risk Report



<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision		
5,300.00	5,272.37	5,299.93	5,275.17	9.58	9.53	117.32	122.58	103.53	19.05	6.435	0			
5,400.00	5,371.71	5,399.91	5,374.54	9.76	9.72	117.16	124.76	105.35	19.42	6.425	0			
5,500.00	5,471.05	5,499.89	5,473.91	9.95	9.90	117.01	126.95	107.16	19.78	6.417	0			
5,600.00	5,570.39	5,599.86	5,573.28	10.13	10.08	116.86	129.13	108.98	20.15	6.408	0			
5,700.00	5,669.73	5,699.84	5,672.65	10.31	10.27	116.71	131.32	110.80	20.52	6.400	0			
5,800.00	5,769.07	5,799.81	5,772.02	10.50	10.45	116.58	133.50	112.62	20.89	6.392	0			
5,900.00	5,868.40	5,899.79	5,871.39	10.68	10.63	116.44	135.69	114.44	21.25	6.385	0			
6,000.00	5,967.74	5,999.76	5,970.76	10.87	10.82	116.31	137.88	116.26	21.62	6.377	0			
6,100.00	6,067.08	6,099.74	6,070.13	11.05	11.00	116.18	140.07	118.08	21.99	6.370	0			
6,200.00	6,166.42	6,199.32	6,169.12	11.24	11.18	116.13	142.30	119.95	22.35	6.366	0			
6,300.00	6,265.76	6,297.91	6,267.38	11.42	11.36	117.06	145.24	122.54	22.70	6.398	0			
6,400.00	6,365.10	6,396.19	6,365.54	11.60	11.53	119.19	149.26	126.22	23.04	6.480	0			
6,490.04	6,454.55	6,484.21	6,453.55	11.77	11.68	122.00	154.08	130.76	23.32	6.606	0			
6,500.00	6,464.44	6,494.10	6,463.44	11.79	11.69	122.37	154.68	131.33	23.36	6.623	0			
6,600.00	6,563.99	6,593.74	6,563.08	11.97	11.86	125.32	159.93	136.25	23.68	6.755	0			
6,700.00	6,663.81	6,692.54	6,661.36	12.14	12.01	130.25	163.65	139.69	23.96	6.830	0			
6,800.00	6,763.78	6,786.00	6,751.97	12.31	12.14	138.60	168.50	144.31	24.20	6.964	0			
6,819.60	6,783.38	6,803.48	6,768.50	12.34	12.17	13.19	169.98	145.77	24.21	7.022	0			
6,900.00	6,863.78	6,871.56	6,831.22	12.48	12.25	21.52	180.09	155.55	24.54	7.339	0			
6,919.60	6,883.38	6,887.21	6,845.21	12.51	12.27	23.60	183.79	159.16	24.63	7.463	0			
6,950.00	6,913.77	6,911.01	6,866.16	12.56	12.30	-62.80	190.28	165.75	24.53	7.757	0			
7,000.00	6,963.56	6,950.00	6,899.51	12.64	12.35	-57.36	202.18	177.61	24.57	8.229	0			
7,050.00	7,012.87	6,987.19	6,930.12	12.71	12.39	-52.70	215.15	190.59	24.56	8.761	0			
7,100.00	7,061.37	7,024.25	6,959.33	12.78	12.44	-48.59	228.72	204.25	24.47	9.345	0			
7,150.00	7,108.78	7,060.71	6,986.74	12.85	12.48	-45.05	242.53	218.22	24.31	9.976	0			
7,200.00	7,154.80	7,100.00	7,014.68	12.91	12.53	-41.80	256.32	232.25	24.07	10.648	0			
7,250.00	7,199.14	7,132.15	7,036.23	12.97	12.57	-39.36	269.77	246.02	23.75	11.358	0			
7,300.00	7,241.54	7,167.23	7,058.35	13.03	12.62	-37.09	282.77	259.41	23.36	12.103	0			
7,350.00	7,281.73	7,200.00	7,077.63	13.09	12.66	-35.22	295.17	272.26	22.91	12.882	0			
7,400.00	7,319.47	7,236.36	7,097.39	13.16	12.71	-33.49	306.81	284.38	22.43	13.680	0			
7,450.00	7,354.51	7,270.49	7,114.33	13.22	12.76	-32.06	317.63	295.72	21.91	14.496	0			
7,500.00	7,386.65	7,300.00	7,127.68	13.28	12.80	-30.93	327.57	306.20	21.37	15.328	0			
7,550.00	7,415.69	7,338.07	7,143.07	13.35	12.86	-29.82	336.44	315.58	20.86	16.126	0			
7,600.00	7,441.45	7,371.57	7,154.87	13.42	12.92	-28.97	344.33	323.96	20.37	16.902	0			
7,650.00	7,463.76	7,400.00	7,163.58	13.50	12.97	-28.31	351.18	331.27	19.92	17.634	0			
7,700.00	7,482.50	7,438.15	7,173.36	13.58	13.06	-27.69	356.82	337.26	19.56	18.238	0			
7,750.00	7,497.54	7,471.28	7,180.04	13.67	13.14	-27.25	361.37	342.08	19.29	18.736	0			
7,800.00	7,508.80	7,500.00	7,184.46	13.77	13.21	-26.95	364.79	345.70	19.09	19.105	0			
7,850.00	7,516.20	7,537.34	7,188.29	13.89	13.31	-26.73	366.95	347.89	19.06	19.255	0			
7,900.00	7,519.70	7,570.31	7,189.85	14.02	13.39	-26.63	367.96	348.83	19.13	19.236	0			
7,919.60	7,520.00	7,584.04	7,190.00	14.07	13.43	-26.63	368.03	348.84	19.20	19.173	0			
7,946.82	7,520.00	7,610.03	7,190.00	14.14	13.50	-26.63	368.03	348.68	19.35	19.021	0			
8,000.00	7,520.00	7,663.22	7,190.00	14.30	13.66	-26.63	368.03	348.35	19.67	18.706	0			
8,100.00	7,520.00	7,763.22	7,190.00	14.60	13.97	-26.63	368.03	347.74	20.29	18.135	0			
8,200.00	7,520.00	7,863.22	7,190.00	14.94	14.31	-26.63	368.03	347.10	20.93	17.585	0			
8,300.00	7,520.00	7,963.22	7,190.00	15.30	14.68	-26.63	368.03	346.45	21.58	17.056	0			
8,400.00	7,520.00	8,063.22	7,190.00	15.68	15.06	-26.63	368.03	345.79	22.24	16.549	0			
8,500.00	7,520.00	8,163.22	7,190.00	16.08	15.47	-26.63	368.03	345.12	22.91	16.062	0			
8,600.00	7,520.00	8,263.22	7,190.00	16.50	15.90	-26.63	368.03	344.43	23.60	15.595	0			
8,700.00	7,520.00	8,363.22	7,190.00	16.94	16.35	-26.63	368.03	343.73	24.29	15.149	0			
8,800.00	7,520.00	8,463.22	7,190.00	17.40	16.82	-26.63	368.03	343.03	25.00	14.722	0			
8,900.00	7,520.00	8,563.22	7,190.00	17.87	17.30	-26.63	368.03	342.32	25.71	14.314	0			
9,000.00	7,520.00	8,663.22	7,190.00	18.36	17.80	-26.63	368.03	341.60	26.43	13.923	0			
9,100.00	7,520.00	8,763.22	7,190.00	18.86	18.31	-26.63	368.03	340.87	27.16	13.550	0			

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



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision		
9,200.00	7,520.00	8,863.22	7,190.00	19.38	18.83	-26.63	368.03	340.13	27.89	13.193	0			
9,300.00	7,520.00	8,963.22	7,190.00	19.90	19.37	-26.63	368.03	339.39	28.64	12.852	0			
9,400.00	7,520.00	9,063.22	7,190.00	20.44	19.91	-26.63	368.03	338.64	29.38	12.526	0			
9,500.00	7,520.00	9,163.22	7,190.00	20.99	20.47	-26.63	368.03	337.89	30.13	12.213	0			
9,600.00	7,520.00	9,263.22	7,190.00	21.54	21.03	-26.63	368.03	337.14	30.89	11.914	0			
9,700.00	7,520.00	9,363.22	7,190.00	22.11	21.60	-26.62	368.03	336.38	31.65	11.628	0			
9,800.00	7,520.00	9,463.22	7,190.00	22.68	22.18	-26.62	368.03	335.61	32.42	11.353	0			
9,900.00	7,520.00	9,563.22	7,190.00	23.26	22.77	-26.62	368.02	334.84	33.18	11.090	0			
10,000.00	7,520.00	9,663.22	7,190.00	23.84	23.36	-26.62	368.02	334.07	33.96	10.838	0			
10,100.00	7,520.00	9,763.22	7,190.00	24.43	23.96	-26.62	368.02	333.29	34.73	10.596	0			
10,200.00	7,520.00	9,863.22	7,190.00	25.03	24.56	-26.62	368.02	332.51	35.51	10.363	0			
10,300.00	7,520.00	9,963.22	7,190.00	25.63	25.17	-26.62	368.02	331.73	36.29	10.140	0			
10,400.00	7,520.00	10,063.22	7,190.00	26.24	25.79	-26.62	368.02	330.94	37.08	9.926	0			
10,500.00	7,520.00	10,163.22	7,190.00	26.85	26.41	-26.62	368.02	330.16	37.87	9.719	0			
10,600.00	7,520.00	10,263.22	7,190.00	27.47	27.03	-26.62	368.02	329.36	38.66	9.521	0			
10,700.00	7,520.00	10,363.22	7,190.00	28.09	27.66	-26.62	368.02	328.57	39.45	9.329	0			
10,800.00	7,520.00	10,463.22	7,190.00	28.72	28.29	-26.62	368.02	327.78	40.24	9.145	0			
10,900.00	7,520.00	10,563.22	7,190.00	29.34	28.92	-26.62	368.02	326.98	41.04	8.968	0			
11,000.00	7,520.00	10,663.22	7,190.00	29.98	29.56	-26.62	368.02	326.18	41.84	8.797	0			
11,100.00	7,520.00	10,763.22	7,190.00	30.61	30.20	-26.62	368.02	325.38	42.64	8.632	0			
11,200.00	7,520.00	10,863.22	7,190.00	31.25	30.84	-26.62	368.02	324.58	43.44	8.472	0			
11,300.00	7,520.00	10,963.22	7,190.00	31.89	31.48	-26.62	368.01	323.77	44.24	8.318	0			
11,400.00	7,520.00	11,063.22	7,190.00	32.53	32.13	-26.62	368.01	322.97	45.05	8.170	0			
11,500.00	7,520.00	11,163.22	7,190.00	33.18	32.78	-26.62	368.01	322.16	45.85	8.026	0			
11,600.00	7,520.00	11,263.22	7,190.00	33.83	33.43	-26.62	368.01	321.35	46.66	7.887	0			
11,700.00	7,520.00	11,363.22	7,190.00	34.48	34.09	-26.62	368.01	320.54	47.47	7.753	0			
11,800.00	7,520.00	11,463.22	7,190.00	35.13	34.74	-26.62	368.01	319.73	48.28	7.623	0			
11,900.00	7,520.00	11,563.22	7,190.00	35.78	35.40	-26.62	368.01	318.92	49.09	7.497	0			
12,000.00	7,520.00	11,663.22	7,190.00	36.44	36.06	-26.62	368.01	318.11	49.90	7.375	0			
12,100.00	7,520.00	11,763.22	7,190.00	37.10	36.72	-26.62	368.01	317.29	50.71	7.256	0			
12,200.00	7,520.00	11,863.22	7,190.00	37.75	37.39	-26.62	368.01	316.48	51.53	7.142	0			
12,300.00	7,520.00	11,963.22	7,190.00	38.42	38.05	-26.62	368.00	315.66	52.34	7.030	0			
12,400.00	7,520.00	12,063.22	7,190.00	39.08	38.72	-26.62	368.00	314.84	53.16	6.923	0			
12,500.00	7,520.00	12,163.22	7,190.00	39.74	39.38	-26.62	368.00	314.02	53.98	6.818	0			
12,600.00	7,520.00	12,263.22	7,190.00	40.41	40.05	-26.62	368.00	313.21	54.80	6.716	0			
12,700.00	7,520.00	12,363.22	7,190.00	41.07	40.72	-26.62	368.00	312.39	55.61	6.617	0			
12,800.00	7,520.00	12,463.22	7,190.00	41.74	41.39	-26.62	368.00	311.56	56.43	6.521	0			
12,900.00	7,520.00	12,563.22	7,190.00	42.41	42.06	-26.62	368.00	310.74	57.25	6.427	0			
13,000.00	7,520.00	12,663.22	7,190.00	43.08	42.74	-26.62	368.00	309.92	58.07	6.337	0			
13,100.00	7,520.00	12,763.22	7,190.00	43.75	43.41	-26.62	367.99	309.10	58.90	6.248	0			
13,200.00	7,520.00	12,863.22	7,190.00	44.42	44.08	-26.61	367.99	308.27	59.72	6.162	0			
13,300.00	7,520.00	12,963.22	7,190.00	45.10	44.76	-26.61	367.99	307.45	60.54	6.078	0			
13,400.00	7,520.00	13,063.22	7,190.00	45.77	45.44	-26.61	367.99	306.63	61.36	5.997	0			
13,500.00	7,520.00	13,163.23	7,190.00	46.44	46.11	-26.61	367.99	305.80	62.19	5.917	0			
13,600.00	7,520.00	13,263.23	7,190.00	47.12	46.79	-26.61	367.99	304.97	63.01	5.840	0			
13,700.00	7,520.00	13,363.23	7,190.00	47.80	47.47	-26.61	367.98	304.15	63.84	5.764	0			
13,800.00	7,520.00	13,463.23	7,190.00	48.47	48.15	-26.61	367.98	303.32	64.66	5.691	0			
13,900.00	7,520.00	13,563.23	7,190.00	49.15	48.83	-26.61	367.98	302.49	65.49	5.619	0			
14,000.00	7,520.00	13,663.23	7,190.00	49.83	49.51	-26.61	367.98	301.67	66.32	5.549	0			
14,100.00	7,520.00	13,763.23	7,190.00	50.51	50.19	-26.61	367.98	300.84	67.14	5.481	0			
14,200.00	7,520.00	13,863.23	7,190.00	51.19	50.87	-26.61	367.98	300.01	67.97	5.414	0			
14,300.00	7,520.00	13,963.23	7,190.00	51.87	51.56	-26.61	367.98	299.18	68.80	5.349	0			
14,400.00	7,520.00	14,063.23	7,190.00	52.55	52.24	-26.61	367.97	298.35	69.62	5.285	0			
14,500.00	7,520.00	14,163.23	7,190.00	53.23	52.92	-26.61	367.97	297.52	70.45	5.223	0			

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



**Schlumberger**  
Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													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 (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision		
14,600.00	7,520.00	14,263.23	7,190.00	53.91	53.61	-26.61	367.97	296.69	71.28	5.162	0			
14,700.00	7,520.00	14,363.23	7,190.00	54.60	54.29	-26.61	367.97	295.86	72.11	5.103	0			
14,800.00	7,520.00	14,463.23	7,190.00	55.28	54.98	-26.61	367.97	295.03	72.94	5.045	0			
14,900.00	7,520.00	14,563.23	7,190.00	55.96	55.66	-26.61	367.96	294.19	73.77	4.988	0			
15,000.00	7,520.00	14,663.23	7,190.00	56.65	56.35	-26.61	367.96	293.36	74.60	4.932	0			
15,100.00	7,520.00	14,763.23	7,190.00	57.33	57.03	-26.60	367.96	292.53	75.43	4.878	0			
15,200.00	7,520.00	14,863.23	7,190.00	58.02	57.72	-26.60	367.96	291.70	76.26	4.825	0			
15,300.00	7,520.00	14,963.23	7,190.00	58.70	58.41	-26.60	367.96	290.87	77.09	4.773	0			
15,400.00	7,520.00	15,063.23	7,190.00	59.39	59.10	-26.60	367.95	290.03	77.92	4.722	0			
15,500.00	7,520.00	15,163.23	7,190.00	60.08	59.78	-26.60	367.95	289.20	78.75	4.672	0			
15,600.00	7,520.00	15,263.23	7,190.00	60.76	60.47	-26.60	367.95	288.36	79.59	4.623	0			
15,700.00	7,520.00	15,363.23	7,190.00	61.45	61.16	-26.60	367.95	287.53	80.42	4.575	0			
15,800.00	7,520.00	15,463.23	7,190.00	62.14	61.85	-26.60	367.95	286.70	81.25	4.529	0			
15,900.00	7,520.00	15,563.23	7,190.00	62.83	62.54	-26.60	367.94	285.86	82.08	4.483	0			
16,000.00	7,520.00	15,663.23	7,190.00	63.52	63.23	-26.60	367.94	285.03	82.91	4.438	0			
16,100.00	7,520.00	15,763.23	7,190.00	64.20	63.92	-26.60	367.94	284.19	83.75	4.393	0			
16,200.00	7,520.00	15,863.23	7,190.00	64.89	64.61	-26.60	367.94	283.36	84.58	4.350	0			
16,300.00	7,520.00	15,963.23	7,190.00	65.58	65.30	-26.60	367.94	282.52	85.41	4.308	0			
16,400.00	7,520.00	16,063.23	7,190.00	66.27	65.99	-26.60	367.93	281.69	86.25	4.266	0			
16,500.00	7,520.00	16,163.23	7,190.00	66.96	66.68	-26.60	367.93	280.85	87.08	4.225	0			
16,600.00	7,520.00	16,263.23	7,190.00	67.65	67.37	-26.59	367.93	280.01	87.91	4.185	0			
16,700.00	7,520.00	16,363.23	7,190.00	68.34	68.07	-26.59	367.93	279.18	88.75	4.146	0			
16,800.00	7,520.00	16,463.23	7,190.00	69.03	68.76	-26.59	367.92	278.34	89.58	4.107	0			
16,900.00	7,520.00	16,563.23	7,190.00	69.72	69.45	-26.59	367.92	277.51	90.42	4.069	0			
17,000.00	7,520.00	16,663.23	7,190.00	70.42	70.14	-26.59	367.92	276.67	91.25	4.032	0			
17,100.00	7,520.00	16,763.23	7,190.00	71.11	70.83	-26.59	367.92	275.83	92.08	3.995	0			
17,200.00	7,520.00	16,863.23	7,190.00	71.80	71.53	-26.59	367.91	274.99	92.92	3.959	0			
17,300.00	7,520.00	16,963.23	7,190.00	72.49	72.22	-26.59	367.91	274.16	93.75	3.924	0			
17,400.00	7,520.00	17,063.23	7,190.00	73.18	72.91	-26.59	367.91	273.32	94.59	3.890	0			
17,500.00	7,520.00	17,163.23	7,190.00	73.88	73.61	-26.59	367.91	272.48	95.42	3.855	0			
17,550.17	7,520.00	17,213.40	7,190.00	74.22	73.95	-26.59	367.91	272.07	95.84	3.839	0			
17,568.49	7,520.00	17,230.36	7,190.00	74.35	74.07	-26.59	367.91	271.92	95.99	3.833	0	SF		

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

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to KB @ 5052.00usft (Xtreme 7 - 16')

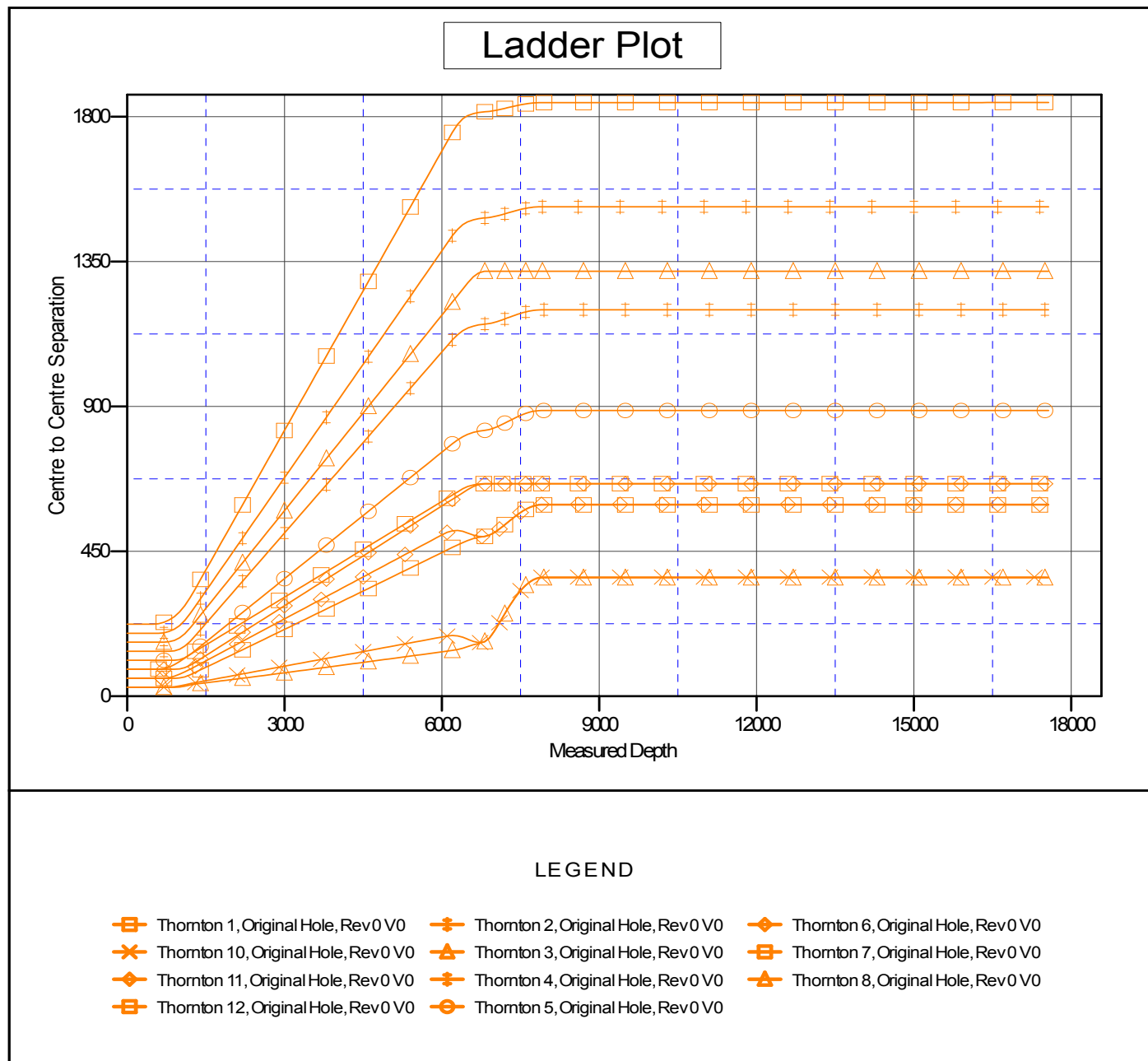
Offset Depths are relative to Offset Datum

Central Meridian is 105° 30' 0.000 W °

Coordinates are relative to: Thornton 9

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.45°



<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 9
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5052.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to KB @ 5052.00usft (Xtreme 7 - 16')

Offset Depths are relative to Offset Datum

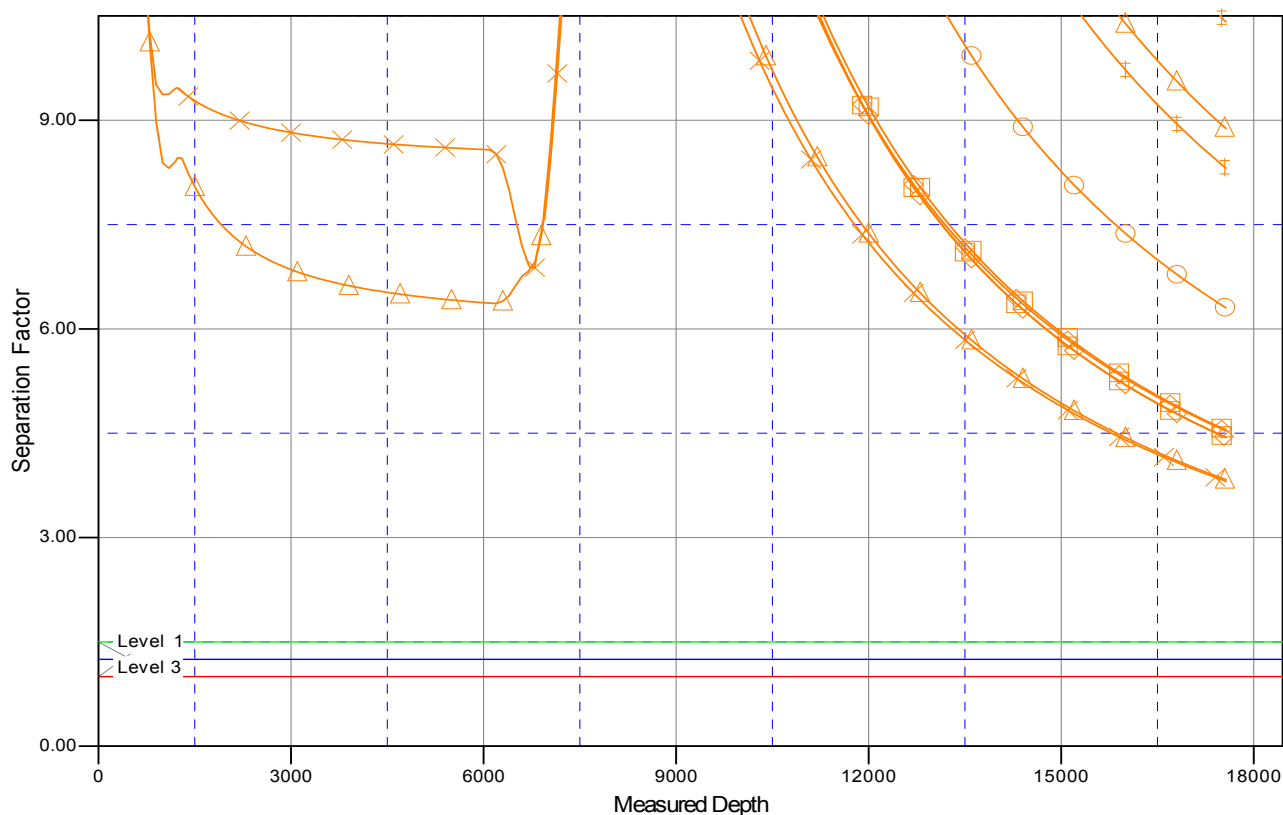
Central Meridian is 105° 30' 0.000 W °

Coordinates are relative to: Thornton 9

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.45°

## Separation Factor Plot



### LEGEND

- Thornton 1, Original Hole, Rev0 V0
- Thornton 2, Original Hole, Rev0 V0
- Thornton 6, Original Hole, Rev0 V0
- Thornton 10, Original Hole, Rev0 V0
- Thornton 3, Original Hole, Rev0 V0
- Thornton 7, Original Hole, Rev0 V0
- Thornton 11, Original Hole, Rev0 V0
- Thornton 4, Original Hole, Rev0 V0
- Thornton 8, Original Hole, Rev0 V0
- Thornton 12, Original Hole, Rev0 V0
- Thornton 5, Original Hole, Rev0 V0