



# **Extraction Oil & Gas**

**Weld Co., Co  
Sec.08-T07N-R66W  
Thornton 11**

**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 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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	Rev 0		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations Interval 1.00usft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 25,000.00usft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

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

Survey Tool Program		Date	6/21/2014		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	17,297.69	Rev 0 (Original Hole)	Pathfinder	Pathfinder MWD	

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Sec.08-T07N-R66W						
Thornton 1 - Original Hole - Rev 0	500.00	495.00	279.81	278.13	166.479 CC, ES	
Thornton 1 - Original Hole - Rev 0	17,297.69	17,324.42	2,310.12	2,161.88	15.583 SF	
Thornton 10 - Original Hole - Rev 0	700.00	699.00	28.05	25.67	11.758 CC, ES	
Thornton 10 - Original Hole - Rev 0	17,297.69	17,254.82	330.07	181.77	2.226 SF	
Thornton 12 - Original Hole - Rev 0	566.33	567.33	28.05	26.13	14.590 CC	
Thornton 12 - Original Hole - Rev 0	600.00	600.99	28.05	26.01	13.750 ES	
Thornton 12 - Original Hole - Rev 0	17,297.69	17,644.13	368.07	272.33	3.844 SF	
Thornton 2 - Original Hole - Rev 0	600.00	595.00	251.74	249.71	124.023 CC, ES	
Thornton 2 - Original Hole - Rev 0	17,297.69	17,273.45	1,980.05	1,831.84	13.360 SF	
Thornton 3 - Original Hole - Rev 0	700.00	695.00	224.06	221.68	94.187 CC, ES	
Thornton 3 - Original Hole - Rev 0	17,297.69	17,582.23	1,845.67	1,698.98	12.582 SF	
Thornton 4 - Original Hole - Rev 0	700.00	695.00	196.01	193.63	82.394 CC, ES	
Thornton 4 - Original Hole - Rev 0	17,297.69	17,242.86	1,649.98	1,501.79	11.134 SF	
Thornton 5 - Original Hole - Rev 0	700.00	696.00	167.96	165.58	70.552 CC, ES	
Thornton 5 - Original Hole - Rev 0	17,297.69	17,222.47	1,319.91	1,171.72	8.906 SF	
Thornton 6 - Original Hole - Rev 0	700.00	697.00	139.90	137.52	58.723 CC, ES	
Thornton 6 - Original Hole - Rev 0	17,297.69	17,547.64	1,201.93	1,057.45	8.319 SF	
Thornton 7 - Original Hole - Rev 0	700.00	697.00	111.85	109.47	46.948 CC, ES	
Thornton 7 - Original Hole - Rev 0	17,297.69	17,219.06	989.84	841.63	6.679 SF	
Thornton 8 - Original Hole - Rev 0	700.00	697.00	83.79	81.41	35.172 CC, ES	
Thornton 8 - Original Hole - Rev 0	17,297.69	17,230.36	659.78	511.53	4.450 SF	
Thornton 9 - Original Hole - Rev 0	700.00	698.00	56.10	53.72	23.533 CC, ES	
Thornton 9 - Original Hole - Rev 0	17,297.69	17,568.49	596.11	464.52	4.530 SF	

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



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
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<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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				
0.00	0.00	0.00	0.00	0.00	0.00	0.01	279.85									
100.00	100.00	95.00	95.00	0.15	0.14	0.01	279.81	279.52	0.29	978.748	0					
200.00	200.00	195.00	195.00	0.32	0.31	0.01	279.81	279.18	0.63	441.650	0					
300.00	300.00	295.00	295.00	0.50	0.49	0.01	279.81	278.83	0.98	284.759	0					
400.00	400.00	395.00	395.00	0.67	0.66	0.01	279.81	278.48	1.33	210.117	0					
500.00	500.00	495.00	495.00	0.84	0.84	0.01	279.81	278.13	1.68	166.479	0		CC, ES			
600.00	600.00	587.11	587.10	1.02	1.00	-0.09	281.14	279.13	2.02	139.448	0					
700.00	700.00	678.63	678.51	1.19	1.16	-0.42	285.44	283.09	2.35	121.425	0					
800.00	799.98	769.68	769.28	1.37	1.32	147.30	294.16	291.48	2.68	109.576	0					
900.00	899.84	859.78	858.84	1.54	1.48	146.94	308.73	305.72	3.02	102.394	0					
1,000.00	999.45	948.50	946.67	1.72	1.64	146.65	329.04	325.70	3.34	98.462	0					
1,100.00	1,098.70	1,035.42	1,032.31	1.90	1.81	146.43	354.97	351.30	3.66	96.886	0					
1,200.00	1,197.47	1,120.16	1,115.33	2.08	1.97	146.25	386.35	382.37	3.98	97.032	0					
1,228.56	1,225.57	1,143.92	1,138.51	2.14	2.02	146.20	396.30	392.22	4.07	97.330	0					
1,300.00	1,295.79	1,203.65	1,196.60	2.27	2.14	146.34	422.33	418.02	4.31	98.072	0					
1,400.00	1,394.10	1,296.50	1,286.73	2.46	2.32	146.50	459.44	454.79	4.65	98.764	0					
1,500.00	1,492.40	1,389.35	1,376.86	2.65	2.51	146.63	496.56	491.56	5.00	99.336	0					
1,600.00	1,590.70	1,482.21	1,466.99	2.84	2.70	146.75	533.68	528.33	5.35	99.816	0					
1,700.00	1,689.00	1,575.06	1,557.12	3.03	2.89	146.85	570.80	565.10	5.70	100.224	0					
1,800.00	1,787.31	1,667.91	1,647.25	3.23	3.09	146.94	607.92	601.87	6.04	100.575	0					
1,900.00	1,885.61	1,760.76	1,737.38	3.42	3.28	147.01	645.04	638.65	6.39	100.878	0					
2,000.00	1,983.91	1,853.61	1,827.51	3.62	3.47	147.08	682.16	675.42	6.74	101.144	0					
2,100.00	2,082.22	1,946.46	1,917.64	3.81	3.67	147.14	719.29	712.19	7.10	101.378	0					
2,200.00	2,180.52	2,039.31	2,007.77	4.01	3.86	147.20	756.41	748.97	7.45	101.585	0					
2,300.00	2,278.82	2,132.16	2,097.90	4.20	4.06	147.25	793.54	785.74	7.80	101.770	0					
2,400.00	2,377.12	2,225.01	2,188.03	4.40	4.26	147.30	830.67	822.52	8.15	101.936	0					
2,500.00	2,475.43	2,317.86	2,278.16	4.60	4.45	147.34	867.79	859.29	8.50	102.085	0					
2,600.00	2,573.73	2,410.71	2,368.29	4.79	4.65	147.38	904.92	896.07	8.85	102.221	0					
2,700.00	2,672.03	2,503.56	2,458.42	4.99	4.85	147.41	942.05	932.84	9.20	102.344	0					
2,800.00	2,770.33	2,596.42	2,548.55	5.19	5.04	147.45	979.17	969.62	9.56	102.456	0					
2,900.00	2,868.64	2,689.27	2,638.68	5.38	5.24	147.48	1,016.30	1,006.39	9.91	102.559	0					
3,000.00	2,966.94	2,782.12	2,728.81	5.58	5.44	147.51	1,053.43	1,043.17	10.26	102.654	0					
3,100.00	3,065.24	2,874.97	2,818.94	5.78	5.64	147.53	1,090.56	1,079.94	10.61	102.742	0					
3,200.00	3,163.55	2,967.82	2,909.07	5.98	5.83	147.56	1,127.69	1,116.72	10.97	102.822	0					
3,300.00	3,261.85	3,060.67	2,999.20	6.17	6.03	147.58	1,164.82	1,153.50	11.32	102.897	0					
3,400.00	3,360.15	3,153.52	3,089.33	6.37	6.23	147.60	1,201.95	1,190.27	11.67	102.967	0					
3,500.00	3,458.45	3,246.37	3,179.46	6.57	6.43	147.62	1,239.07	1,227.05	12.03	103.032	0					
3,600.00	3,556.76	3,339.22	3,269.59	6.77	6.63	147.64	1,276.20	1,263.82	12.38	103.093	0					
3,700.00	3,655.06	3,432.07	3,359.72	6.97	6.83	147.66	1,313.33	1,300.60	12.73	103.150	0					
3,800.00	3,753.36	3,524.92	3,449.85	7.17	7.03	147.68	1,350.46	1,337.38	13.09	103.203	0					
3,900.00	3,851.67	3,617.77	3,539.98	7.36	7.22	147.69	1,387.59	1,374.15	13.44	103.253	0					
4,000.00	3,949.97	3,710.62	3,630.11	7.56	7.42	147.71	1,424.72	1,410.93	13.79	103.300	0					
4,100.00	4,048.27	3,803.48	3,720.24	7.76	7.62	147.72	1,461.85	1,447.71	14.15	103.345	0					
4,200.00	4,146.57	3,896.33	3,810.37	7.96	7.82	147.74	1,498.98	1,484.48	14.50	103.387	0					
4,300.00	4,244.88	3,989.18	3,900.50	8.16	8.02	147.75	1,536.11	1,521.26	14.85	103.427	0					
4,400.00	4,343.18	4,082.03	3,990.63	8.36	8.22	147.76	1,573.24	1,558.03	15.21	103.464	0					
4,500.00	4,441.48	4,174.88	4,080.76	8.55	8.42	147.78	1,610.37	1,594.81	15.56	103.500	0					
4,600.00	4,539.78	4,267.73	4,170.89	8.75	8.62	147.79	1,647.50	1,631.59	15.91	103.534	0					
4,700.00	4,638.09	4,360.58	4,261.02	8.95	8.82	147.80	1,684.63	1,668.36	16.27	103.566	0					
4,800.00	4,736.39	4,453.43	4,351.15	9.15	9.02	147.81	1,721.76	1,705.14	16.62	103.597	0					
4,900.00	4,834.69	4,546.28	4,441.28	9.35	9.21	147.82	1,758.89	1,741.92	16.97	103.626	0					
5,000.00	4,933.00	4,639.13	4,531.41	9.55	9.41	147.83	1,796.02	1,778.69	17.33	103.654	0					
5,100.00	5,031.30	4,731.98	4,621.54	9.75	9.61	147.84	1,833.15	1,815.47	17.68	103.681	0					
5,200.00	5,129.60	4,824.83	4,711.67	9.95	9.81	147.85	1,870.28	1,852.25	18.03	103.707	0					

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



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## Anticollision Risk Report

**PATHFINDER**  
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<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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	5,227.90	4,917.69	4,801.80	10.14	10.01	147.86	1,907.41	1,889.02	18.39	103.731	0		
5,400.00	5,326.21	5,010.54	4,891.93	10.34	10.21	147.86	1,944.54	1,925.80	18.74	103.754	0		
5,500.00	5,424.51	5,103.39	4,982.06	10.54	10.41	147.87	1,981.67	1,962.58	19.10	103.777	0		
5,600.00	5,522.81	5,196.24	5,072.19	10.74	10.61	147.88	2,018.80	1,999.35	19.45	103.798	0		
5,700.00	5,621.11	5,289.09	5,162.32	10.94	10.81	147.89	2,055.93	2,036.13	19.80	103.819	0		
5,800.00	5,719.42	5,381.94	5,252.45	11.14	11.01	147.89	2,093.06	2,072.91	20.16	103.839	0		
5,900.00	5,817.72	5,474.79	5,342.58	11.34	11.21	147.90	2,130.19	2,109.68	20.51	103.858	0		
6,000.00	5,916.02	5,567.64	5,432.71	11.54	11.41	147.91	2,167.32	2,146.46	20.86	103.877	0		
6,011.99	5,927.81	5,578.77	5,443.52	11.56	11.43	147.91	2,171.78	2,150.87	20.91	103.879	0		
6,100.00	6,014.56	5,660.91	5,523.25	11.73	11.61	148.25	2,203.39	2,182.10	21.28	103.530	0		
6,200.00	6,113.63	5,755.17	5,614.74	11.91	11.81	148.56	2,236.69	2,214.99	21.70	103.082	0		
6,300.00	6,213.11	5,850.31	5,707.10	12.09	12.01	148.78	2,267.17	2,245.07	22.10	102.582	0		
6,400.00	6,312.88	6,048.13	5,899.87	12.26	12.42	148.78	2,294.00	2,271.33	22.67	101.179	0		
6,500.00	6,412.83	6,428.30	6,276.65	12.42	13.10	148.60	2,308.47	2,284.94	23.53	98.102	0		
6,540.55	6,453.38	6,585.70	6,433.94	12.49	13.35	0.41	2,309.99	2,284.62	25.37	91.060	0		
6,600.00	6,512.83	6,659.59	6,507.83	12.58	13.46	0.41	2,310.01	2,284.43	25.58	90.315	0		
6,640.55	6,553.38	6,700.14	6,548.38	12.65	13.52	0.41	2,310.01	2,284.30	25.71	89.865	0		
6,650.00	6,562.83	6,709.47	6,557.71	12.66	13.53	-89.59	2,310.01	2,285.75	24.26	95.225	0		
6,700.00	6,612.74	6,758.23	6,606.41	12.73	13.60	-89.60	2,310.00	2,285.59	24.41	94.618	0		
6,750.00	6,662.29	6,807.03	6,654.83	12.81	13.67	-89.62	2,310.00	2,285.44	24.56	94.050	0		
6,800.00	6,711.16	6,855.86	6,702.70	12.87	13.73	-89.63	2,310.00	2,285.30	24.70	93.518	0		
6,850.00	6,759.07	6,904.75	6,749.74	12.94	13.79	-89.65	2,309.99	2,285.16	24.83	93.017	0		
6,900.00	6,805.70	6,953.69	6,795.67	13.00	13.85	-89.67	2,309.99	2,285.03	24.96	92.542	0		
6,950.00	6,850.78	7,002.70	6,840.22	13.06	13.90	-89.69	2,309.98	2,284.90	25.08	92.088	0		
7,000.00	6,894.03	7,051.78	6,883.14	13.11	13.96	-89.72	2,309.98	2,284.77	25.20	91.649	0		
7,050.00	6,935.18	7,100.93	6,924.16	13.17	14.01	-89.74	2,309.97	2,284.65	25.32	91.216	0		
7,100.00	6,973.97	7,150.00	6,962.91	13.23	14.07	-89.77	2,309.97	2,284.52	25.44	90.784	0		
7,150.00	7,010.17	7,199.48	6,999.52	13.28	14.12	-89.80	2,309.96	2,284.39	25.57	90.342	0		
7,200.00	7,043.55	7,248.88	7,033.38	13.34	14.18	-89.83	2,309.96	2,284.26	25.70	89.884	0		
7,250.00	7,073.91	7,298.38	7,064.42	13.40	14.24	-89.86	2,309.96	2,284.12	25.84	89.403	0		
7,300.00	7,101.06	7,347.98	7,092.41	13.47	14.30	-89.89	2,309.95	2,283.97	25.99	88.890	0		
7,350.00	7,124.84	7,397.68	7,117.19	13.54	14.36	-89.93	2,309.95	2,283.80	26.15	88.341	0		
7,400.00	7,145.09	7,447.48	7,138.57	13.61	14.43	-89.96	2,309.95	2,283.63	26.32	87.750	0		
7,450.00	7,161.69	7,497.38	7,156.40	13.70	14.51	-89.99	2,309.95	2,283.43	26.52	87.114	0		
7,461.48	7,164.98	7,508.85	7,159.98	13.72	14.53	-90.00	2,309.95	2,283.39	26.56	86.958	0		
7,500.00	7,174.55	7,547.39	7,170.56	13.78	14.59	-90.03	2,309.95	2,283.22	26.73	86.433	0		
7,550.00	7,183.57	7,597.51	7,180.92	13.88	14.68	-90.06	2,309.95	2,283.00	26.95	85.706	0		
7,600.00	7,188.71	7,647.73	7,187.41	13.99	14.78	-90.09	2,309.95	2,282.76	27.20	84.938	0		
7,640.55	7,190.00	7,688.55	7,189.78	14.08	14.87	-90.12	2,309.95	2,282.55	27.41	84.285	0		
7,700.00	7,190.00	7,748.12	7,190.00	14.23	15.00	-90.12	2,309.96	2,282.22	27.73	83.287	0		
7,800.00	7,190.00	7,848.12	7,190.00	14.51	15.26	-90.12	2,309.96	2,281.62	28.33	81.537	0		
7,900.00	7,190.00	7,948.11	7,190.00	14.83	15.54	-90.12	2,309.96	2,280.97	28.98	79.705	0		
7,994.32	7,190.00	8,042.43	7,190.00	15.15	15.83	-90.12	2,309.96	2,280.31	29.64	77.923	0		
8,000.00	7,190.00	8,048.12	7,190.00	15.17	15.85	-90.12	2,309.96	2,280.27	29.68	77.816	0		
8,100.00	7,190.00	8,148.11	7,190.00	15.54	16.20	-90.12	2,309.96	2,279.52	30.44	75.892	0		
8,200.00	7,190.00	8,248.11	7,190.00	15.93	16.56	-90.12	2,309.96	2,278.72	31.24	73.954	0		
8,300.00	7,190.00	8,348.11	7,190.00	16.34	16.95	-90.12	2,309.96	2,277.88	32.07	72.018	0		
8,400.00	7,190.00	8,448.11	7,190.00	16.78	17.37	-90.12	2,309.96	2,277.00	32.95	70.098	0		
8,500.00	7,190.00	8,548.11	7,190.00	17.23	17.80	-90.12	2,309.96	2,276.09	33.87	68.207	0		
8,600.00	7,190.00	8,648.11	7,190.00	17.69	18.25	-90.12	2,309.96	2,275.14	34.81	66.351	0		
8,700.00	7,190.00	8,748.11	7,190.00	18.18	18.71	-90.12	2,309.96	2,274.16	35.79	64.540	0		
8,800.00	7,190.00	8,848.11	7,190.00	18.67	19.20	-90.12	2,309.96	2,273.16	36.80	62.777	0		
8,900.00	7,190.00	8,948.11	7,190.00	19.18	19.69	-90.12	2,309.96	2,272.13	37.83	61.066	0		
9,000.00	7,190.00	9,048.10	7,190.00	19.70	20.20	-90.12	2,309.96	2,271.08	38.88	59.410	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 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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		
9,100.00	7,190.00	9,148.10	7,190.00	20.24	20.72	-90.12	2,309.96	2,270.00	39.96	57.810	0		
9,200.00	7,190.00	9,248.10	7,190.00	20.78	21.25	-90.12	2,309.96	2,268.90	41.05	56.267	0		
9,300.00	7,190.00	9,348.10	7,190.00	21.33	21.78	-90.12	2,309.96	2,267.79	42.17	54.780	0		
9,400.00	7,190.00	9,448.10	7,190.00	21.89	22.33	-90.12	2,309.96	2,266.66	43.30	53.348	0		
9,500.00	7,190.00	9,548.10	7,190.00	22.46	22.89	-90.12	2,309.96	2,265.51	44.45	51.971	0		
9,600.00	7,190.00	9,648.10	7,190.00	23.04	23.46	-90.12	2,309.96	2,264.35	45.61	50.647	0		
9,700.00	7,190.00	9,748.10	7,190.00	23.62	24.03	-90.12	2,309.96	2,263.17	46.78	49.374	0		
9,800.00	7,190.00	9,848.09	7,190.00	24.21	24.61	-90.12	2,309.96	2,261.99	47.97	48.152	0		
9,900.00	7,190.00	9,948.09	7,190.00	24.80	25.19	-90.12	2,309.96	2,260.79	49.17	46.977	0		
10,000.00	7,190.00	10,048.09	7,190.00	25.40	25.78	-90.12	2,309.96	2,259.58	50.38	45.849	0		
10,100.00	7,190.00	10,148.09	7,190.00	26.01	26.38	-90.12	2,309.96	2,258.36	51.60	44.765	0		
10,200.00	7,190.00	10,248.09	7,190.00	26.62	26.98	-90.12	2,309.96	2,257.13	52.83	43.723	0		
10,300.00	7,190.00	10,348.09	7,190.00	27.23	27.59	-90.12	2,309.96	2,255.89	54.07	42.722	0		
10,400.00	7,190.00	10,448.09	7,190.00	27.85	28.20	-90.12	2,309.96	2,254.64	55.32	41.759	0		
10,500.00	7,190.00	10,548.09	7,190.00	28.48	28.82	-90.12	2,309.96	2,253.39	56.57	40.834	0		
10,600.00	7,190.00	10,648.09	7,190.00	29.10	29.43	-90.12	2,309.96	2,252.13	57.83	39.943	0		
10,700.00	7,190.00	10,748.08	7,190.00	29.73	30.06	-90.12	2,309.96	2,250.86	59.10	39.087	0		
10,800.00	7,190.00	10,848.08	7,190.00	30.37	30.68	-90.12	2,309.96	2,249.59	60.37	38.262	0		
10,900.00	7,190.00	10,948.08	7,190.00	31.00	31.31	-90.12	2,309.96	2,248.31	61.65	37.468	0		
11,000.00	7,190.00	11,048.08	7,190.00	31.64	31.95	-90.12	2,309.96	2,247.03	62.94	36.703	0		
11,100.00	7,190.00	11,148.08	7,190.00	32.28	32.58	-90.12	2,309.96	2,245.74	64.23	35.966	0		
11,200.00	7,190.00	11,248.08	7,190.00	32.93	33.22	-90.12	2,309.96	2,244.44	65.52	35.255	0		
11,300.00	7,190.00	11,348.08	7,190.00	33.57	33.86	-90.12	2,309.96	2,243.14	66.82	34.570	0		
11,400.00	7,190.00	11,448.08	7,190.00	34.22	34.51	-90.12	2,309.97	2,241.84	68.12	33.908	0		
11,500.00	7,190.00	11,548.07	7,190.00	34.87	35.15	-90.12	2,309.97	2,240.53	69.43	33.270	0		
11,600.00	7,190.00	11,648.07	7,190.00	35.53	35.80	-90.12	2,309.97	2,239.22	70.74	32.653	0		
11,700.00	7,190.00	11,748.07	7,190.00	36.18	36.45	-90.12	2,309.97	2,237.91	72.06	32.057	0		
11,800.00	7,190.00	11,848.07	7,190.00	36.84	37.10	-90.12	2,309.97	2,236.59	73.38	31.481	0		
11,900.00	7,190.00	11,948.07	7,190.00	37.50	37.75	-90.12	2,309.97	2,235.27	74.70	30.924	0		
12,000.00	7,190.00	12,048.07	7,190.00	38.16	38.41	-90.12	2,309.97	2,233.95	76.02	30.385	0		
12,100.00	7,190.00	12,148.07	7,190.00	38.82	39.07	-90.12	2,309.97	2,232.62	77.35	29.863	0		
12,200.00	7,190.00	12,248.07	7,190.00	39.48	39.73	-90.12	2,309.97	2,231.29	78.68	29.358	0		
12,300.00	7,190.00	12,348.07	7,190.00	40.15	40.39	-90.12	2,309.97	2,229.96	80.01	28.869	0		
12,400.00	7,190.00	12,448.06	7,190.00	40.81	41.05	-90.12	2,309.97	2,228.62	81.35	28.395	0		
12,500.00	7,190.00	12,548.06	7,190.00	41.48	41.71	-90.12	2,309.97	2,227.28	82.69	27.936	0		
12,600.00	7,190.00	12,648.06	7,190.00	42.15	42.38	-90.12	2,309.97	2,225.94	84.03	27.490	0		
12,700.00	7,190.00	12,748.06	7,190.00	42.82	43.04	-90.12	2,309.97	2,224.60	85.37	27.058	0		
12,800.00	7,190.00	12,848.06	7,190.00	43.49	43.71	-90.12	2,309.97	2,223.26	86.72	26.639	0		
12,900.00	7,190.00	12,948.06	7,190.00	44.16	44.38	-90.12	2,309.97	2,221.91	88.06	26.231	0		
13,000.00	7,190.00	13,048.06	7,190.00	44.83	45.04	-90.12	2,309.98	2,220.57	89.41	25.836	0		
13,100.00	7,190.00	13,148.06	7,190.00	45.50	45.71	-90.12	2,309.98	2,219.22	90.76	25.451	0		
13,200.00	7,190.00	13,248.05	7,190.00	46.18	46.39	-90.12	2,309.98	2,217.87	92.11	25.078	0		
13,300.00	7,190.00	13,348.05	7,190.00	46.85	47.06	-90.12	2,309.98	2,216.51	93.47	24.715	0		
13,400.00	7,190.00	13,448.05	7,190.00	47.53	47.73	-90.12	2,309.98	2,215.16	94.82	24.362	0		
13,500.00	7,190.00	13,548.05	7,190.00	48.21	48.40	-90.12	2,309.98	2,213.80	96.18	24.018	0		
13,600.00	7,190.00	13,648.05	7,190.00	48.88	49.08	-90.12	2,309.98	2,212.45	97.53	23.684	0		
13,700.00	7,190.00	13,748.05	7,190.00	49.56	49.75	-90.12	2,309.98	2,211.09	98.89	23.358	0		
13,800.00	7,190.00	13,848.05	7,190.00	50.24	50.43	-90.12	2,309.98	2,209.73	100.25	23.041	0		
13,900.00	7,190.00	13,948.05	7,190.00	50.92	51.11	-90.12	2,309.98	2,208.37	101.62	22.732	0		
14,000.00	7,190.00	14,048.05	7,190.00	51.60	51.78	-90.12	2,309.98	2,207.00	102.98	22.431	0		
14,100.00	7,190.00	14,148.04	7,190.00	52.28	52.46	-90.12	2,309.98	2,205.64	104.34	22.138	0		
14,200.00	7,190.00	14,248.04	7,190.00	52.96	53.14	-90.12	2,309.99	2,204.28	105.71	21.852	0		
14,300.00	7,190.00	14,348.04	7,190.00	53.65	53.82	-90.12	2,309.99	2,202.91	107.08	21.573	0		
14,400.00	7,190.00	14,448.04	7,190.00	54.33	54.50	-90.12	2,309.99	2,201.54	108.44	21.301	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 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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				
14,500.00	7,190.00	14,548.04	7,190.00	55.01	55.18	-90.12	2,309.99	2,200.18	109.81	21.036	0					
14,600.00	7,190.00	14,648.04	7,190.00	55.69	55.86	-90.12	2,309.99	2,198.81	111.18	20.777	0					
14,700.00	7,190.00	14,748.04	7,190.00	56.38	56.55	-90.12	2,309.99	2,197.44	112.55	20.524	0					
14,800.00	7,190.00	14,848.04	7,190.00	57.06	57.23	-90.12	2,309.99	2,196.07	113.92	20.277	0					
14,900.00	7,190.00	14,948.03	7,190.00	57.75	57.91	-90.12	2,309.99	2,194.70	115.29	20.036	0					
15,000.00	7,190.00	15,048.03	7,190.00	58.43	58.59	-90.12	2,309.99	2,193.33	116.67	19.800	0					
15,100.00	7,190.00	15,148.03	7,190.00	59.12	59.28	-90.12	2,309.99	2,191.95	118.04	19.569	0					
15,200.00	7,190.00	15,248.03	7,190.00	59.81	59.96	-90.12	2,310.00	2,190.58	119.42	19.344	0					
15,300.00	7,190.00	15,348.03	7,190.00	60.49	60.65	-90.12	2,310.00	2,189.21	120.79	19.124	0					
15,400.00	7,190.00	15,448.03	7,190.00	61.18	61.33	-90.12	2,310.00	2,187.83	122.17	18.908	0					
15,500.00	7,190.00	15,548.03	7,190.00	61.87	62.02	-90.12	2,310.00	2,186.45	123.54	18.698	0					
15,600.00	7,190.00	15,648.03	7,190.00	62.55	62.70	-90.12	2,310.00	2,185.08	124.92	18.492	0					
15,700.00	7,190.00	15,748.03	7,190.00	63.24	63.39	-90.12	2,310.00	2,183.70	126.30	18.290	0					
15,800.00	7,190.00	15,848.02	7,190.00	63.93	64.08	-90.12	2,310.00	2,182.32	127.68	18.092	0					
15,900.00	7,190.00	15,948.02	7,190.00	64.62	64.76	-90.12	2,310.00	2,180.95	129.06	17.899	0					
16,000.00	7,190.00	16,048.02	7,190.00	65.31	65.45	-90.12	2,310.00	2,179.57	130.44	17.710	0					
16,100.00	7,190.00	16,148.02	7,190.00	66.00	66.14	-90.12	2,310.01	2,178.19	131.82	17.524	0					
16,200.00	7,190.00	16,248.02	7,190.00	66.69	66.83	-90.12	2,310.01	2,176.81	133.20	17.343	0					
16,300.00	7,190.00	16,348.02	7,190.00	67.38	67.52	-90.12	2,310.01	2,175.43	134.58	17.164	0					
16,400.00	7,190.00	16,448.02	7,190.00	68.07	68.20	-90.12	2,310.01	2,174.05	135.96	16.990	0					
16,500.00	7,190.00	16,548.02	7,190.00	68.76	68.89	-90.12	2,310.01	2,172.67	137.35	16.819	0					
16,600.00	7,190.00	16,648.01	7,190.00	69.45	69.58	-90.12	2,310.01	2,171.28	138.73	16.651	0					
16,700.00	7,190.00	16,748.01	7,190.00	70.14	70.27	-90.12	2,310.01	2,169.90	140.11	16.487	0					
16,800.00	7,190.00	16,848.01	7,190.00	70.83	70.96	-90.12	2,310.02	2,168.52	141.50	16.326	0					
16,900.00	7,190.00	16,948.01	7,190.00	71.52	71.65	-90.12	2,310.02	2,167.14	142.88	16.167	0					
17,000.00	7,190.00	17,048.01	7,190.00	72.21	72.34	-90.12	2,310.02	2,165.75	144.27	16.012	0					
17,100.00	7,190.00	17,148.01	7,190.00	72.91	73.03	-90.12	2,310.02	2,164.37	145.65	15.860	0					
17,200.00	7,190.00	17,248.01	7,190.00	73.60	73.72	-90.12	2,310.02	2,162.98	147.04	15.710	0					
17,250.40	7,190.00	17,298.40	7,190.00	73.95	74.07	-90.12	2,310.02	2,162.29	147.74	15.636	0					
17,297.69	7,190.00	17,324.42	7,190.00	74.28	74.25	-90.12	2,310.12	2,161.88	148.24	15.583	0	SF				



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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	0.00	0.00	0.00	0.00	0.12	28.07					0					
100.00	100.00	99.00	99.00	0.15	0.15	0.12	28.05	27.76	0.29	96.156	0						
200.00	200.00	199.00	199.00	0.32	0.32	0.12	28.05	27.41	0.64	43.797	0						
300.00	300.00	299.00	299.00	0.50	0.49	0.12	28.05	27.06	0.99	28.348	0						
400.00	400.00	399.00	399.00	0.67	0.67	0.12	28.05	26.71	1.34	20.956	0						
500.00	500.00	499.00	499.00	0.84	0.84	0.12	28.05	26.37	1.69	16.622	0						
600.00	600.00	599.00	599.00	1.02	1.02	0.12	28.05	26.02	2.04	13.773	0						
700.00	700.00	699.00	699.00	1.19	1.19	0.12	28.05	25.67	2.39	11.758	0						
800.00	799.98	798.98	798.98	1.37	1.37	150.06	29.55	26.82	2.73	10.809	0		CC, ES				
900.00	899.84	899.74	899.72	1.54	1.54	152.58	32.85	29.77	3.08	10.657	0						
1,000.00	999.45	1,000.61	1,000.45	1.72	1.72	153.60	36.57	33.14	3.43	10.664	0						
1,100.00	1,098.70	1,101.59	1,101.03	1.90	1.90	153.48	40.68	36.90	3.78	10.771	0						
1,200.00	1,197.47	1,202.60	1,201.27	2.08	2.08	152.55	45.17	41.04	4.13	10.949	0						
1,228.56	1,225.57	1,231.12	1,229.52	2.14	2.13	152.32	46.67	42.45	4.22	11.048	0						
1,300.00	1,295.79	1,302.44	1,300.16	2.27	2.26	152.04	50.75	46.27	4.48	11.325	0						
1,400.00	1,394.10	1,402.28	1,399.03	2.46	2.44	151.71	56.46	51.62	4.84	11.661	0						
1,500.00	1,492.40	1,502.11	1,497.91	2.65	2.62	151.44	62.17	56.97	5.20	11.949	0						
1,600.00	1,590.70	1,601.95	1,596.79	2.84	2.81	151.21	67.89	62.32	5.57	12.197	0						
1,700.00	1,689.00	1,701.78	1,695.66	3.03	2.99	151.02	73.60	67.67	5.93	12.413	0						
1,800.00	1,787.31	1,801.62	1,794.54	3.23	3.18	150.86	79.32	73.02	6.29	12.603	0						
1,900.00	1,885.61	1,901.46	1,893.42	3.42	3.36	150.72	85.03	78.37	6.66	12.772	0						
2,000.00	1,983.91	2,001.29	1,992.29	3.62	3.55	150.60	90.75	83.72	7.02	12.922	0						
2,100.00	2,082.22	2,101.13	2,091.17	3.81	3.73	150.49	96.46	89.07	7.39	13.057	0						
2,200.00	2,180.52	2,200.97	2,190.05	4.01	3.92	150.39	102.18	94.42	7.75	13.178	0						
2,300.00	2,278.82	2,300.80	2,288.92	4.20	4.11	150.31	107.89	99.78	8.12	13.288	0						
2,400.00	2,377.12	2,400.64	2,387.80	4.40	4.29	150.23	113.61	105.13	8.49	13.388	0						
2,500.00	2,475.43	2,500.47	2,486.68	4.60	4.48	150.16	119.33	110.48	8.85	13.480	0						
2,600.00	2,573.73	2,600.31	2,585.56	4.79	4.67	150.09	125.05	115.83	9.22	13.564	0						
2,700.00	2,672.03	2,700.15	2,684.43	4.99	4.85	150.04	130.76	121.18	9.59	13.641	0						
2,800.00	2,770.33	2,799.98	2,783.31	5.19	5.04	149.98	136.48	126.53	9.95	13.713	0						
2,900.00	2,868.64	2,899.82	2,882.19	5.38	5.23	149.93	142.20	131.88	10.32	13.779	0						
3,000.00	2,966.94	2,999.66	2,981.06	5.58	5.42	149.89	147.91	137.23	10.69	13.840	0						
3,100.00	3,065.24	3,099.49	3,079.94	5.78	5.60	149.85	153.63	142.58	11.05	13.897	0						
3,200.00	3,163.55	3,199.33	3,178.82	5.98	5.79	149.81	159.35	147.93	11.42	13.951	0						
3,300.00	3,261.85	3,299.17	3,277.69	6.17	5.98	149.77	165.07	153.28	11.79	14.001	0						
3,400.00	3,360.15	3,399.00	3,376.57	6.37	6.17	149.74	170.79	158.63	12.16	14.048	0						
3,500.00	3,458.45	3,498.84	3,475.45	6.57	6.35	149.71	176.50	163.98	12.53	14.092	0						
3,600.00	3,556.76	3,598.67	3,574.32	6.77	6.54	149.68	182.22	169.33	12.89	14.133	0						
3,700.00	3,655.06	3,698.51	3,673.20	6.97	6.73	149.65	187.94	174.68	13.26	14.172	0						
3,800.00	3,753.36	3,798.35	3,772.08	7.17	6.92	149.62	193.66	180.03	13.63	14.209	0						
3,900.00	3,851.67	3,898.18	3,870.95	7.36	7.11	149.60	199.38	185.38	14.00	14.244	0						
4,000.00	3,949.97	3,998.02	3,969.83	7.56	7.29	149.58	205.09	190.73	14.36	14.277	0						
4,100.00	4,048.27	4,097.86	4,068.71	7.76	7.48	149.55	210.81	196.08	14.73	14.309	0						
4,200.00	4,146.57	4,197.69	4,167.59	7.96	7.67	149.53	216.53	201.43	15.10	14.339	0						
4,300.00	4,244.88	4,297.53	4,266.46	8.16	7.86	149.51	222.25	206.78	15.47	14.367	0						
4,400.00	4,343.18	4,397.37	4,365.34	8.36	8.05	149.50	227.97	212.13	15.84	14.394	0						
4,500.00	4,441.48	4,497.20	4,464.22	8.55	8.23	149.48	233.68	217.48	16.21	14.420	0						
4,600.00	4,539.78	4,597.04	4,563.09	8.75	8.42	149.46	239.40	222.83	16.57	14.444	0						
4,700.00	4,638.09	4,696.87	4,661.97	8.95	8.61	149.44	245.12	228.18	16.94	14.468	0						
4,800.00	4,736.39	4,796.71	4,760.85	9.15	8.80	149.43	250.84	233.53	17.31	14.490	0						
4,900.00	4,834.69	4,896.55	4,859.72	9.35	8.99	149.41	256.56	238.88	17.68	14.512	0						
5,000.00	4,933.00	4,996.38	4,958.60	9.55	9.18	149.40	262.27	244.23	18.05	14.532	0						
5,100.00	5,031.30	5,096.22	5,057.48	9.75	9.36	149.39	267.99	249.58	18.42	14.552	0						
5,200.00	5,129.60	5,196.06	5,156.35	9.95	9.55	149.37	273.71	254.93	18.78	14.571	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 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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	Vertical	Measured	Vertical	Reference	Offset	Highside	Between	Between	Minimum	Separation	Risked	Probability					
Depth (usft)	Depth (usft)	Depth (usft)	Depth (usft)	(usft)	(usft)	Toolface (°)	Centres (usft)	Ellipses (usft)	Separation (usft)	Factor	Separation Factor	of Collision					
5,300.00	5,227.90	5,295.89	5,255.23	10.14	9.74	149.36	279.43	260.28	19.15	14.589	0						
5,400.00	5,326.21	5,395.73	5,354.11	10.34	9.93	149.35	285.15	265.63	19.52	14.607	0						
5,500.00	5,424.51	5,495.57	5,452.99	10.54	10.12	149.34	290.87	270.98	19.89	14.623	0						
5,600.00	5,522.81	5,595.40	5,551.86	10.74	10.31	149.33	296.58	276.33	20.26	14.640	0						
5,700.00	5,621.11	5,695.24	5,650.74	10.94	10.49	149.32	302.30	281.68	20.63	14.655	0						
5,800.00	5,719.42	5,795.07	5,749.62	11.14	10.68	149.31	308.02	287.03	21.00	14.670	0						
5,900.00	5,817.72	5,894.91	5,848.49	11.34	10.87	149.30	313.74	292.38	21.36	14.685	0						
6,000.00	5,916.02	5,994.75	5,947.37	11.54	11.06	149.29	319.46	297.73	21.73	14.699	0						
6,011.99	5,927.81	6,006.72	5,959.23	11.56	11.08	149.29	320.14	298.37	21.78	14.701	0						
6,100.00	6,014.56	6,094.64	6,046.30	11.73	11.25	149.20	324.02	301.90	22.12	14.651	0						
6,200.00	6,113.63	6,187.79	6,138.71	11.91	11.42	148.95	326.54	304.07	22.47	14.531	0						
6,300.00	6,213.11	6,280.10	6,230.61	12.09	11.58	148.78	328.40	305.60	22.80	14.401	0						
6,400.00	6,312.88	6,372.42	6,322.75	12.26	11.74	148.66	329.62	306.50	23.12	14.260	0						
6,500.00	6,412.83	6,464.74	6,415.02	12.42	11.90	148.60	330.19	306.78	23.41	14.107	0						
6,540.55	6,453.38	6,503.10	6,453.38	12.49	11.96	0.42	330.23	306.28	23.96	13.785	0						
6,560.71	6,473.53	6,522.25	6,472.53	12.52	11.99	0.42	330.23	306.21	24.02	13.747	0						
6,600.00	6,512.83	6,561.54	6,511.83	12.58	12.06	0.42	330.23	306.08	24.15	13.673	0						
6,640.55	6,553.38	6,602.10	6,552.38	12.65	12.12	0.42	330.23	305.95	24.29	13.598	0						
6,650.00	6,562.83	6,611.51	6,561.79	12.66	12.14	-89.58	330.23	306.35	23.89	13.825	0						
6,700.00	6,612.74	6,661.33	6,611.53	12.73	12.22	-89.60	330.23	306.19	24.04	13.734	0						
6,750.00	6,662.29	6,711.15	6,660.91	12.81	12.29	-89.61	330.23	306.04	24.19	13.650	0						
6,800.00	6,711.16	6,760.98	6,709.65	12.87	12.36	-89.63	330.23	305.90	24.33	13.571	0						
6,850.00	6,759.07	6,810.82	6,757.43	12.94	12.42	-89.66	330.23	305.76	24.47	13.496	0						
6,900.00	6,805.70	6,860.67	6,803.98	13.00	12.49	-89.68	330.23	305.63	24.60	13.426	0						
6,950.00	6,850.78	6,910.53	6,849.00	13.06	12.55	-89.71	330.23	305.51	24.72	13.359	0						
7,000.00	6,894.03	6,960.40	6,892.22	13.11	12.61	-89.74	330.23	305.38	24.84	13.293	0						
7,050.00	6,935.18	7,010.29	6,933.37	13.17	12.66	-89.77	330.23	305.26	24.96	13.229	0						
7,100.00	6,973.97	7,060.19	6,972.20	13.23	12.72	-89.80	330.23	305.14	25.09	13.164	0						
7,150.00	7,010.17	7,110.11	7,008.47	13.28	12.78	-89.83	330.22	305.01	25.21	13.098	0						
7,200.00	7,043.55	7,160.04	7,041.95	13.34	12.84	-89.86	330.22	304.88	25.34	13.030	0						
7,250.00	7,073.91	7,209.98	7,072.43	13.40	12.91	-89.90	330.22	304.74	25.49	12.957	0						
7,300.00	7,101.06	7,259.94	7,099.73	13.47	12.98	-89.93	330.22	304.59	25.64	12.881	0						
7,350.00	7,124.84	7,309.92	7,123.68	13.54	13.05	-89.97	330.22	304.42	25.80	12.798	0						
7,393.29	7,142.58	7,353.21	7,141.58	13.60	13.11	-90.00	330.22	304.27	25.96	12.722	0						
7,400.00	7,145.09	7,359.92	7,144.12	13.61	13.12	-90.00	330.22	304.24	25.98	12.710	0						
7,450.00	7,161.69	7,409.93	7,160.92	13.70	13.21	-90.04	330.22	304.05	26.18	12.615	0						
7,500.00	7,174.55	7,459.95	7,173.97	13.78	13.30	-90.08	330.22	303.83	26.39	12.513	0						
7,550.00	7,183.57	7,509.99	7,183.20	13.88	13.41	-90.11	330.22	303.60	26.62	12.404	0						
7,600.00	7,188.71	7,560.05	7,188.55	13.99	13.52	-90.15	330.22	303.36	26.87	12.290	0						
7,640.55	7,190.00	7,600.66	7,190.00	14.08	13.63	-90.17	330.22	303.14	27.08	12.194	0						
7,700.00	7,190.00	7,660.11	7,190.00	14.23	13.79	-90.17	330.22	302.81	27.41	12.046	0						
7,800.00	7,190.00	7,760.11	7,190.00	14.51	14.09	-90.17	330.22	302.21	28.02	11.787	0						
7,900.00	7,190.00	7,860.11	7,190.00	14.83	14.42	-90.17	330.22	301.55	28.67	11.517	0						
8,000.00	7,190.00	7,960.11	7,190.00	15.17	14.78	-90.17	330.22	300.84	29.38	11.238	0						
8,100.00	7,190.00	8,060.11	7,190.00	15.54	15.16	-90.17	330.22	300.08	30.14	10.955	0						
8,200.00	7,190.00	8,160.11	7,190.00	15.93	15.56	-90.17	330.22	299.28	30.95	10.670	0						
8,300.00	7,190.00	8,260.11	7,190.00	16.34	15.99	-90.17	330.22	298.43	31.80	10.386	0						
8,400.00	7,190.00	8,360.11	7,190.00	16.78	16.43	-90.17	330.22	297.54	32.68	10.104	0						
8,500.00	7,190.00	8,460.11	7,190.00	17.23	16.89	-90.17	330.22	296.62	33.60	9.827	0						
8,600.00	7,190.00	8,560.11	7,190.00	17.69	17.36	-90.17	330.22	295.67	34.56	9.556	0						
8,700.00	7,190.00	8,660.11	7,190.00	18.18	17.85	-90.17	330.22	294.68	35.54	9.291	0						
8,800.00	7,190.00	8,760.11	7,190.00	18.67	18.36	-90.17	330.22	293.67	36.55	9.034	0						
8,900.00	7,190.00	8,860.11	7,190.00	19.18	18.87	-90.17	330.22	292.63	37.59	8.785	0						
9,000.00	7,190.00	8,960.11	7,190.00	19.70	19.40	-90.17	330.22	291.57	38.65	8.544	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 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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	7,190.00	9,060.11	7,190.00	20.24	19.94	-90.17	330.22	290.49	39.73	8.311	0						
9,200.00	7,190.00	9,160.11	7,190.00	20.78	20.49	-90.17	330.22	289.39	40.83	8.087	0						
9,300.00	7,190.00	9,260.11	7,190.00	21.33	21.05	-90.17	330.22	288.27	41.95	7.871	0						
9,400.00	7,190.00	9,360.11	7,190.00	21.89	21.61	-90.17	330.22	287.13	43.09	7.663	0						
9,500.00	7,190.00	9,460.11	7,190.00	22.46	22.19	-90.17	330.22	285.97	44.24	7.464	0						
9,600.00	7,190.00	9,560.11	7,190.00	23.04	22.77	-90.17	330.22	284.81	45.41	7.272	0						
9,700.00	7,190.00	9,660.11	7,190.00	23.62	23.36	-90.17	330.22	283.63	46.59	7.088	0						
9,800.00	7,190.00	9,760.11	7,190.00	24.21	23.95	-90.17	330.22	282.43	47.78	6.911	0						
9,900.00	7,190.00	9,860.11	7,190.00	24.80	24.55	-90.17	330.22	281.23	48.99	6.741	0						
10,000.00	7,190.00	9,960.11	7,190.00	25.40	25.16	-90.17	330.21	280.01	50.20	6.578	0						
10,100.00	7,190.00	10,060.11	7,190.00	26.01	25.77	-90.17	330.21	278.79	51.43	6.421	0						
10,200.00	7,190.00	10,160.11	7,190.00	26.62	26.38	-90.17	330.21	277.55	52.66	6.271	0						
10,300.00	7,190.00	10,260.11	7,190.00	27.23	27.00	-90.17	330.21	276.31	53.90	6.126	0						
10,400.00	7,190.00	10,360.11	7,190.00	27.85	27.63	-90.17	330.21	275.06	55.15	5.987	0						
10,500.00	7,190.00	10,460.11	7,190.00	28.48	28.25	-90.17	330.21	273.80	56.41	5.854	0						
10,600.00	7,190.00	10,560.11	7,190.00	29.10	28.89	-90.17	330.21	272.54	57.67	5.726	0						
10,700.00	7,190.00	10,660.11	7,190.00	29.73	29.52	-90.17	330.21	271.26	58.94	5.602	0						
10,800.00	7,190.00	10,760.11	7,190.00	30.37	30.16	-90.17	330.21	269.99	60.22	5.483	0						
10,900.00	7,190.00	10,860.11	7,190.00	31.00	30.80	-90.17	330.21	268.70	61.50	5.369	0						
11,000.00	7,190.00	10,960.11	7,190.00	31.64	31.44	-90.17	330.20	267.41	62.79	5.259	0						
11,100.00	7,190.00	11,060.11	7,190.00	32.28	32.08	-90.17	330.20	266.12	64.08	5.153	0						
11,200.00	7,190.00	11,160.11	7,190.00	32.93	32.73	-90.17	330.20	264.82	65.38	5.050	0						
11,300.00	7,190.00	11,260.11	7,190.00	33.57	33.38	-90.17	330.20	263.52	66.68	4.952	0						
11,400.00	7,190.00	11,360.11	7,190.00	34.22	34.03	-90.17	330.20	262.21	67.99	4.857	0						
11,500.00	7,190.00	11,460.11	7,190.00	34.87	34.69	-90.17	330.20	260.90	69.30	4.765	0						
11,600.00	7,190.00	11,560.11	7,190.00	35.53	35.34	-90.17	330.20	259.58	70.61	4.676	0						
11,700.00	7,190.00	11,660.11	7,190.00	36.18	36.00	-90.17	330.19	258.26	71.93	4.590	0						
11,800.00	7,190.00	11,760.11	7,190.00	36.84	36.66	-90.17	330.19	256.94	73.25	4.508	0						
11,900.00	7,190.00	11,860.11	7,190.00	37.50	37.32	-90.17	330.19	255.62	74.57	4.428	0						
12,000.00	7,190.00	11,960.11	7,190.00	38.16	37.99	-90.17	330.19	254.29	75.90	4.350	0						
12,100.00	7,190.00	12,060.11	7,190.00	38.82	38.65	-90.17	330.19	252.96	77.23	4.275	0						
12,200.00	7,190.00	12,160.11	7,190.00	39.48	39.32	-90.17	330.19	251.62	78.56	4.203	0						
12,300.00	7,190.00	12,260.11	7,190.00	40.15	39.98	-90.17	330.19	250.29	79.90	4.133	0						
12,400.00	7,190.00	12,360.11	7,190.00	40.81	40.65	-90.17	330.18	248.95	81.24	4.064	0						
12,500.00	7,190.00	12,460.11	7,190.00	41.48	41.32	-90.17	330.18	247.61	82.58	3.999	0						
12,600.00	7,190.00	12,560.11	7,190.00	42.15	41.99	-90.17	330.18	246.26	83.92	3.935	0						
12,700.00	7,190.00	12,660.11	7,190.00	42.82	42.66	-90.17	330.18	244.92	85.26	3.873	0						
12,800.00	7,190.00	12,760.11	7,190.00	43.49	43.33	-90.17	330.18	243.57	86.61	3.812	0						
12,900.00	7,190.00	12,860.11	7,190.00	44.16	44.01	-90.17	330.17	242.22	87.96	3.754	0						
13,000.00	7,190.00	12,960.11	7,190.00	44.83	44.68	-90.17	330.17	240.87	89.31	3.697	0						
13,100.00	7,190.00	13,060.11	7,190.00	45.50	45.36	-90.17	330.17	239.51	90.66	3.642	0						
13,200.00	7,190.00	13,160.11	7,190.00	46.18	46.03	-90.17	330.17	238.16	92.01	3.588	0						
13,300.00	7,190.00	13,260.11	7,190.00	46.85	46.71	-90.17	330.17	236.80	93.36	3.536	0						
13,400.00	7,190.00	13,360.11	7,190.00	47.53	47.39	-90.17	330.16	235.44	94.72	3.486	0						
13,500.00	7,190.00	13,460.11	7,190.00	48.21	48.06	-90.17	330.16	234.08	96.08	3.436	0						
13,600.00	7,190.00	13,560.11	7,190.00	48.88	48.74	-90.17	330.16	232.72	97.44	3.388	0						
13,700.00	7,190.00	13,660.11	7,190.00	49.56	49.42	-90.17	330.16	231.36	98.80	3.342	0						
13,800.00	7,190.00	13,760.11	7,190.00	50.24	50.10	-90.17	330.16	230.00	100.16	3.296	0						
13,900.00	7,190.00	13,860.11	7,190.00	50.92	50.78	-90.17	330.15	228.63	101.52	3.252	0						
14,000.00	7,190.00	13,960.11	7,190.00	51.60	51.47	-90.17	330.15	227.26	102.89	3.209	0						
14,100.00	7,190.00	14,060.11	7,190.00	52.28	52.15	-90.17	330.15	225.90	104.25	3.167	0						
14,200.00	7,190.00	14,160.11	7,190.00	52.96	52.83	-90.17	330.15	224.53	105.62	3.126	0						
14,300.00	7,190.00	14,260.11	7,190.00	53.65	53.51	-90.17	330.14	223.16	106.99	3.086	0						
14,400.00	7,190.00	14,360.11	7,190.00	54.33	54.20	-90.17	330.14	221.79	108.36	3.047	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 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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	7,190.00	14,460.11	7,190.00	55.01	54.88	-90.17	330.14	220.41	109.73	3.009	0					
14,600.00	7,190.00	14,560.11	7,190.00	55.69	55.57	-90.17	330.14	219.04	111.10	2.972	0					
14,700.00	7,190.00	14,660.11	7,190.00	56.38	56.25	-90.17	330.13	217.67	112.47	2.935	0					
14,800.00	7,190.00	14,760.11	7,190.00	57.06	56.94	-90.17	330.13	216.29	113.84	2.900	0					
14,900.00	7,190.00	14,860.11	7,190.00	57.75	57.62	-90.17	330.13	214.92	115.21	2.865	0					
15,000.00	7,190.00	14,960.11	7,190.00	58.43	58.31	-90.17	330.13	213.54	116.59	2.832	0					
15,100.00	7,190.00	15,060.11	7,190.00	59.12	59.00	-90.17	330.12	212.16	117.96	2.799	0					
15,200.00	7,190.00	15,160.11	7,190.00	59.81	59.69	-90.17	330.12	210.78	119.34	2.766	0					
15,300.00	7,190.00	15,260.11	7,190.00	60.49	60.37	-90.17	330.12	209.41	120.71	2.735	0					
15,400.00	7,190.00	15,360.11	7,190.00	61.18	61.06	-90.17	330.11	208.03	122.09	2.704	0					
15,500.00	7,190.00	15,460.11	7,190.00	61.87	61.75	-90.17	330.11	206.65	123.47	2.674	0					
15,600.00	7,190.00	15,560.11	7,190.00	62.55	62.44	-90.17	330.11	205.26	124.84	2.644	0					
15,700.00	7,190.00	15,660.11	7,190.00	63.24	63.13	-90.17	330.11	203.88	126.22	2.615	0					
15,800.00	7,190.00	15,760.11	7,190.00	63.93	63.82	-90.17	330.10	202.50	127.60	2.587	0					
15,900.00	7,190.00	15,860.11	7,190.00	64.62	64.51	-90.17	330.10	201.12	128.98	2.559	0					
16,000.00	7,190.00	15,960.11	7,190.00	65.31	65.20	-90.17	330.10	199.73	130.36	2.532	0					
16,100.00	7,190.00	16,060.11	7,190.00	66.00	65.89	-90.17	330.09	198.35	131.75	2.506	0					
16,200.00	7,190.00	16,160.11	7,190.00	66.69	66.58	-90.17	330.09	196.96	133.13	2.480	0					
16,300.00	7,190.00	16,260.11	7,190.00	67.38	67.27	-90.17	330.09	195.58	134.51	2.454	0					
16,400.00	7,190.00	16,360.11	7,190.00	68.07	67.96	-90.17	330.08	194.19	135.89	2.429	0					
16,500.00	7,190.00	16,460.11	7,190.00	68.76	68.65	-90.17	330.08	192.81	137.28	2.405	0					
16,600.00	7,190.00	16,560.11	7,190.00	69.45	69.34	-90.17	330.08	191.42	138.66	2.381	0					
16,700.00	7,190.00	16,660.11	7,190.00	70.14	70.03	-90.17	330.07	190.03	140.04	2.357	0					
16,800.00	7,190.00	16,760.11	7,190.00	70.83	70.73	-90.17	330.07	188.64	141.43	2.334	0					
16,900.00	7,190.00	16,860.11	7,190.00	71.52	71.42	-90.17	330.07	187.26	142.81	2.311	0					
17,000.00	7,190.00	16,960.11	7,190.00	72.21	72.11	-90.17	330.06	185.87	144.20	2.289	0					
17,100.00	7,190.00	17,060.11	7,190.00	72.91	72.80	-90.17	330.06	184.48	145.58	2.267	0					
17,200.00	7,190.00	17,160.11	7,190.00	73.60	73.50	-90.17	330.06	183.09	146.97	2.246	0					
17,269.22	7,190.00	17,229.32	7,190.00	74.08	73.98	-90.17	330.06	182.13	147.93	2.231	0					
17,297.69	7,190.00	17,254.82	7,190.00	74.28	74.15	-90.17	330.07	181.77	148.30	2.226	0	SF				



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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	1.00	1.00	0.00	0.00	-179.88	28.05							
100.00	100.00	101.00	101.00	0.15	0.15	-179.88	28.05	27.76	0.29	95.109	0			
200.00	200.00	201.00	201.00	0.32	0.32	-179.88	28.05	27.41	0.64	43.560	0			
300.00	300.00	301.00	301.00	0.50	0.50	-179.88	28.05	27.06	0.99	28.249	0			
400.00	400.00	401.00	401.00	0.67	0.67	-179.88	28.05	26.71	1.34	20.902	0			
500.00	500.00	501.00	501.00	0.84	0.85	-179.88	28.05	26.36	1.69	16.588	0			
566.33	566.33	567.33	567.33	0.96	0.96	-179.88	28.05	26.13	1.92	14.590	0			
600.00	600.00	600.99	600.99	1.02	1.02	-179.88	28.05	26.01	2.04	13.750	0			
700.00	700.00	700.00	699.98	1.19	1.19	-178.29	29.62	27.24	2.39	12.406	0			
800.00	799.98	799.06	798.90	1.37	1.37	-27.59	32.82	30.09	2.73	12.002	0			
900.00	899.84	897.90	897.36	1.54	1.54	-25.86	36.13	33.05	3.08	11.727	0			
1,000.00	999.45	996.63	995.36	1.72	1.72	-24.74	39.51	36.09	3.43	11.531	0			
1,100.00	1,098.70	1,095.24	1,092.78	1.90	1.90	-24.10	42.95	39.18	3.77	11.384	0			
1,200.00	1,197.47	1,194.41	1,190.22	2.08	2.09	-23.97	46.11	41.98	4.12	11.189	0			
1,228.56	1,225.57	1,222.97	1,218.25	2.14	2.14	-24.19	46.56	42.34	4.22	11.031	0			
1,300.00	1,295.79	1,294.39	1,288.37	2.27	2.28	-24.92	47.38	42.90	4.48	10.577	0			
1,400.00	1,394.10	1,394.38	1,386.53	2.46	2.47	-25.90	48.55	43.70	4.84	10.023	0			
1,500.00	1,492.40	1,494.37	1,484.68	2.65	2.67	-26.84	49.73	44.52	5.21	9.546	0			
1,600.00	1,590.70	1,594.36	1,582.84	2.84	2.86	-27.73	50.92	45.34	5.58	9.131	0			
1,700.00	1,689.00	1,694.35	1,680.99	3.03	3.06	-28.58	52.12	46.17	5.94	8.767	0			
1,800.00	1,787.31	1,794.34	1,779.15	3.23	3.25	-29.40	53.33	47.02	6.31	8.446	0			
1,900.00	1,885.61	1,894.33	1,877.30	3.42	3.45	-30.17	54.55	47.87	6.68	8.161	0			
2,000.00	1,983.91	1,994.32	1,975.46	3.62	3.65	-30.92	55.79	48.73	7.06	7.906	0			
2,100.00	2,082.22	2,094.31	2,073.61	3.81	3.84	-31.63	57.03	49.60	7.43	7.677	0			
2,200.00	2,180.52	2,194.30	2,171.76	4.01	4.04	-32.31	58.28	50.47	7.80	7.469	0			
2,300.00	2,278.82	2,294.29	2,269.92	4.20	4.24	-32.96	59.53	51.36	8.18	7.281	0			
2,400.00	2,377.12	2,394.28	2,368.07	4.40	4.44	-33.58	60.80	52.25	8.55	7.110	0			
2,500.00	2,475.43	2,494.27	2,466.23	4.60	4.64	-34.18	62.07	53.14	8.93	6.953	0			
2,600.00	2,573.73	2,594.26	2,564.38	4.79	4.84	-34.75	63.35	54.05	9.30	6.809	0			
2,700.00	2,672.03	2,694.25	2,662.54	4.99	5.03	-35.31	64.63	54.95	9.68	6.677	0			
2,800.00	2,770.33	2,794.24	2,760.69	5.19	5.23	-35.84	65.93	55.87	10.06	6.554	0			
2,900.00	2,868.64	2,894.23	2,858.85	5.38	5.43	-36.35	67.22	56.78	10.44	6.441	0			
3,000.00	2,966.94	2,994.22	2,957.00	5.58	5.63	-36.84	68.52	57.71	10.82	6.336	0			
3,100.00	3,065.24	3,094.21	3,055.16	5.78	5.83	-37.31	69.83	58.63	11.19	6.238	0			
3,200.00	3,163.55	3,194.20	3,153.31	5.98	6.03	-37.76	71.14	59.56	11.57	6.146	0			
3,300.00	3,261.85	3,294.19	3,251.47	6.17	6.23	-38.20	72.45	60.50	11.95	6.060	0			
3,400.00	3,360.15	3,394.18	3,349.62	6.37	6.43	-38.63	73.77	61.44	12.34	5.980	0			
3,500.00	3,458.45	3,494.17	3,447.78	6.57	6.63	-39.03	75.09	62.38	12.72	5.905	0			
3,600.00	3,556.76	3,594.16	3,545.93	6.77	6.83	-39.43	76.42	63.32	13.10	5.834	0			
3,700.00	3,655.06	3,694.15	3,644.09	6.97	7.03	-39.81	77.75	64.27	13.48	5.768	0			
3,800.00	3,753.36	3,794.14	3,742.24	7.17	7.23	-40.18	79.08	65.22	13.86	5.705	0			
3,900.00	3,851.67	3,894.13	3,840.39	7.36	7.43	-40.53	80.42	66.17	14.25	5.645	0			
4,000.00	3,949.97	3,994.12	3,938.55	7.56	7.63	-40.87	81.76	67.13	14.63	5.589	0			
4,100.00	4,048.27	4,094.11	4,036.70	7.76	7.83	-41.21	83.10	68.09	15.01	5.536	0			
4,200.00	4,146.57	4,194.10	4,134.86	7.96	8.03	-41.53	84.45	69.05	15.40	5.485	0			
4,300.00	4,244.88	4,294.09	4,233.01	8.16	8.23	-41.84	85.79	70.01	15.78	5.437	0			
4,400.00	4,343.18	4,394.08	4,331.17	8.36	8.43	-42.14	87.14	70.98	16.16	5.391	0			
4,500.00	4,441.48	4,494.07	4,429.32	8.55	8.64	-42.44	88.50	71.95	16.55	5.348	0			
4,600.00	4,539.78	4,594.06	4,527.48	8.75	8.84	-42.72	89.85	72.92	16.93	5.306	0			
4,700.00	4,638.09	4,694.05	4,625.63	8.95	9.04	-43.00	91.21	73.89	17.32	5.267	0			
4,800.00	4,736.39	4,794.04	4,723.79	9.15	9.24	-43.26	92.57	74.86	17.70	5.229	0			
4,900.00	4,834.69	4,894.03	4,821.94	9.35	9.44	-43.52	93.93	75.84	18.09	5.193	0			
5,000.00	4,933.00	4,994.02	4,920.10	9.55	9.64	-43.78	95.29	76.82	18.47	5.158	0			
5,100.00	5,031.30	5,094.01	5,018.25	9.75	9.84	-44.02	96.65	77.79	18.86	5.125	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 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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				
5,200.00	5,129.60	5,194.00	5,116.41	9.95	10.04	-44.26	98.02	78.77	19.24	5.093	0					
5,300.00	5,227.90	5,293.99	5,214.56	10.14	10.24	-44.49	99.39	79.76	19.63	5.063	0					
5,400.00	5,326.21	5,393.98	5,312.72	10.34	10.44	-44.72	100.76	80.74	20.02	5.034	0					
5,500.00	5,424.51	5,493.97	5,410.87	10.54	10.64	-44.94	102.13	81.72	20.40	5.006	0					
5,600.00	5,522.81	5,593.96	5,509.03	10.74	10.84	-45.15	103.50	82.71	20.79	4.979	0					
5,700.00	5,621.11	5,693.95	5,607.18	10.94	11.04	-45.36	104.87	83.70	21.18	4.952	0					
5,800.00	5,719.42	5,793.94	5,705.33	11.14	11.24	-45.56	106.25	84.68	21.56	4.927	0					
5,900.00	5,817.72	5,893.93	5,803.49	11.34	11.45	-45.76	107.62	85.67	21.95	4.903	0					
6,000.00	5,916.02	5,993.92	5,901.64	11.54	11.65	-45.95	109.00	86.66	22.34	4.880	0					
6,011.99	5,927.81	6,005.91	5,913.41	11.56	11.67	-45.97	109.17	86.78	22.38	4.877	0					
6,100.00	6,014.56	6,093.88	5,999.78	11.73	11.85	-45.67	111.32	88.62	22.70	4.903	0					
6,200.00	6,113.63	6,193.72	6,097.78	11.91	12.05	-44.22	116.10	93.08	23.02	5.044	0					
6,300.00	6,213.11	6,293.30	6,195.53	12.09	12.25	-41.82	123.54	100.25	23.29	5.305	0					
6,400.00	6,312.88	6,394.77	6,295.25	12.26	12.45	-38.87	133.39	109.87	23.52	5.671	0					
6,500.00	6,412.83	6,498.20	6,397.46	12.42	12.64	-36.17	143.62	119.87	23.74	6.049	0					
6,540.55	6,453.38	6,540.28	6,439.20	12.49	12.72	176.66	147.78	123.16	24.62	6.002	0					
6,600.00	6,512.83	6,602.17	6,500.72	12.58	12.83	177.99	153.38	128.51	24.87	6.167	0					
6,640.55	6,553.38	6,644.55	6,542.92	12.65	12.90	178.70	156.60	131.57	25.03	6.256	0					
6,650.00	6,562.83	6,654.43	6,552.77	12.66	12.92	88.81	157.27	133.13	24.14	6.514	0					
6,700.00	6,612.74	6,706.67	6,604.88	12.73	13.01	90.19	160.39	136.12	24.27	6.609	0					
6,750.00	6,662.29	6,758.62	6,656.75	12.81	13.09	92.83	162.98	138.63	24.35	6.694	0					
6,800.00	6,711.16	6,810.00	6,708.10	12.87	13.18	96.59	165.52	141.15	24.37	6.791	0					
6,850.00	6,759.07	6,860.58	6,758.67	12.94	13.26	101.30	168.70	144.36	24.34	6.930	0					
6,900.00	6,805.70	6,908.61	6,806.70	13.00	13.33	106.53	173.46	149.21	24.25	7.152	0					
6,950.00	6,850.78	6,953.69	6,851.78	13.06	13.40	111.88	181.28	157.19	24.09	7.524	0					
7,000.00	6,894.03	6,999.11	6,897.20	13.11	13.47	117.39	192.93	169.10	23.83	8.095	0					
7,050.00	6,935.18	7,051.19	6,949.16	13.17	13.55	123.15	207.45	184.00	23.45	8.845	0					
7,100.00	6,973.97	7,106.14	7,003.50	13.23	13.63	128.30	223.85	200.86	22.99	9.737	0					
7,150.00	7,010.17	7,164.38	7,060.12	13.28	13.70	132.85	241.52	219.07	22.45	10.759	0					
7,200.00	7,043.55	7,226.40	7,118.77	13.34	13.78	136.86	259.87	238.03	21.85	11.896	0					
7,250.00	7,073.91	7,292.73	7,179.00	13.40	13.86	140.38	278.37	257.16	21.21	13.126	0					
7,300.00	7,101.06	7,363.88	7,240.04	13.47	13.94	143.46	296.48	275.92	20.56	14.419	0					
7,350.00	7,124.84	7,440.36	7,300.67	13.54	14.03	146.11	313.66	293.72	19.94	15.730	0					
7,400.00	7,145.09	7,522.52	7,359.08	13.61	14.12	148.36	329.38	310.00	19.38	16.995	0					
7,450.00	7,161.69	7,610.50	7,412.82	13.70	14.23	150.21	343.08	324.15	18.92	18.132	0					
7,500.00	7,174.55	7,704.02	7,458.87	13.78	14.36	151.64	354.22	335.62	18.60	19.044	0					
7,550.00	7,183.57	7,802.32	7,493.89	13.88	14.51	152.65	362.32	343.87	18.45	19.638	0					
7,600.00	7,188.71	7,904.05	7,514.82	13.99	14.70	153.23	366.99	348.50	18.49	19.844	0					
7,640.55	7,190.00	7,986.51	7,520.00	14.08	14.88	153.36	368.08	349.41	18.67	19.712	0					
7,700.00	7,190.00	8,045.96	7,520.00	14.23	15.02	153.36	368.08	349.05	19.03	19.340	0					
7,800.00	7,190.00	8,145.96	7,520.00	14.51	15.29	153.36	368.08	348.43	19.65	18.733	0					
7,900.00	7,190.00	8,245.96	7,520.00	14.83	15.59	153.36	368.08	347.80	20.28	18.147	0					
8,000.00	7,190.00	8,345.96	7,520.00	15.17	15.92	153.36	368.08	347.15	20.93	17.585	0					
8,100.00	7,190.00	8,445.96	7,520.00	15.54	16.27	153.36	368.08	346.48	21.59	17.046	0					
8,200.00	7,190.00	8,545.96	7,520.00	15.93	16.65	153.36	368.08	345.81	22.27	16.529	0					
8,300.00	7,190.00	8,645.96	7,520.00	16.34	17.05	153.36	368.08	345.12	22.95	16.036	0					
8,400.00	7,190.00	8,745.96	7,520.00	16.78	17.48	153.36	368.08	344.43	23.65	15.563	0					
8,500.00	7,190.00	8,845.96	7,520.00	17.23	17.91	153.36	368.08	343.72	24.36	15.113	0					
8,600.00	7,190.00	8,945.96	7,520.00	17.69	18.37	153.36	368.08	343.01	25.07	14.682	0					
8,700.00	7,190.00	9,045.96	7,520.00	18.18	18.84	153.36	368.08	342.29	25.79	14.271	0					
8,800.00	7,190.00	9,145.96	7,520.00	18.67	19.33	153.36	368.08	341.56	26.52	13.878	0					
8,900.00	7,190.00	9,245.96	7,520.00	19.18	19.83	153.36	368.08	340.82	27.26	13.504	0					
9,000.00	7,190.00	9,345.96	7,520.00	19.70	20.34	153.36	368.08	340.08	28.00	13.146	0					
9,100.00	7,190.00	9,445.96	7,520.00	20.24	20.86	153.36	368.08	339.33	28.75	12.803	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 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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	7,190.00	9,545.96	7,520.00	20.78	21.39	153.36	368.08	338.58	29.50	12.477	0		
9,300.00	7,190.00	9,645.96	7,520.00	21.33	21.93	153.36	368.08	337.82	30.26	12.164	0		
9,340.46	7,190.00	9,686.42	7,520.00	21.56	22.15	153.36	368.08	337.39	30.68	11.996	0		
9,400.00	7,190.00	9,745.96	7,520.00	21.89	22.48	153.36	368.08	337.05	31.02	11.865	0		
9,500.00	7,190.00	9,845.96	7,520.00	22.46	23.04	153.36	368.08	336.29	31.79	11.579	0		
9,600.00	7,190.00	9,945.96	7,520.00	23.04	23.61	153.36	368.08	335.52	32.56	11.305	0		
9,700.00	7,190.00	10,045.96	7,520.00	23.62	24.18	153.36	368.08	334.74	33.33	11.042	0		
9,800.00	7,190.00	10,145.96	7,520.00	24.21	24.76	153.36	368.08	333.97	34.11	10.790	0		
9,900.00	7,190.00	10,245.96	7,520.00	24.80	25.35	153.36	368.08	333.18	34.89	10.549	0		
10,000.00	7,190.00	10,345.96	7,520.00	25.40	25.94	153.36	368.08	332.40	35.68	10.317	0		
10,100.00	7,190.00	10,445.96	7,520.00	26.01	26.54	153.36	368.08	331.61	36.46	10.095	0		
10,200.00	7,190.00	10,545.96	7,520.00	26.62	27.14	153.36	368.08	330.83	37.25	9.881	0		
10,300.00	7,190.00	10,645.96	7,520.00	27.23	27.75	153.36	368.08	330.03	38.04	9.675	0		
10,400.00	7,190.00	10,745.96	7,520.00	27.85	28.36	153.36	368.08	329.24	38.84	9.477	0		
10,500.00	7,190.00	10,845.96	7,520.00	28.48	28.98	153.36	368.08	328.44	39.63	9.287	0		
10,600.00	7,190.00	10,945.96	7,520.00	29.10	29.60	153.36	368.08	327.65	40.43	9.104	0		
10,700.00	7,190.00	11,045.96	7,520.00	29.73	30.22	153.36	368.08	326.85	41.23	8.927	0		
10,800.00	7,190.00	11,145.96	7,520.00	30.37	30.85	153.36	368.08	326.05	42.03	8.757	0		
10,900.00	7,190.00	11,245.96	7,520.00	31.00	31.48	153.36	368.08	325.24	42.84	8.593	0		
11,000.00	7,190.00	11,345.96	7,520.00	31.64	32.11	153.36	368.08	324.44	43.64	8.434	0		
11,100.00	7,190.00	11,445.96	7,520.00	32.28	32.75	153.36	368.08	323.63	44.45	8.281	0		
11,200.00	7,190.00	11,545.96	7,520.00	32.93	33.39	153.36	368.08	322.82	45.26	8.133	0		
11,300.00	7,190.00	11,645.96	7,520.00	33.57	34.03	153.36	368.08	322.02	46.06	7.991	0		
11,400.00	7,190.00	11,745.96	7,520.00	34.22	34.67	153.36	368.08	321.21	46.87	7.852	0		
11,500.00	7,190.00	11,845.96	7,520.00	34.87	35.32	153.36	368.08	320.39	47.69	7.719	0		
11,600.00	7,190.00	11,945.96	7,520.00	35.53	35.97	153.36	368.08	319.58	48.50	7.589	0		
11,700.00	7,190.00	12,045.96	7,520.00	36.18	36.62	153.36	368.08	318.77	49.31	7.464	0		
11,800.00	7,190.00	12,145.96	7,520.00	36.84	37.27	153.36	368.08	317.95	50.13	7.343	0		
11,900.00	7,190.00	12,245.96	7,520.00	37.50	37.92	153.36	368.08	317.14	50.94	7.225	0		
12,000.00	7,190.00	12,345.96	7,520.00	38.16	38.58	153.36	368.08	316.32	51.76	7.111	0		
12,100.00	7,190.00	12,445.96	7,520.00	38.82	39.24	153.36	368.08	315.50	52.58	7.001	0		
12,200.00	7,190.00	12,545.96	7,520.00	39.48	39.89	153.36	368.08	314.69	53.40	6.893	0		
12,300.00	7,190.00	12,645.96	7,520.00	40.15	40.56	153.36	368.08	313.87	54.22	6.789	0		
12,400.00	7,190.00	12,745.96	7,520.00	40.81	41.22	153.36	368.08	313.05	55.04	6.688	0		
12,500.00	7,190.00	12,845.96	7,520.00	41.48	41.88	153.36	368.09	312.23	55.86	6.590	0		
12,600.00	7,190.00	12,945.96	7,520.00	42.15	42.54	153.36	368.09	311.41	56.68	6.494	0		
12,700.00	7,190.00	13,045.96	7,520.00	42.82	43.21	153.36	368.09	310.58	57.50	6.401	0		
12,800.00	7,190.00	13,145.96	7,520.00	43.49	43.88	153.36	368.09	309.76	58.33	6.311	0		
12,900.00	7,190.00	13,245.96	7,520.00	44.16	44.55	153.36	368.09	308.94	59.15	6.223	0		
13,000.00	7,190.00	13,345.96	7,520.00	44.83	45.21	153.36	368.09	308.11	59.97	6.137	0		
13,100.00	7,190.00	13,445.96	7,520.00	45.50	45.89	153.36	368.09	307.29	60.80	6.054	0		
13,200.00	7,190.00	13,545.96	7,520.00	46.18	46.56	153.36	368.09	306.46	61.62	5.973	0		
13,300.00	7,190.00	13,645.96	7,520.00	46.85	47.23	153.36	368.09	305.64	62.45	5.894	0		
13,400.00	7,190.00	13,745.96	7,520.00	47.53	47.90	153.35	368.09	304.81	63.28	5.817	0		
13,500.00	7,190.00	13,845.96	7,520.00	48.21	48.58	153.35	368.09	303.99	64.10	5.742	0		
13,600.00	7,190.00	13,945.96	7,520.00	48.88	49.25	153.35	368.09	303.16	64.93	5.669	0		
13,700.00	7,190.00	14,045.96	7,520.00	49.56	49.93	153.35	368.09	302.33	65.76	5.598	0		
13,800.00	7,190.00	14,145.96	7,520.00	50.24	50.60	153.35	368.09	301.51	66.59	5.528	0		
13,900.00	7,190.00	14,245.96	7,520.00	50.92	51.28	153.35	368.09	300.68	67.42	5.460	0		
14,000.00	7,190.00	14,345.96	7,520.00	51.60	51.96	153.35	368.09	299.85	68.25	5.394	0		
14,100.00	7,190.00	14,445.96	7,520.00	52.28	52.63	153.35	368.10	299.02	69.08	5.329	0		
14,200.00	7,190.00	14,545.96	7,520.00	52.96	53.31	153.35	368.10	298.19	69.91	5.266	0		
14,300.00	7,190.00	14,645.96	7,520.00	53.65	53.99	153.35	368.10	297.36	70.74	5.204	0		
14,400.00	7,190.00	14,745.96	7,520.00	54.33	54.67	153.35	368.10	296.53	71.57	5.143	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 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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
14,500.00	7,190.00	14,845.96	7,520.00	55.01	55.35	153.35	368.10	295.70	72.40	5.084	0		
14,600.00	7,190.00	14,945.96	7,520.00	55.69	56.04	153.35	368.10	294.87	73.23	5.027	0		
14,700.00	7,190.00	15,045.96	7,520.00	56.38	56.72	153.35	368.10	294.04	74.06	4.970	0		
14,800.00	7,190.00	15,145.96	7,520.00	57.06	57.40	153.35	368.10	293.21	74.89	4.915	0		
14,900.00	7,190.00	15,245.96	7,520.00	57.75	58.08	153.35	368.10	292.38	75.73	4.861	0		
15,000.00	7,190.00	15,345.96	7,520.00	58.43	58.77	153.35	368.10	291.54	76.56	4.808	0		
15,100.00	7,190.00	15,445.96	7,520.00	59.12	59.45	153.35	368.10	290.71	77.39	4.756	0		
15,200.00	7,190.00	15,545.96	7,520.00	59.81	60.14	153.35	368.11	289.88	78.23	4.706	0		
15,300.00	7,190.00	15,645.96	7,520.00	60.49	60.82	153.35	368.11	289.05	79.06	4.656	0		
15,400.00	7,190.00	15,745.96	7,520.00	61.18	61.51	153.35	368.11	288.21	79.89	4.607	0		
15,500.00	7,190.00	15,845.96	7,520.00	61.87	62.19	153.35	368.11	287.38	80.73	4.560	0		
15,600.00	7,190.00	15,945.96	7,520.00	62.55	62.88	153.35	368.11	286.55	81.56	4.513	0		
15,700.00	7,190.00	16,045.96	7,520.00	63.24	63.56	153.35	368.11	285.71	82.40	4.468	0		
15,800.00	7,190.00	16,145.96	7,520.00	63.93	64.25	153.35	368.11	284.88	83.23	4.423	0		
15,900.00	7,190.00	16,245.96	7,520.00	64.62	64.94	153.35	368.11	284.05	84.07	4.379	0		
16,000.00	7,190.00	16,345.96	7,520.00	65.31	65.62	153.35	368.11	283.21	84.90	4.336	0		
16,100.00	7,190.00	16,445.96	7,520.00	66.00	66.31	153.35	368.11	282.38	85.74	4.294	0		
16,200.00	7,190.00	16,545.96	7,520.00	66.69	67.00	153.35	368.12	281.54	86.57	4.252	0		
16,300.00	7,190.00	16,645.96	7,520.00	67.38	67.69	153.35	368.12	280.71	87.41	4.211	0		
16,400.00	7,190.00	16,745.96	7,520.00	68.07	68.38	153.35	368.12	279.87	88.25	4.172	0		
16,500.00	7,190.00	16,845.96	7,520.00	68.76	69.07	153.35	368.12	279.04	89.08	4.132	0		
16,600.00	7,190.00	16,945.96	7,520.00	69.45	69.76	153.35	368.12	278.20	89.92	4.094	0		
16,700.00	7,190.00	17,045.96	7,520.00	70.14	70.45	153.35	368.12	277.37	90.75	4.056	0		
16,800.00	7,190.00	17,145.96	7,520.00	70.83	71.14	153.34	368.12	276.53	91.59	4.019	0		
16,900.00	7,190.00	17,245.96	7,520.00	71.52	71.83	153.34	368.12	275.69	92.43	3.983	0		
17,000.00	7,190.00	17,345.96	7,520.00	72.21	72.52	153.34	368.12	274.86	93.27	3.947	0		
17,100.00	7,190.00	17,445.96	7,520.00	72.91	73.21	153.34	368.13	274.02	94.10	3.912	0		
17,200.00	7,190.00	17,545.96	7,520.00	73.60	73.90	153.34	368.13	273.19	94.94	3.877	0		
17,297.69	7,190.00	17,644.13	7,520.00	74.28	74.58	153.36	368.07	272.33	95.74	3.844	0	SF	



# Schlumberger

## Anticollision Risk Report



<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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	0.00	251.79					0	
100.00	100.00	95.00	95.00	0.15	0.14	0.00	251.74	251.46	0.29	880.578	0		
200.00	200.00	195.00	195.00	0.32	0.31	0.00	251.74	251.11	0.63	397.352	0		
300.00	300.00	295.00	295.00	0.50	0.49	0.00	251.74	250.76	0.98	256.197	0		
400.00	400.00	395.00	395.00	0.67	0.66	0.00	251.74	250.41	1.33	189.042	0		
500.00	500.00	495.00	495.00	0.84	0.84	0.00	251.74	250.06	1.68	149.781	0		
600.00	600.00	595.00	595.00	1.02	1.01	0.00	251.74	249.71	2.03	124.023	0		CC, ES
700.00	700.00	688.19	688.18	1.19	1.17	-0.15	253.02	250.66	2.37	106.894	0		
800.00	799.98	780.78	780.66	1.37	1.34	147.69	258.62	255.91	2.70	95.676	0		
900.00	899.84	872.67	872.26	1.54	1.50	147.37	269.97	266.93	3.04	88.908	0		
1,000.00	999.45	963.44	962.47	1.72	1.66	147.08	287.01	283.64	3.37	85.247	0		
1,100.00	1,098.70	1,052.66	1,050.78	1.90	1.82	146.81	309.63	305.94	3.69	83.838	0		
1,200.00	1,197.47	1,139.95	1,136.76	2.08	1.99	146.56	337.71	333.69	4.02	84.106	0		
1,228.56	1,225.57	1,166.09	1,162.42	2.14	2.04	146.49	346.67	342.56	4.11	84.362	0		
1,300.00	1,295.79	1,233.81	1,228.90	2.27	2.16	146.62	369.40	365.04	4.36	84.772	0		
1,400.00	1,394.10	1,328.60	1,321.96	2.46	2.35	146.76	401.22	396.51	4.71	85.254	0		
1,500.00	1,492.40	1,423.40	1,415.02	2.65	2.53	146.89	433.04	427.99	5.06	85.650	0		
1,600.00	1,590.70	1,518.20	1,508.08	2.84	2.71	147.00	464.87	459.46	5.41	85.981	0		
1,700.00	1,689.00	1,613.00	1,601.14	3.03	2.90	147.09	496.69	490.93	5.76	86.260	0		
1,800.00	1,787.31	1,707.79	1,694.19	3.23	3.08	147.17	528.52	522.41	6.11	86.499	0		
1,900.00	1,885.61	1,802.59	1,787.25	3.42	3.27	147.25	560.34	553.88	6.46	86.705	0		
2,000.00	1,983.91	1,897.39	1,880.31	3.62	3.45	147.31	592.17	585.35	6.82	86.885	0		
2,100.00	2,082.22	1,992.19	1,973.37	3.81	3.64	147.37	624.00	616.83	7.17	87.042	0		
2,200.00	2,180.52	2,086.99	2,066.43	4.01	3.83	147.42	655.83	648.30	7.52	87.181	0		
2,300.00	2,278.82	2,181.78	2,159.49	4.20	4.02	147.47	687.66	679.78	7.88	87.304	0		
2,400.00	2,377.12	2,276.58	2,252.55	4.40	4.20	147.52	719.49	711.26	8.23	87.414	0		
2,500.00	2,475.43	2,371.38	2,345.61	4.60	4.39	147.56	751.32	742.73	8.59	87.514	0		
2,600.00	2,573.73	2,466.18	2,438.67	4.79	4.58	147.59	783.15	774.21	8.94	87.603	0		
2,700.00	2,672.03	2,560.97	2,531.73	4.99	4.77	147.63	814.98	805.68	9.29	87.684	0		
2,800.00	2,770.33	2,655.77	2,624.79	5.19	4.96	147.66	846.81	837.16	9.65	87.758	0		
2,900.00	2,868.64	2,750.57	2,717.85	5.38	5.15	147.69	878.64	868.63	10.00	87.826	0		
3,000.00	2,966.94	2,845.37	2,810.91	5.58	5.34	147.71	910.47	900.11	10.36	87.888	0		
3,100.00	3,065.24	2,940.17	2,903.97	5.78	5.52	147.74	942.30	931.59	10.71	87.945	0		
3,200.00	3,163.55	3,034.96	2,997.03	5.98	5.71	147.76	974.13	963.06	11.07	87.997	0		
3,300.00	3,261.85	3,129.76	3,090.09	6.17	5.90	147.79	1,005.96	994.54	11.43	88.046	0		
3,400.00	3,360.15	3,224.56	3,183.15	6.37	6.09	147.81	1,037.80	1,026.02	11.78	88.091	0		
3,500.00	3,458.45	3,319.36	3,276.21	6.57	6.28	147.83	1,069.63	1,057.49	12.14	88.133	0		
3,600.00	3,556.76	3,414.15	3,369.27	6.77	6.47	147.84	1,101.46	1,088.97	12.49	88.172	0		
3,700.00	3,655.06	3,508.95	3,462.33	6.97	6.66	147.86	1,133.29	1,120.44	12.85	88.209	0		
3,800.00	3,753.36	3,603.75	3,555.39	7.17	6.85	147.88	1,165.12	1,151.92	13.20	88.243	0		
3,900.00	3,851.67	3,698.55	3,648.45	7.36	7.04	147.89	1,196.96	1,183.40	13.56	88.275	0		
4,000.00	3,949.97	3,793.35	3,741.51	7.56	7.23	147.91	1,228.79	1,214.87	13.92	88.306	0		
4,100.00	4,048.27	3,888.14	3,834.57	7.76	7.42	147.92	1,260.62	1,246.35	14.27	88.334	0		
4,200.00	4,146.57	3,982.94	3,927.63	7.96	7.61	147.94	1,292.45	1,277.83	14.63	88.361	0		
4,300.00	4,244.88	4,077.74	4,020.68	8.16	7.80	147.95	1,324.29	1,309.30	14.98	88.386	0		
4,400.00	4,343.18	4,172.54	4,113.74	8.36	7.99	147.96	1,356.12	1,340.78	15.34	88.410	0		
4,500.00	4,441.48	4,267.33	4,206.80	8.55	8.18	147.97	1,387.95	1,372.26	15.69	88.433	0		
4,600.00	4,539.78	4,362.13	4,299.86	8.75	8.37	147.98	1,419.78	1,403.73	16.05	88.455	0		
4,700.00	4,638.09	4,456.93	4,392.92	8.95	8.56	147.99	1,451.62	1,435.21	16.41	88.475	0		
4,800.00	4,736.39	4,551.73	4,485.98	9.15	8.75	148.00	1,483.45	1,466.69	16.76	88.494	0		
4,900.00	4,834.69	4,646.52	4,579.04	9.35	8.94	148.01	1,515.28	1,498.16	17.12	88.513	0		
5,000.00	4,933.00	4,741.32	4,672.10	9.55	9.13	148.02	1,547.12	1,529.64	17.48	88.531	0		
5,100.00	5,031.30	4,836.12	4,765.16	9.75	9.32	148.03	1,578.95	1,561.12	17.83	88.547	0		
5,200.00	5,129.60	4,930.92	4,858.22	9.95	9.51	148.04	1,610.78	1,592.59	18.19	88.563	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 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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	5,227.90	5,025.72	4,951.28	10.14	9.70	148.05	1,642.61	1,624.07	18.54	88.579	0			
5,400.00	5,326.21	5,120.51	5,044.34	10.34	9.89	148.06	1,674.45	1,655.55	18.90	88.594	0			
5,500.00	5,424.51	5,215.31	5,137.40	10.54	10.08	148.06	1,706.28	1,687.02	19.26	88.608	0			
5,600.00	5,522.81	5,310.11	5,230.46	10.74	10.27	148.07	1,738.11	1,718.50	19.61	88.621	0			
5,700.00	5,621.11	5,404.91	5,323.52	10.94	10.46	148.08	1,769.95	1,749.98	19.97	88.634	0			
5,800.00	5,719.42	5,499.70	5,416.58	11.14	10.65	148.09	1,801.78	1,781.45	20.33	88.647	0			
5,900.00	5,817.72	5,594.50	5,509.64	11.34	10.84	148.09	1,833.61	1,812.93	20.68	88.658	0			
6,000.00	5,916.02	5,689.30	5,602.70	11.54	11.03	148.10	1,865.45	1,844.41	21.04	88.670	0			
6,011.99	5,927.81	5,700.67	5,613.86	11.56	11.06	148.10	1,869.26	1,848.18	21.08	88.671	0			
6,100.00	6,014.56	5,784.45	5,696.10	11.73	11.22	148.38	1,896.19	1,874.74	21.45	88.407	0			
6,200.00	6,113.63	5,880.44	5,790.33	11.91	11.42	148.61	1,924.11	1,902.25	21.85	88.044	0			
6,300.00	6,213.11	5,977.16	5,885.28	12.09	11.61	148.75	1,949.16	1,926.92	22.25	87.618	0			
6,400.00	6,312.88	6,186.06	6,091.37	12.26	12.01	148.67	1,969.21	1,946.39	22.82	86.294	0			
6,500.00	6,412.83	6,434.69	6,339.06	12.42	12.44	148.60	1,979.15	1,955.72	23.43	84.462	0			
6,540.55	6,453.38	6,536.47	6,440.82	12.49	12.60	0.41	1,980.18	1,955.57	24.61	80.466	0			
6,600.00	6,512.83	6,603.48	6,507.83	12.58	12.70	0.41	1,980.19	1,955.37	24.81	79.804	0			
6,640.55	6,553.38	6,644.03	6,548.38	12.65	12.77	0.41	1,980.19	1,955.24	24.94	79.385	0			
6,650.00	6,562.83	6,653.38	6,557.73	12.66	12.78	-89.59	1,980.19	1,956.13	24.05	82.324	0			
6,700.00	6,612.74	6,702.30	6,606.59	12.73	12.86	-89.60	1,980.18	1,955.97	24.21	81.792	0			
6,750.00	6,662.29	6,751.26	6,655.16	12.81	12.93	-89.62	1,980.18	1,955.82	24.36	81.295	0			
6,795.18	6,706.49	6,795.53	6,698.58	12.87	12.99	-89.63	1,980.18	1,955.69	24.48	80.874	0			
6,800.00	6,711.16	6,800.00	6,702.94	12.87	12.99	-89.63	1,980.17	1,955.68	24.50	80.831	0			
6,850.00	6,759.07	6,849.30	6,750.36	12.94	13.05	-89.65	1,980.17	1,955.54	24.63	80.392	0			
6,900.00	6,805.70	6,898.40	6,796.41	13.00	13.11	-89.67	1,980.17	1,955.41	24.76	79.977	0			
6,950.00	6,850.78	6,947.55	6,841.08	13.06	13.17	-89.70	1,980.16	1,955.28	24.88	79.580	0			
7,000.00	6,894.03	6,996.77	6,884.08	13.11	13.23	-89.72	1,980.16	1,955.15	25.00	79.196	0			
7,050.00	6,935.18	7,046.06	6,925.17	13.17	13.29	-89.75	1,980.15	1,955.03	25.12	78.817	0			
7,100.00	6,973.97	7,095.43	6,964.08	13.23	13.34	-89.78	1,980.15	1,954.90	25.24	78.438	0			
7,150.00	7,010.17	7,144.87	7,000.58	13.28	13.40	-89.81	1,980.14	1,954.78	25.37	78.052	0			
7,200.00	7,043.55	7,194.39	7,034.44	13.34	13.46	-89.84	1,980.14	1,954.64	25.50	77.652	0			
7,250.00	7,073.91	7,244.00	7,065.44	13.40	13.52	-89.88	1,980.14	1,954.50	25.64	77.230	0			
7,300.00	7,101.06	7,293.69	7,093.38	13.47	13.58	-89.91	1,980.14	1,954.35	25.79	76.782	0			
7,350.00	7,124.84	7,343.48	7,118.07	13.54	13.65	-89.94	1,980.14	1,954.18	25.95	76.300	0			
7,400.00	7,145.09	7,393.36	7,139.34	13.61	13.73	-89.98	1,980.13	1,954.01	26.13	75.783	0			
7,434.09	7,156.81	7,427.41	7,151.81	13.67	13.78	-90.00	1,980.13	1,953.87	26.26	75.403	0			
7,450.00	7,161.69	7,443.32	7,157.05	13.70	13.81	-90.01	1,980.13	1,953.81	26.32	75.226	0			
7,500.00	7,174.55	7,493.39	7,171.07	13.78	13.89	-90.05	1,980.13	1,953.60	26.53	74.629	0			
7,550.00	7,183.57	7,543.54	7,181.28	13.88	13.99	-90.08	1,980.14	1,953.38	26.76	73.994	0			
7,600.00	7,188.71	7,593.79	7,187.60	13.99	14.09	-90.11	1,980.14	1,953.13	27.01	73.321	0			
7,640.55	7,190.00	7,634.62	7,189.84	14.08	14.19	-90.14	1,980.14	1,952.92	27.22	72.751	0			
7,700.00	7,190.00	7,694.17	7,190.00	14.23	14.33	-90.14	1,980.14	1,952.60	27.55	71.887	0			
7,800.00	7,190.00	7,794.17	7,190.00	14.51	14.61	-90.14	1,980.14	1,952.00	28.14	70.358	0			
7,900.00	7,190.00	7,894.17	7,190.00	14.83	14.91	-90.14	1,980.14	1,951.34	28.80	68.759	0			
8,000.00	7,190.00	7,994.17	7,190.00	15.17	15.25	-90.14	1,980.14	1,950.63	29.51	67.111	0			
8,100.00	7,190.00	8,094.17	7,190.00	15.54	15.61	-90.14	1,980.14	1,949.88	30.26	65.434	0			
8,200.00	7,190.00	8,194.17	7,190.00	15.93	16.00	-90.14	1,980.14	1,949.08	31.06	63.746	0			
8,300.00	7,190.00	8,294.17	7,190.00	16.34	16.41	-90.14	1,980.14	1,948.23	31.91	62.061	0			
8,400.00	7,190.00	8,394.17	7,190.00	16.78	16.84	-90.14	1,980.14	1,947.35	32.79	60.391	0			
8,500.00	7,190.00	8,494.17	7,190.00	17.23	17.29	-90.14	1,980.14	1,946.43	33.71	58.747	0			
8,600.00	7,190.00	8,594.17	7,190.00	17.69	17.75	-90.14	1,980.14	1,945.48	34.66	57.135	0			
8,700.00	7,190.00	8,694.17	7,190.00	18.18	18.23	-90.14	1,980.14	1,944.50	35.64	55.563	0			
8,800.00	7,190.00	8,794.17	7,190.00	18.67	18.72	-90.14	1,980.14	1,943.49	36.65	54.033	0			
8,900.00	7,190.00	8,894.17	7,190.00	19.18	19.23	-90.14	1,980.14	1,942.46	37.68	52.550	0			
9,000.00	7,190.00	8,994.17	7,190.00	19.70	19.75	-90.14	1,980.14	1,941.40	38.74	51.115	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 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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	7,190.00	9,094.17	7,190.00	20.24	20.28	-90.14	1,980.14	1,940.32	39.82	49.730	0			
9,200.00	7,190.00	9,194.17	7,190.00	20.78	20.82	-90.14	1,980.14	1,939.22	40.92	48.394	0			
9,300.00	7,190.00	9,294.17	7,190.00	21.33	21.37	-90.14	1,980.14	1,938.10	42.03	47.107	0			
9,400.00	7,190.00	9,394.17	7,190.00	21.89	21.93	-90.14	1,980.13	1,936.97	43.17	45.869	0			
9,500.00	7,190.00	9,494.17	7,190.00	22.46	22.50	-90.14	1,980.13	1,935.81	44.32	44.678	0			
9,600.00	7,190.00	9,594.17	7,190.00	23.04	23.07	-90.14	1,980.13	1,934.65	45.48	43.534	0			
9,700.00	7,190.00	9,694.17	7,190.00	23.62	23.65	-90.14	1,980.13	1,933.47	46.66	42.435	0			
9,800.00	7,190.00	9,794.17	7,190.00	24.21	24.24	-90.14	1,980.13	1,932.28	47.85	41.380	0			
9,900.00	7,190.00	9,894.17	7,190.00	24.80	24.83	-90.14	1,980.13	1,931.08	49.05	40.366	0			
10,000.00	7,190.00	9,994.17	7,190.00	25.40	25.43	-90.14	1,980.13	1,929.86	50.27	39.392	0			
10,100.00	7,190.00	10,094.17	7,190.00	26.01	26.03	-90.14	1,980.13	1,928.64	51.49	38.457	0			
10,200.00	7,190.00	10,194.17	7,190.00	26.62	26.64	-90.14	1,980.13	1,927.41	52.72	37.558	0			
10,300.00	7,190.00	10,294.17	7,190.00	27.23	27.26	-90.14	1,980.13	1,926.17	53.96	36.695	0			
10,400.00	7,190.00	10,394.17	7,190.00	27.85	27.88	-90.14	1,980.13	1,924.92	55.21	35.866	0			
10,500.00	7,190.00	10,494.17	7,190.00	28.48	28.50	-90.14	1,980.13	1,923.66	56.47	35.068	0			
10,600.00	7,190.00	10,594.17	7,190.00	29.10	29.12	-90.14	1,980.12	1,922.40	57.73	34.301	0			
10,700.00	7,190.00	10,694.17	7,190.00	29.73	29.75	-90.14	1,980.12	1,921.13	59.00	33.563	0			
10,800.00	7,190.00	10,794.17	7,190.00	30.37	30.38	-90.14	1,980.12	1,919.85	60.27	32.853	0			
10,900.00	7,190.00	10,894.17	7,190.00	31.00	31.02	-90.14	1,980.12	1,918.57	61.55	32.169	0			
11,000.00	7,190.00	10,994.17	7,190.00	31.64	31.66	-90.14	1,980.12	1,917.28	62.84	31.510	0			
11,100.00	7,190.00	11,094.17	7,190.00	32.28	32.30	-90.14	1,980.12	1,915.99	64.13	30.876	0			
11,200.00	7,190.00	11,194.17	7,190.00	32.93	32.94	-90.14	1,980.12	1,914.69	65.43	30.264	0			
11,300.00	7,190.00	11,294.17	7,190.00	33.57	33.59	-90.14	1,980.12	1,913.39	66.73	29.674	0			
11,400.00	7,190.00	11,394.17	7,190.00	34.22	34.24	-90.14	1,980.11	1,912.08	68.03	29.105	0			
11,500.00	7,190.00	11,494.17	7,190.00	34.87	34.89	-90.14	1,980.11	1,910.77	69.34	28.555	0			
11,600.00	7,190.00	11,594.17	7,190.00	35.53	35.54	-90.14	1,980.11	1,909.46	70.66	28.025	0			
11,700.00	7,190.00	11,694.17	7,190.00	36.18	36.19	-90.14	1,980.11	1,908.14	71.97	27.512	0			
11,800.00	7,190.00	11,794.17	7,190.00	36.84	36.85	-90.14	1,980.11	1,906.82	73.29	27.017	0			
11,900.00	7,190.00	11,894.17	7,190.00	37.50	37.51	-90.14	1,980.11	1,905.49	74.62	26.538	0			
12,000.00	7,190.00	11,994.17	7,190.00	38.16	38.17	-90.14	1,980.11	1,904.16	75.94	26.074	0			
12,100.00	7,190.00	12,094.17	7,190.00	38.82	38.83	-90.14	1,980.10	1,902.83	77.27	25.626	0			
12,200.00	7,190.00	12,194.17	7,190.00	39.48	39.49	-90.14	1,980.10	1,901.50	78.60	25.192	0			
12,300.00	7,190.00	12,294.17	7,190.00	40.15	40.15	-90.14	1,980.10	1,900.17	79.94	24.771	0			
12,400.00	7,190.00	12,394.17	7,190.00	40.81	40.82	-90.14	1,980.10	1,898.83	81.27	24.364	0			
12,500.00	7,190.00	12,494.17	7,190.00	41.48	41.48	-90.14	1,980.10	1,897.49	82.61	23.969	0			
12,600.00	7,190.00	12,594.17	7,190.00	42.15	42.15	-90.14	1,980.10	1,896.14	83.95	23.586	0			
12,700.00	7,190.00	12,694.17	7,190.00	42.82	42.82	-90.14	1,980.09	1,894.80	85.30	23.214	0			
12,800.00	7,190.00	12,794.17	7,190.00	43.49	43.49	-90.14	1,980.09	1,893.45	86.64	22.854	0			
12,900.00	7,190.00	12,894.17	7,190.00	44.16	44.16	-90.14	1,980.09	1,892.10	87.99	22.504	0			
13,000.00	7,190.00	12,994.17	7,190.00	44.83	44.83	-90.14	1,980.09	1,890.75	89.34	22.164	0			
13,100.00	7,190.00	13,094.17	7,190.00	45.50	45.51	-90.14	1,980.09	1,889.40	90.69	21.834	0			
13,200.00	7,190.00	13,194.17	7,190.00	46.18	46.18	-90.14	1,980.08	1,888.04	92.04	21.513	0			
13,300.00	7,190.00	13,294.17	7,190.00	46.85	46.85	-90.14	1,980.08	1,886.69	93.39	21.201	0			
13,400.00	7,190.00	13,394.17	7,190.00	47.53	47.53	-90.14	1,980.08	1,885.33	94.75	20.898	0			
13,500.00	7,190.00	13,494.17	7,190.00	48.21	48.21	-90.14	1,980.08	1,883.97	96.11	20.603	0			
13,600.00	7,190.00	13,594.17	7,190.00	48.88	48.88	-90.14	1,980.08	1,882.61	97.47	20.315	0			
13,700.00	7,190.00	13,694.17	7,190.00	49.56	49.56	-90.14	1,980.07	1,881.25	98.83	20.036	0			
13,800.00	7,190.00	13,794.17	7,190.00	50.24	50.24	-90.14	1,980.07	1,879.88	100.19	19.764	0			
13,900.00	7,190.00	13,894.17	7,190.00	50.92	50.92	-90.14	1,980.07	1,878.52	101.55	19.498	0			
14,000.00	7,190.00	13,994.17	7,190.00	51.60	51.60	-90.14	1,980.07	1,877.15	102.91	19.240	0			
14,100.00	7,190.00	14,094.17	7,190.00	52.28	52.28	-90.14	1,980.06	1,875.79	104.28	18.988	0			
14,200.00	7,190.00	14,194.17	7,190.00	52.96	52.96	-90.14	1,980.06	1,874.42	105.64	18.743	0			
14,300.00	7,190.00	14,294.17	7,190.00	53.65	53.64	-90.14	1,980.06	1,873.05	107.01	18.503	0			
14,400.00	7,190.00	14,394.17	7,190.00	54.33	54.32	-90.14	1,980.06	1,871.68	108.38	18.270	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 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Risked Separation Factor	Probability of Collision				
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(°)	(usft)	(usft)	(usft)							
14,500.00	7,190.00	14,494.17	7,190.00	55.01	55.01	-90.14	1,980.05	1,870.31	109.75	18.042	0					
14,600.00	7,190.00	14,594.17	7,190.00	55.69	55.69	-90.14	1,980.05	1,868.93	111.12	17.819	0					
14,700.00	7,190.00	14,694.17	7,190.00	56.38	56.37	-90.14	1,980.05	1,867.56	112.49	17.602	0					
14,800.00	7,190.00	14,794.17	7,190.00	57.06	57.06	-90.14	1,980.05	1,866.19	113.86	17.390	0					
14,900.00	7,190.00	14,894.17	7,190.00	57.75	57.74	-90.14	1,980.04	1,864.81	115.23	17.183	0					
15,000.00	7,190.00	14,994.17	7,190.00	58.43	58.43	-90.14	1,980.04	1,863.43	116.61	16.980	0					
15,100.00	7,190.00	15,094.17	7,190.00	59.12	59.11	-90.14	1,980.04	1,862.06	117.98	16.783	0					
15,200.00	7,190.00	15,194.17	7,190.00	59.81	59.80	-90.14	1,980.04	1,860.68	119.36	16.589	0					
15,300.00	7,190.00	15,294.17	7,190.00	60.49	60.49	-90.14	1,980.03	1,859.30	120.73	16.400	0					
15,400.00	7,190.00	15,394.17	7,190.00	61.18	61.17	-90.14	1,980.03	1,857.92	122.11	16.215	0					
15,500.00	7,190.00	15,494.17	7,190.00	61.87	61.86	-90.14	1,980.03	1,856.54	123.49	16.034	0					
15,600.00	7,190.00	15,594.17	7,190.00	62.55	62.55	-90.14	1,980.02	1,855.16	124.86	15.857	0					
15,700.00	7,190.00	15,694.17	7,190.00	63.24	63.23	-90.14	1,980.02	1,853.78	126.24	15.684	0					
15,800.00	7,190.00	15,794.17	7,190.00	63.93	63.92	-90.14	1,980.02	1,852.40	127.62	15.515	0					
15,900.00	7,190.00	15,894.17	7,190.00	64.62	64.61	-90.14	1,980.02	1,851.01	129.00	15.349	0					
16,000.00	7,190.00	15,994.17	7,190.00	65.31	65.30	-90.14	1,980.01	1,849.63	130.38	15.186	0					
16,100.00	7,190.00	16,094.17	7,190.00	66.00	65.99	-90.14	1,980.01	1,848.25	131.76	15.027	0					
16,200.00	7,190.00	16,194.17	7,190.00	66.69	66.68	-90.14	1,980.01	1,846.86	133.14	14.871	0					
16,300.00	7,190.00	16,294.17	7,190.00	67.38	67.37	-90.14	1,980.00	1,845.48	134.53	14.718	0					
16,400.00	7,190.00	16,394.17	7,190.00	68.07	68.06	-90.14	1,980.00	1,844.09	135.91	14.569	0					
16,500.00	7,190.00	16,494.17	7,190.00	68.76	68.75	-90.14	1,980.00	1,842.70	137.29	14.422	0					
16,600.00	7,190.00	16,594.17	7,190.00	69.45	69.44	-90.14	1,979.99	1,841.32	138.68	14.278	0					
16,700.00	7,190.00	16,694.17	7,190.00	70.14	70.13	-90.14	1,979.99	1,839.93	140.06	14.137	0					
16,800.00	7,190.00	16,794.17	7,190.00	70.83	70.82	-90.14	1,979.99	1,838.54	141.44	13.998	0					
16,900.00	7,190.00	16,894.17	7,190.00	71.52	71.51	-90.14	1,979.98	1,837.16	142.83	13.863	0					
17,000.00	7,190.00	16,994.17	7,190.00	72.21	72.20	-90.14	1,979.98	1,835.77	144.21	13.729	0					
17,100.00	7,190.00	17,094.17	7,190.00	72.91	72.90	-90.14	1,979.98	1,834.38	145.60	13.599	0					
17,200.00	7,190.00	17,194.17	7,190.00	73.60	73.59	-90.14	1,979.97	1,832.99	146.99	13.471	0					
17,263.25	7,190.00	17,257.51	7,190.00	74.04	74.03	-90.14	1,979.97	1,832.11	147.86	13.391	0					
17,297.69	7,190.00	17,273.45	7,190.00	74.28	74.14	-90.14	1,980.05	1,831.84	148.21	13.360	0	SF				



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16")
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16")
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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	-0.02	224.11						0	
100.00	100.00	95.00	95.00	0.15	0.14	-0.02	224.06	223.77	0.29	783.738	0		0	
200.00	200.00	195.00	195.00	0.32	0.31	-0.02	224.06	223.43	0.63	353.654	0		0	
300.00	300.00	295.00	295.00	0.50	0.49	-0.02	224.06	223.08	0.98	228.022	0		0	
400.00	400.00	395.00	395.00	0.67	0.66	-0.02	224.06	222.73	1.33	168.252	0		0	
500.00	500.00	495.00	495.00	0.84	0.84	-0.02	224.06	222.38	1.68	133.309	0		0	
600.00	600.00	595.00	595.00	1.02	1.01	-0.02	224.06	222.03	2.03	110.384	0		0	
700.00	700.00	695.00	695.00	1.19	1.19	-0.02	224.06	221.68	2.38	94.187	0		0	
800.00	799.98	789.10	789.09	1.37	1.35	148.15	226.78	224.06	2.72	83.467	0	CC, ES	0	
900.00	899.84	882.46	882.33	1.54	1.51	148.10	235.18	232.12	3.05	77.046	0		0	
1,000.00	999.45	974.94	974.51	1.72	1.68	148.00	249.21	245.83	3.39	73.620	0		0	
1,100.00	1,098.70	1,066.12	1,065.12	1.90	1.84	147.85	268.81	265.09	3.71	72.362	0		0	
1,200.00	1,197.47	1,155.60	1,153.68	2.08	2.00	147.66	293.84	289.80	4.04	72.723	0		0	
1,228.56	1,225.57	1,182.53	1,180.27	2.14	2.05	147.61	301.91	297.78	4.14	73.001	0		0	
1,300.00	1,295.79	1,250.97	1,247.82	2.27	2.18	147.74	322.40	318.02	4.38	73.527	0		0	
1,400.00	1,394.10	1,346.76	1,342.37	2.46	2.36	147.88	351.08	346.35	4.73	74.156	0		0	
1,500.00	1,492.40	1,442.56	1,436.93	2.65	2.53	148.01	379.76	374.68	5.08	74.683	0		0	
1,600.00	1,590.70	1,538.35	1,531.49	2.84	2.71	148.12	408.44	403.01	5.44	75.130	0		0	
1,700.00	1,689.00	1,634.15	1,626.05	3.03	2.89	148.21	437.13	431.34	5.79	75.513	0		0	
1,800.00	1,787.31	1,729.94	1,720.61	3.23	3.08	148.30	465.81	459.67	6.14	75.845	0		0	
1,900.00	1,885.61	1,825.74	1,815.16	3.42	3.26	148.37	494.50	488.00	6.49	76.136	0		0	
2,000.00	1,983.91	1,921.54	1,909.72	3.62	3.44	148.44	523.19	516.34	6.85	76.391	0		0	
2,100.00	2,082.22	2,017.33	2,004.28	3.81	3.62	148.49	551.87	544.67	7.20	76.618	0		0	
2,200.00	2,180.52	2,113.13	2,098.84	4.01	3.80	148.55	580.56	573.00	7.56	76.821	0		0	
2,300.00	2,278.82	2,208.92	2,193.39	4.20	3.99	148.59	609.25	601.34	7.91	77.003	0		0	
2,400.00	2,377.12	2,304.72	2,287.95	4.40	4.17	148.64	637.94	629.67	8.27	77.167	0		0	
2,500.00	2,475.43	2,400.51	2,382.51	4.60	4.35	148.68	666.62	658.00	8.62	77.316	0		0	
2,600.00	2,573.73	2,496.31	2,477.07	4.79	4.54	148.71	695.31	686.34	8.98	77.452	0		0	
2,700.00	2,672.03	2,592.10	2,571.62	4.99	4.72	148.75	724.00	714.67	9.33	77.576	0		0	
2,800.00	2,770.33	2,687.90	2,666.18	5.19	4.90	148.78	752.69	743.00	9.69	77.690	0		0	
2,900.00	2,868.64	2,783.70	2,760.74	5.38	5.09	148.81	781.38	771.34	10.04	77.795	0		0	
3,000.00	2,966.94	2,879.49	2,855.30	5.58	5.27	148.83	810.07	799.67	10.40	77.892	0		0	
3,100.00	3,065.24	2,975.29	2,949.85	5.78	5.46	148.86	838.76	828.00	10.76	77.981	0		0	
3,200.00	3,163.55	3,071.08	3,044.41	5.98	5.64	148.88	867.45	856.34	11.11	78.065	0		0	
3,300.00	3,261.85	3,166.88	3,138.97	6.17	5.83	148.90	896.14	884.67	11.47	78.142	0		0	
3,400.00	3,360.15	3,262.67	3,233.53	6.37	6.01	148.92	924.83	913.01	11.82	78.215	0		0	
3,500.00	3,458.45	3,358.47	3,328.08	6.57	6.19	148.94	953.52	941.34	12.18	78.282	0		0	
3,600.00	3,556.76	3,454.26	3,422.64	6.77	6.38	148.96	982.21	969.67	12.54	78.346	0		0	
3,700.00	3,655.06	3,550.06	3,517.20	6.97	6.56	148.98	1,010.90	998.01	12.89	78.406	0		0	
3,800.00	3,753.36	3,645.85	3,611.76	7.17	6.75	148.99	1,039.59	1,026.34	13.25	78.462	0		0	
3,900.00	3,851.67	3,741.65	3,706.32	7.36	6.93	149.01	1,068.28	1,054.68	13.61	78.515	0		0	
4,000.00	3,949.97	3,837.45	3,800.87	7.56	7.12	149.02	1,096.97	1,083.01	13.96	78.565	0		0	
4,100.00	4,048.27	3,933.24	3,895.43	7.76	7.30	149.04	1,125.66	1,111.34	14.32	78.612	0		0	
4,200.00	4,146.57	4,029.04	3,989.99	7.96	7.49	149.05	1,154.35	1,139.68	14.68	78.657	0		0	
4,300.00	4,244.88	4,124.83	4,084.55	8.16	7.67	149.06	1,183.04	1,168.01	15.03	78.699	0		0	
4,400.00	4,343.18	4,220.63	4,179.10	8.36	7.86	149.07	1,211.74	1,196.35	15.39	78.740	0		0	
4,500.00	4,441.48	4,316.42	4,273.66	8.55	8.04	149.08	1,240.43	1,224.68	15.75	78.778	0		0	
4,600.00	4,539.78	4,412.22	4,368.22	8.75	8.23	149.10	1,269.12	1,253.01	16.10	78.814	0		0	
4,700.00	4,638.09	4,508.01	4,462.78	8.95	8.41	149.11	1,297.81	1,281.35	16.46	78.849	0		0	
4,800.00	4,736.39	4,603.81	4,557.33	9.15	8.60	149.12	1,326.50	1,309.68	16.82	78.883	0		0	
4,900.00	4,834.69	4,699.61	4,651.89	9.35	8.78	149.13	1,355.19	1,338.02	17.17	78.914	0		0	
5,000.00	4,933.00	4,795.40	4,746.45	9.55	8.97	149.13	1,383.88	1,366.35	17.53	78.945	0		0	
5,100.00	5,031.30	4,891.20	4,841.01	9.75	9.15	149.14	1,412.57	1,394.69	17.89	78.974	0		0	
5,200.00	5,129.60	4,986.99	4,935.56	9.95	9.34	149.15	1,441.26	1,423.02	18.24	79.001	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 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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		
5,300.00	5,227.90	5,082.79	5,030.12	10.14	9.52	149.16	1,469.95	1,451.35	18.60	79.028	0			
5,400.00	5,326.21	5,178.58	5,124.68	10.34	9.71	149.17	1,498.65	1,479.69	18.96	79.054	0			
5,500.00	5,424.51	5,274.38	5,219.24	10.54	9.89	149.17	1,527.34	1,508.02	19.31	79.078	0			
5,600.00	5,522.81	5,370.17	5,313.80	10.74	10.08	149.18	1,556.03	1,536.36	19.67	79.102	0			
5,700.00	5,621.11	5,465.97	5,408.35	10.94	10.26	149.19	1,584.72	1,564.69	20.03	79.125	0			
5,800.00	5,719.42	5,561.77	5,502.91	11.14	10.45	149.19	1,613.41	1,593.03	20.39	79.146	0			
5,900.00	5,817.72	5,657.56	5,597.47	11.34	10.63	149.20	1,642.10	1,621.36	20.74	79.168	0			
6,000.00	5,916.02	5,753.36	5,692.03	11.54	10.82	149.21	1,670.79	1,649.69	21.10	79.188	0			
6,011.99	5,927.81	5,764.84	5,703.36	11.56	10.84	149.21	1,674.23	1,653.09	21.14	79.190	0			
6,100.00	6,014.56	5,849.47	5,786.90	11.73	11.01	149.44	1,698.37	1,676.86	21.50	78.978	0			
6,200.00	6,113.63	5,946.34	5,882.52	11.91	11.19	149.62	1,723.06	1,701.16	21.90	78.665	0			
6,300.00	6,213.11	6,043.86	5,978.77	12.09	11.38	149.71	1,744.84	1,722.55	22.29	78.281	0			
6,400.00	6,312.88	6,141.89	6,075.54	12.26	11.57	149.72	1,763.67	1,741.01	22.66	77.830	0			
6,500.00	6,412.83	6,240.33	6,172.71	12.42	11.76	149.64	1,779.57	1,756.55	23.02	77.317	0			
6,540.55	6,453.38	6,280.34	6,212.20	12.49	11.84	1.41	1,785.17	1,761.31	23.86	74.814	0			
6,600.00	6,512.83	6,339.02	6,270.12	12.58	11.95	1.23	1,793.05	1,768.98	24.07	74.498	0			
6,640.55	6,553.38	6,379.05	6,309.64	12.65	12.03	1.12	1,798.43	1,774.22	24.21	74.285	0			
6,650.00	6,562.83	6,388.37	6,318.83	12.66	12.05	-88.80	1,799.68	1,776.14	23.54	76.456	0			
6,700.00	6,612.74	6,485.21	6,414.64	12.73	12.23	-88.68	1,805.70	1,781.91	23.79	75.897	0			
6,750.00	6,662.29	6,588.09	6,516.88	12.81	12.41	-88.91	1,810.21	1,786.16	24.05	75.275	0			
6,800.00	6,711.16	6,690.55	6,619.04	12.87	12.59	-89.45	1,813.26	1,788.97	24.30	74.630	0			
6,850.00	6,759.07	6,792.13	6,720.54	12.94	12.76	-90.28	1,814.96	1,790.42	24.54	73.967	0			
6,900.00	6,805.70	6,872.30	6,800.70	13.00	12.89	-91.13	1,815.53	1,790.79	24.74	73.394	0			
6,950.00	6,850.78	6,917.38	6,845.78	13.06	12.96	-91.69	1,816.12	1,791.25	24.87	73.016	0			
7,000.00	6,894.03	6,961.50	6,889.91	13.11	13.03	-92.30	1,817.13	1,792.13	25.00	72.673	0			
7,050.00	6,935.18	7,011.84	6,940.17	13.17	13.11	-93.00	1,818.56	1,793.42	25.14	72.341	0			
7,100.00	6,973.97	7,064.84	6,992.70	13.23	13.19	-93.72	1,820.36	1,795.09	25.27	72.035	0			
7,150.00	7,010.17	7,120.94	7,047.47	13.28	13.27	-94.44	1,822.51	1,797.11	25.40	71.749	0			
7,200.00	7,043.55	7,180.61	7,104.32	13.34	13.34	-95.16	1,824.98	1,799.44	25.53	71.477	0			
7,250.00	7,073.91	7,244.39	7,162.92	13.40	13.42	-95.90	1,827.69	1,802.03	25.67	71.212	0			
7,300.00	7,101.06	7,312.84	7,222.69	13.47	13.50	-96.64	1,830.59	1,804.79	25.80	70.943	0			
7,350.00	7,124.84	7,386.54	7,282.64	13.54	13.59	-97.38	1,833.58	1,807.63	25.95	70.655	0			
7,400.00	7,145.09	7,466.01	7,341.27	13.61	13.69	-98.11	1,836.53	1,810.42	26.11	70.328	0			
7,450.00	7,161.69	7,551.57	7,396.41	13.70	13.80	-98.80	1,839.32	1,813.02	26.30	69.939	0			
7,500.00	7,174.55	7,643.25	7,445.20	13.78	13.92	-99.42	1,841.79	1,815.27	26.52	69.451	0			
7,550.00	7,183.57	7,740.59	7,484.24	13.88	14.07	-99.93	1,843.78	1,816.99	26.79	68.835	0			
7,600.00	7,188.71	7,842.50	7,510.09	13.99	14.26	-100.29	1,845.14	1,818.03	27.11	68.066	0			
7,640.55	7,190.00	7,927.36	7,519.40	14.08	14.45	-100.44	1,845.71	1,818.30	27.41	67.327	0			
7,700.00	7,190.00	8,001.33	7,520.00	14.23	14.63	-100.46	1,845.76	1,817.99	27.78	66.451	0			
7,800.00	7,190.00	8,101.33	7,520.00	14.51	14.91	-100.46	1,845.76	1,817.39	28.37	65.057	0			
7,900.00	7,190.00	8,201.33	7,520.00	14.83	15.22	-100.46	1,845.76	1,816.74	29.02	63.602	0			
8,000.00	7,190.00	8,301.33	7,520.00	15.17	15.56	-100.46	1,845.76	1,816.04	29.72	62.104	0			
8,100.00	7,190.00	8,401.33	7,520.00	15.54	15.93	-100.46	1,845.76	1,815.30	30.47	60.581	0			
8,200.00	7,190.00	8,501.33	7,520.00	15.93	16.31	-100.46	1,845.76	1,814.51	31.26	59.048	0			
8,300.00	7,190.00	8,601.33	7,520.00	16.34	16.72	-100.46	1,845.76	1,813.67	32.09	57.518	0			
8,400.00	7,190.00	8,701.33	7,520.00	16.78	17.15	-100.46	1,845.76	1,812.80	32.96	56.001	0			
8,500.00	7,190.00	8,801.33	7,520.00	17.23	17.60	-100.46	1,845.76	1,811.90	33.86	54.507	0			
8,600.00	7,190.00	8,901.33	7,520.00	17.69	18.06	-100.46	1,845.76	1,810.96	34.80	53.041	0			
8,700.00	7,190.00	9,001.33	7,520.00	18.18	18.54	-100.46	1,845.76	1,810.00	35.76	51.610	0			
8,800.00	7,190.00	9,101.33	7,520.00	18.67	19.03	-100.46	1,845.76	1,809.01	36.76	50.216	0			
8,900.00	7,190.00	9,201.33	7,520.00	19.18	19.53	-100.46	1,845.76	1,807.99	37.77	48.864	0			
9,000.00	7,190.00	9,301.33	7,520.00	19.70	20.05	-100.46	1,845.76	1,806.95	38.81	47.554	0			
9,100.00	7,190.00	9,401.33	7,520.00	20.24	20.58	-100.46	1,845.76	1,805.89	39.88	46.289	0			
9,200.00	7,190.00	9,501.33	7,520.00	20.78	21.11	-100.46	1,845.76	1,804.80	40.96	45.067	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 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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	
9,300.00	7,190.00	9,601.33	7,520.00	21.33	21.66	-100.46	1,845.76	1,803.70	42.06	43.889	0		
9,400.00	7,190.00	9,701.33	7,520.00	21.89	22.22	-100.46	1,845.76	1,802.59	43.17	42.755	0		
9,500.00	7,190.00	9,801.33	7,520.00	22.46	22.78	-100.46	1,845.76	1,801.46	44.30	41.663	0		
9,600.00	7,190.00	9,901.33	7,520.00	23.04	23.35	-100.46	1,845.76	1,800.31	45.45	40.613	0		
9,700.00	7,190.00	10,001.33	7,520.00	23.62	23.93	-100.46	1,845.76	1,799.15	46.61	39.603	0		
9,800.00	7,190.00	10,101.33	7,520.00	24.21	24.51	-100.46	1,845.76	1,797.98	47.78	38.633	0		
9,900.00	7,190.00	10,201.33	7,520.00	24.80	25.10	-100.46	1,845.76	1,796.80	48.96	37.700	0		
10,000.00	7,190.00	10,301.33	7,520.00	25.40	25.70	-100.46	1,845.75	1,795.60	50.15	36.803	0		
10,100.00	7,190.00	10,401.33	7,520.00	26.01	26.30	-100.46	1,845.75	1,794.40	51.35	35.941	0		
10,200.00	7,190.00	10,501.33	7,520.00	26.62	26.91	-100.46	1,845.75	1,793.19	52.57	35.112	0		
10,300.00	7,190.00	10,601.33	7,520.00	27.23	27.52	-100.46	1,845.75	1,791.96	53.79	34.316	0		
10,400.00	7,190.00	10,701.33	7,520.00	27.85	28.14	-100.46	1,845.75	1,790.74	55.02	33.550	0		
10,500.00	7,190.00	10,801.33	7,520.00	28.48	28.76	-100.46	1,845.75	1,789.50	56.25	32.813	0		
10,600.00	7,190.00	10,901.33	7,520.00	29.10	29.38	-100.46	1,845.75	1,788.25	57.49	32.103	0		
10,700.00	7,190.00	11,001.33	7,520.00	29.73	30.01	-100.46	1,845.75	1,787.00	58.74	31.420	0		
10,800.00	7,190.00	11,101.33	7,520.00	30.37	30.64	-100.46	1,845.75	1,785.75	60.00	30.763	0		
10,900.00	7,190.00	11,201.33	7,520.00	31.00	31.27	-100.46	1,845.75	1,784.49	61.26	30.130	0		
11,000.00	7,190.00	11,301.33	7,520.00	31.64	31.91	-100.46	1,845.74	1,783.22	62.53	29.519	0		
11,100.00	7,190.00	11,401.33	7,520.00	32.28	32.54	-100.46	1,845.74	1,781.94	63.80	28.931	0		
11,200.00	7,190.00	11,501.33	7,520.00	32.93	33.19	-100.46	1,845.74	1,780.67	65.07	28.363	0		
11,300.00	7,190.00	11,601.33	7,520.00	33.57	33.83	-100.46	1,845.74	1,779.38	66.36	27.816	0		
11,400.00	7,190.00	11,701.33	7,520.00	34.22	34.48	-100.46	1,845.74	1,778.10	67.64	27.287	0		
11,500.00	7,190.00	11,801.33	7,520.00	34.87	35.13	-100.46	1,845.74	1,776.81	68.93	26.777	0		
11,600.00	7,190.00	11,901.33	7,520.00	35.53	35.78	-100.46	1,845.74	1,775.51	70.22	26.284	0		
11,700.00	7,190.00	12,001.33	7,520.00	36.18	36.43	-100.46	1,845.73	1,774.22	71.52	25.807	0		
11,800.00	7,190.00	12,101.33	7,520.00	36.84	37.08	-100.46	1,845.73	1,772.91	72.82	25.347	0		
11,900.00	7,190.00	12,201.33	7,520.00	37.50	37.74	-100.46	1,845.73	1,771.61	74.12	24.901	0		
12,000.00	7,190.00	12,301.33	7,520.00	38.16	38.40	-100.46	1,845.73	1,770.30	75.43	24.470	0		
12,100.00	7,190.00	12,401.33	7,520.00	38.82	39.06	-100.46	1,845.73	1,768.99	76.74	24.052	0		
12,200.00	7,190.00	12,501.33	7,520.00	39.48	39.72	-100.46	1,845.73	1,767.68	78.05	23.648	0		
12,300.00	7,190.00	12,601.33	7,520.00	40.15	40.38	-100.46	1,845.73	1,766.36	79.36	23.257	0		
12,400.00	7,190.00	12,701.33	7,520.00	40.81	41.04	-100.46	1,845.72	1,765.04	80.68	22.877	0		
12,500.00	7,190.00	12,801.33	7,520.00	41.48	41.71	-100.46	1,845.72	1,763.72	82.00	22.509	0		
12,600.00	7,190.00	12,901.33	7,520.00	42.15	42.38	-100.46	1,845.72	1,762.40	83.32	22.152	0		
12,700.00	7,190.00	13,001.33	7,520.00	42.82	43.04	-100.46	1,845.72	1,761.07	84.65	21.805	0		
12,800.00	7,190.00	13,101.33	7,520.00	43.49	43.71	-100.46	1,845.72	1,759.75	85.97	21.469	0		
12,900.00	7,190.00	13,201.33	7,520.00	44.16	44.38	-100.46	1,845.71	1,758.42	87.30	21.143	0		
13,000.00	7,190.00	13,301.33	7,520.00	44.83	45.05	-100.46	1,845.71	1,757.08	88.63	20.825	0		
13,100.00	7,190.00	13,401.33	7,520.00	45.50	45.72	-100.46	1,845.71	1,755.75	89.96	20.517	0		
13,200.00	7,190.00	13,501.33	7,520.00	46.18	46.40	-100.46	1,845.71	1,754.42	91.29	20.218	0		
13,300.00	7,190.00	13,601.33	7,520.00	46.85	47.07	-100.46	1,845.71	1,753.08	92.63	19.926	0		
13,400.00	7,190.00	13,701.33	7,520.00	47.53	47.74	-100.46	1,845.70	1,751.74	93.96	19.643	0		
13,500.00	7,190.00	13,801.33	7,520.00	48.21	48.42	-100.46	1,845.70	1,750.40	95.30	19.367	0		
13,600.00	7,190.00	13,901.33	7,520.00	48.88	49.10	-100.46	1,845.70	1,749.06	96.64	19.099	0		
13,700.00	7,190.00	14,001.33	7,520.00	49.56	49.77	-100.46	1,845.70	1,747.72	97.98	18.837	0		
13,800.00	7,190.00	14,101.33	7,520.00	50.24	50.45	-100.46	1,845.70	1,746.37	99.32	18.583	0		
13,900.00	7,190.00	14,201.33	7,520.00	50.92	51.13	-100.46	1,845.69	1,745.03	100.67	18.335	0		
14,000.00	7,190.00	14,301.33	7,520.00	51.60	51.81	-100.46	1,845.69	1,743.68	102.01	18.093	0		
14,100.00	7,190.00	14,401.33	7,520.00	52.28	52.49	-100.46	1,845.69	1,742.33	103.35	17.858	0		
14,200.00	7,190.00	14,501.33	7,520.00	52.96	53.17	-100.46	1,845.69	1,740.99	104.70	17.628	0		
14,300.00	7,190.00	14,601.33	7,520.00	53.65	53.85	-100.46	1,845.68	1,739.64	106.05	17.404	0		
14,400.00	7,190.00	14,701.33	7,520.00	54.33	54.53	-100.46	1,845.68	1,738.28	107.40	17.185	0		
14,500.00	7,190.00	14,801.33	7,520.00	55.01	55.21	-100.46	1,845.68	1,736.93	108.75	16.972	0		
14,600.00	7,190.00	14,901.33	7,520.00	55.69	55.89	-100.46	1,845.68	1,735.58	110.10	16.764	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 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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	
14,700.00	7,190.00	15,001.33	7,520.00	56.38	56.58	-100.46	1,845.67	1,734.22	111.45	16.561	0		
14,800.00	7,190.00	15,101.33	7,520.00	57.06	57.26	-100.46	1,845.67	1,732.87	112.80	16.362	0		
14,900.00	7,190.00	15,201.33	7,520.00	57.75	57.94	-100.46	1,845.67	1,731.51	114.16	16.168	0		
15,000.00	7,190.00	15,301.33	7,520.00	58.43	58.63	-100.46	1,845.67	1,730.16	115.51	15.978	0		
15,100.00	7,190.00	15,401.33	7,520.00	59.12	59.31	-100.46	1,845.66	1,728.80	116.86	15.793	0		
15,200.00	7,190.00	15,501.33	7,520.00	59.81	60.00	-100.46	1,845.66	1,727.44	118.22	15.612	0		
15,300.00	7,190.00	15,601.33	7,520.00	60.49	60.69	-100.46	1,845.66	1,726.08	119.58	15.435	0		
15,400.00	7,190.00	15,701.33	7,520.00	61.18	61.37	-100.46	1,845.66	1,724.72	120.93	15.262	0		
15,500.00	7,190.00	15,801.33	7,520.00	61.87	62.06	-100.46	1,845.65	1,723.36	122.29	15.092	0		
15,600.00	7,190.00	15,901.33	7,520.00	62.55	62.74	-100.46	1,845.65	1,722.00	123.65	14.926	0		
15,700.00	7,190.00	16,001.33	7,520.00	63.24	63.43	-100.46	1,845.65	1,720.64	125.01	14.764	0		
15,800.00	7,190.00	16,101.33	7,520.00	63.93	64.12	-100.46	1,845.64	1,719.27	126.37	14.605	0		
15,900.00	7,190.00	16,201.33	7,520.00	64.62	64.81	-100.46	1,845.64	1,717.91	127.73	14.449	0		
16,000.00	7,190.00	16,301.33	7,520.00	65.31	65.50	-100.46	1,845.64	1,716.55	129.09	14.297	0		
16,100.00	7,190.00	16,401.33	7,520.00	66.00	66.18	-100.46	1,845.64	1,715.18	130.45	14.148	0		
16,200.00	7,190.00	16,501.33	7,520.00	66.69	66.87	-100.46	1,845.63	1,713.82	131.82	14.002	0		
16,300.00	7,190.00	16,601.33	7,520.00	67.38	67.56	-100.46	1,845.63	1,712.45	133.18	13.858	0		
16,400.00	7,190.00	16,701.33	7,520.00	68.07	68.25	-100.46	1,845.63	1,711.08	134.54	13.718	0		
16,500.00	7,190.00	16,801.33	7,520.00	68.76	68.94	-100.46	1,845.62	1,709.72	135.91	13.580	0		
16,600.00	7,190.00	16,901.33	7,520.00	69.45	69.63	-100.46	1,845.62	1,708.35	137.27	13.445	0		
16,700.00	7,190.00	17,001.33	7,520.00	70.14	70.32	-100.46	1,845.62	1,706.98	138.63	13.313	0		
16,800.00	7,190.00	17,101.33	7,520.00	70.83	71.01	-100.46	1,845.61	1,705.61	140.00	13.183	0		
16,900.00	7,190.00	17,201.33	7,520.00	71.52	71.70	-100.46	1,845.61	1,704.24	141.37	13.056	0		
17,000.00	7,190.00	17,301.33	7,520.00	72.21	72.39	-100.46	1,845.61	1,702.87	142.73	12.931	0		
17,100.00	7,190.00	17,401.33	7,520.00	72.91	73.09	-100.46	1,845.60	1,701.51	144.10	12.808	0		
17,200.00	7,190.00	17,501.43	7,520.00	73.60	73.78	-100.46	1,845.60	1,700.13	145.47	12.687	0		
17,264.02	7,190.00	17,565.45	7,520.00	74.04	74.22	-100.46	1,845.59	1,699.25	146.34	12.612	0		
17,297.69	7,190.00	17,582.23	7,520.00	74.28	74.34	-100.46	1,845.67	1,698.98	146.69	12.582	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 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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	196.07				0			
100.00	100.00	95.00	95.00	0.15	0.14	-0.04	196.01	195.72	0.29	685.609	0			
200.00	200.00	195.00	195.00	0.32	0.31	-0.04	196.01	195.37	0.63	309.374	0			
300.00	300.00	295.00	295.00	0.50	0.49	-0.04	196.01	195.02	0.98	199.472	0			
400.00	400.00	395.00	395.00	0.67	0.66	-0.04	196.01	194.67	1.33	147.186	0			
500.00	500.00	495.00	495.00	0.84	0.84	-0.04	196.01	194.32	1.68	116.618	0			
600.00	600.00	595.00	595.00	1.02	1.01	-0.04	196.01	193.98	2.03	96.563	0			
700.00	700.00	695.00	695.00	1.19	1.19	-0.04	196.01	193.63	2.38	82.394	0			
800.00	799.98	794.98	794.98	1.37	1.36	148.39	197.49	194.76	2.73	72.415	0		CC, ES	
900.00	899.84	889.93	889.92	1.54	1.53	148.81	203.11	200.05	3.07	66.263	0			
1,000.00	999.45	984.02	983.90	1.72	1.69	149.07	214.25	210.85	3.40	63.008	0			
1,100.00	1,098.70	1,077.09	1,076.66	1.90	1.85	149.16	230.85	227.12	3.73	61.845	0			
1,200.00	1,197.47	1,168.74	1,167.72	2.08	2.02	149.10	252.81	248.75	4.06	62.239	0			
1,228.56	1,225.57	1,194.61	1,193.36	2.14	2.06	149.06	260.05	255.90	4.16	62.586	0			
1,300.00	1,295.79	1,260.40	1,258.44	2.27	2.18	149.05	279.22	274.82	4.40	63.468	0			
1,400.00	1,394.10	1,356.63	1,353.55	2.46	2.36	148.97	306.41	301.66	4.75	64.512	0			
1,500.00	1,492.40	1,452.86	1,448.66	2.65	2.54	148.90	333.60	328.50	5.10	65.398	0			
1,600.00	1,590.70	1,549.09	1,543.77	2.84	2.72	148.85	360.79	355.34	5.45	66.157	0			
1,700.00	1,689.00	1,645.33	1,638.89	3.03	2.89	148.80	387.98	382.18	5.81	66.816	0			
1,800.00	1,787.31	1,741.56	1,734.00	3.23	3.07	148.76	415.18	409.01	6.16	67.391	0			
1,900.00	1,885.61	1,837.79	1,829.11	3.42	3.25	148.73	442.37	435.85	6.52	67.898	0			
2,000.00	1,983.91	1,934.02	1,924.22	3.62	3.43	148.69	469.56	462.69	6.87	68.349	0			
2,100.00	2,082.22	2,030.25	2,019.34	3.81	3.62	148.67	496.75	489.53	7.23	68.751	0			
2,200.00	2,180.52	2,126.48	2,114.45	4.01	3.80	148.64	523.95	516.37	7.58	69.112	0			
2,300.00	2,278.82	2,222.71	2,209.56	4.20	3.98	148.62	551.14	543.20	7.94	69.438	0			
2,400.00	2,377.12	2,318.95	2,304.67	4.40	4.16	148.60	578.33	570.04	8.29	69.734	0			
2,500.00	2,475.43	2,415.18	2,399.79	4.60	4.34	148.58	605.53	596.88	8.65	70.004	0			
2,600.00	2,573.73	2,511.41	2,494.90	4.79	4.53	148.56	632.72	623.71	9.01	70.251	0			
2,700.00	2,672.03	2,607.64	2,590.01	4.99	4.71	148.54	659.91	650.55	9.36	70.478	0			
2,800.00	2,770.33	2,703.87	2,685.12	5.19	4.89	148.53	687.11	677.38	9.72	70.687	0			
2,900.00	2,868.64	2,800.10	2,780.24	5.38	5.07	148.52	714.30	704.22	10.08	70.880	0			
3,000.00	2,966.94	2,896.34	2,875.35	5.58	5.26	148.50	741.49	731.06	10.43	71.059	0			
3,100.00	3,065.24	2,992.57	2,970.46	5.78	5.44	148.49	768.69	757.89	10.79	71.226	0			
3,200.00	3,163.55	3,088.80	3,065.57	5.98	5.62	148.48	795.88	784.73	11.15	71.381	0			
3,300.00	3,261.85	3,185.03	3,160.69	6.17	5.81	148.47	823.07	811.56	11.51	71.526	0			
3,400.00	3,360.15	3,281.26	3,255.80	6.37	5.99	148.46	850.27	838.40	11.87	71.661	0			
3,500.00	3,458.45	3,377.49	3,350.91	6.57	6.17	148.45	877.46	865.24	12.22	71.788	0			
3,600.00	3,556.76	3,473.72	3,446.02	6.77	6.36	148.45	904.65	892.07	12.58	71.908	0			
3,700.00	3,655.06	3,569.96	3,541.14	6.97	6.54	148.44	931.85	918.91	12.94	72.021	0			
3,800.00	3,753.36	3,666.19	3,636.25	7.17	6.72	148.43	959.04	945.74	13.30	72.127	0			
3,900.00	3,851.67	3,762.42	3,731.36	7.36	6.91	148.42	986.23	972.58	13.65	72.227	0			
4,000.00	3,949.97	3,858.65	3,826.47	7.56	7.09	148.42	1,013.43	999.41	14.01	72.322	0			
4,100.00	4,048.27	3,954.88	3,921.59	7.76	7.28	148.41	1,040.62	1,026.25	14.37	72.412	0			
4,200.00	4,146.57	4,051.11	4,016.70	7.96	7.46	148.40	1,067.81	1,053.08	14.73	72.498	0			
4,300.00	4,244.88	4,147.34	4,111.81	8.16	7.64	148.40	1,095.01	1,079.92	15.09	72.579	0			
4,400.00	4,343.18	4,243.58	4,206.92	8.36	7.83	148.39	1,122.20	1,106.76	15.45	72.656	0			
4,500.00	4,441.48	4,339.81	4,302.04	8.55	8.01	148.39	1,149.39	1,133.59	15.80	72.730	0			
4,600.00	4,539.78	4,436.04	4,397.15	8.75	8.20	148.38	1,176.59	1,160.43	16.16	72.800	0			
4,700.00	4,638.09	4,532.27	4,492.26	8.95	8.38	148.38	1,203.78	1,187.26	16.52	72.867	0			
4,800.00	4,736.39	4,628.50	4,587.37	9.15	8.56	148.37	1,230.98	1,214.10	16.88	72.931	0			
4,900.00	4,834.69	4,724.73	4,682.49	9.35	8.75	148.37	1,258.17	1,240.93	17.24	72.992	0			
5,000.00	4,933.00	4,820.96	4,777.60	9.55	8.93	148.37	1,285.36	1,267.77	17.60	73.051	0			
5,100.00	5,031.30	4,917.20	4,872.71	9.75	9.12	148.36	1,312.56	1,294.60	17.95	73.107	0			
5,200.00	5,129.60	5,013.43	4,967.82	9.95	9.30	148.36	1,339.75	1,321.44	18.31	73.161	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 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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 4 - 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	5,227.90	5,109.66	5,062.94	10.14	9.48	148.35	1,366.94	1,348.27	18.67	73.213	0				
5,400.00	5,326.21	5,205.89	5,158.05	10.34	9.67	148.35	1,394.14	1,375.11	19.03	73.262	0				
5,500.00	5,424.51	5,302.12	5,253.16	10.54	9.85	148.35	1,421.33	1,401.94	19.39	73.310	0				
5,600.00	5,522.81	5,398.35	5,348.27	10.74	10.04	148.34	1,448.52	1,428.78	19.75	73.356	0				
5,700.00	5,621.11	5,494.59	5,443.39	10.94	10.22	148.34	1,475.72	1,455.61	20.11	73.401	0				
5,800.00	5,719.42	5,590.82	5,538.50	11.14	10.41	148.34	1,502.91	1,482.45	20.46	73.443	0				
5,900.00	5,817.72	5,687.05	5,633.61	11.34	10.59	148.34	1,530.11	1,509.28	20.82	73.484	0				
6,000.00	5,916.02	5,783.28	5,728.72	11.54	10.77	148.33	1,557.30	1,536.12	21.18	73.524	0				
6,011.99	5,927.81	5,794.82	5,740.13	11.56	10.80	148.33	1,560.56	1,539.34	21.22	73.529	0				
6,100.00	6,014.56	5,879.81	5,824.13	11.73	10.96	148.55	1,583.38	1,561.80	21.58	73.358	0				
6,200.00	6,113.63	5,977.04	5,920.23	11.91	11.15	148.71	1,606.60	1,584.62	21.98	73.089	0				
6,300.00	6,213.11	6,074.85	6,016.90	12.09	11.33	148.76	1,626.92	1,604.55	22.36	72.745	0				
6,400.00	6,312.88	6,251.00	6,191.71	12.26	11.65	148.65	1,642.01	1,619.15	22.87	71.805	0				
6,500.00	6,412.83	6,430.73	6,371.09	12.42	11.96	148.59	1,649.37	1,626.02	23.35	70.634	0				
6,540.55	6,453.38	6,504.00	6,444.34	12.49	12.08	0.41	1,650.11	1,626.03	24.08	68.520	0				
6,600.00	6,512.83	6,567.48	6,507.83	12.58	12.19	0.41	1,650.12	1,625.83	24.28	67.949	0				
6,640.55	6,553.38	6,608.03	6,548.38	12.65	12.25	0.41	1,650.12	1,625.70	24.42	67.577	0				
6,650.00	6,562.83	6,617.40	6,557.74	12.66	12.27	-89.59	1,650.12	1,626.20	23.92	68.998	0				
6,700.00	6,612.74	6,666.50	6,606.78	12.73	12.34	-89.60	1,650.11	1,626.04	24.07	68.548	0				
6,750.00	6,662.29	6,715.64	6,655.54	12.81	12.42	-89.62	1,650.11	1,625.89	24.22	68.128	0				
6,800.00	6,711.16	6,764.82	6,703.73	12.87	12.48	-89.64	1,650.11	1,625.75	24.36	67.734	0				
6,850.00	6,759.07	6,814.04	6,751.06	12.94	12.55	-89.66	1,650.10	1,625.61	24.50	67.363	0				
6,900.00	6,805.70	6,863.31	6,797.26	13.00	12.61	-89.69	1,650.10	1,625.48	24.62	67.013	0				
6,950.00	6,850.78	6,912.64	6,842.05	13.06	12.67	-89.71	1,650.10	1,625.35	24.75	66.677	0				
7,000.00	6,894.03	6,962.02	6,885.15	13.11	12.73	-89.74	1,650.09	1,625.22	24.87	66.352	0				
7,050.00	6,935.18	7,011.47	6,926.31	13.17	12.79	-89.77	1,650.09	1,625.10	24.99	66.032	0				
7,100.00	6,973.97	7,060.98	6,965.27	13.23	12.85	-89.80	1,650.09	1,624.97	25.11	65.712	0				
7,150.00	7,010.17	7,110.56	7,001.79	13.28	12.91	-89.83	1,650.08	1,624.85	25.24	65.386	0				
7,200.00	7,043.55	7,160.22	7,035.64	13.34	12.97	-89.87	1,650.08	1,624.71	25.37	65.047	0				
7,250.00	7,073.91	7,209.95	7,066.60	13.40	13.03	-89.90	1,650.08	1,624.57	25.51	64.691	0				
7,300.00	7,101.06	7,259.75	7,094.47	13.47	13.10	-89.93	1,650.08	1,624.42	25.66	64.312	0				
7,350.00	7,124.84	7,309.63	7,119.06	13.54	13.17	-89.97	1,650.08	1,624.26	25.82	63.905	0				
7,393.28	7,142.58	7,352.87	7,137.58	13.60	13.23	-90.00	1,650.08	1,624.10	25.97	63.528	0				
7,400.00	7,145.09	7,359.59	7,140.22	13.61	13.24	-90.00	1,650.08	1,624.08	26.00	63.467	0				
7,450.00	7,161.69	7,409.63	7,157.78	13.70	13.33	-90.04	1,650.08	1,623.88	26.19	62.996	0				
7,500.00	7,174.55	7,459.75	7,171.64	13.78	13.42	-90.07	1,650.08	1,623.67	26.40	62.492	0				
7,550.00	7,183.57	7,509.95	7,181.67	13.88	13.52	-90.11	1,650.08	1,623.44	26.63	61.954	0				
7,600.00	7,188.71	7,560.23	7,187.81	13.99	13.63	-90.14	1,650.08	1,623.20	26.88	61.386	0				
7,640.55	7,190.00	7,601.07	7,189.89	14.08	13.73	-90.17	1,650.08	1,622.99	27.09	60.907	0				
7,700.00	7,190.00	7,660.60	7,190.00	14.23	13.89	-90.17	1,650.08	1,622.66	27.42	60.171	0				
7,800.00	7,190.00	7,760.60	7,190.00	14.51	14.18	-90.17	1,650.08	1,622.06	28.02	58.881	0				
7,900.00	7,190.00	7,860.60	7,190.00	14.83	14.51	-90.17	1,650.08	1,621.40	28.68	57.533	0				
8,000.00	7,190.00	7,960.60	7,190.00	15.17	14.86	-90.17	1,650.08	1,620.69	29.39	56.145	0				
8,100.00	7,190.00	8,060.60	7,190.00	15.54	15.24	-90.17	1,650.08	1,619.93	30.15	54.733	0				
8,200.00	7,190.00	8,160.60	7,190.00	15.93	15.64	-90.17	1,650.08	1,619.13	30.95	53.311	0				
8,300.00	7,190.00	8,260.60	7,190.00	16.34	16.06	-90.17	1,650.08	1,618.28	31.80	51.894	0				
8,400.00	7,190.00	8,360.60	7,190.00	16.78	16.50	-90.17	1,650.08	1,617.40	32.68	50.489	0				
8,500.00	7,190.00	8,460.60	7,190.00	17.23	16.95	-90.17	1,650.08	1,616.48	33.60	49.107	0				
8,600.00	7,190.00	8,560.60	7,190.00	17.69	17.43	-90.17	1,650.08	1,615.53	34.55	47.753	0				
8,700.00	7,190.00	8,660.60	7,190.00	18.18	17.91	-90.17	1,650.08	1,614.54	35.54	46.432	0				
8,800.00	7,190.00	8,760.60	7,190.00	18.67	18.42	-90.17	1,650.08	1,613.53	36.55	45.147	0				
8,900.00	7,190.00	8,860.60	7,190.00	19.18	18.93	-90.17	1,650.08	1,612.50	37.59	43.902	0				
9,000.00	7,190.00	8,960.60	7,190.00	19.70	19.46	-90.17	1,650.08	1,611.43	38.64	42.698	0				
9,100.00	7,190.00	9,060.60	7,190.00	20.24	19.99	-90.17	1,650.08	1,610.35	39.73	41.536	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 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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		
9,200.00	7,190.00	9,160.60	7,190.00	20.78	20.54	-90.17	1,650.08	1,609.25	40.83	40.416	0			
9,300.00	7,190.00	9,260.60	7,190.00	21.33	21.10	-90.17	1,650.08	1,608.13	41.95	39.337	0			
9,400.00	7,190.00	9,360.60	7,190.00	21.89	21.66	-90.17	1,650.08	1,606.99	43.08	38.300	0			
9,500.00	7,190.00	9,460.60	7,190.00	22.46	22.23	-90.17	1,650.08	1,605.84	44.24	37.302	0			
9,600.00	7,190.00	9,560.60	7,190.00	23.04	22.81	-90.17	1,650.08	1,604.67	45.40	36.344	0			
9,700.00	7,190.00	9,660.60	7,190.00	23.62	23.40	-90.17	1,650.08	1,603.49	46.58	35.423	0			
9,800.00	7,190.00	9,760.60	7,190.00	24.21	23.99	-90.17	1,650.07	1,602.30	47.77	34.540	0			
9,900.00	7,190.00	9,860.60	7,190.00	24.80	24.59	-90.17	1,650.07	1,601.10	48.98	33.691	0			
10,000.00	7,190.00	9,960.60	7,190.00	25.40	25.20	-90.17	1,650.07	1,599.88	50.19	32.876	0			
10,100.00	7,190.00	10,060.60	7,190.00	26.01	25.81	-90.17	1,650.07	1,598.66	51.41	32.093	0			
10,200.00	7,190.00	10,160.60	7,190.00	26.62	26.42	-90.17	1,650.07	1,597.42	52.65	31.342	0			
10,300.00	7,190.00	10,260.60	7,190.00	27.23	27.04	-90.17	1,650.07	1,596.18	53.89	30.620	0			
10,400.00	7,190.00	10,360.60	7,190.00	27.85	27.66	-90.17	1,650.07	1,594.93	55.14	29.926	0			
10,500.00	7,190.00	10,460.60	7,190.00	28.48	28.29	-90.17	1,650.07	1,593.67	56.40	29.259	0			
10,600.00	7,190.00	10,560.60	7,190.00	29.10	28.92	-90.17	1,650.07	1,592.41	57.66	28.617	0			
10,700.00	7,190.00	10,660.60	7,190.00	29.73	29.55	-90.17	1,650.07	1,591.14	58.93	28.000	0			
10,800.00	7,190.00	10,760.60	7,190.00	30.37	30.18	-90.17	1,650.06	1,589.86	60.21	27.407	0			
10,900.00	7,190.00	10,860.60	7,190.00	31.00	30.82	-90.17	1,650.06	1,588.58	61.49	26.835	0			
11,000.00	7,190.00	10,960.60	7,190.00	31.64	31.47	-90.17	1,650.06	1,587.29	62.78	26.285	0			
11,100.00	7,190.00	11,060.60	7,190.00	32.28	32.11	-90.17	1,650.06	1,585.99	64.07	25.755	0			
11,200.00	7,190.00	11,160.60	7,190.00	32.93	32.76	-90.17	1,650.06	1,584.69	65.37	25.243	0			
11,300.00	7,190.00	11,260.60	7,190.00	33.57	33.41	-90.17	1,650.06	1,583.39	66.67	24.750	0			
11,400.00	7,190.00	11,360.60	7,190.00	34.22	34.06	-90.17	1,650.06	1,582.08	67.97	24.275	0			
11,500.00	7,190.00	11,460.60	7,190.00	34.87	34.71	-90.17	1,650.06	1,580.77	69.28	23.816	0			
11,600.00	7,190.00	11,560.60	7,190.00	35.53	35.37	-90.17	1,650.05	1,579.46	70.60	23.373	0			
11,700.00	7,190.00	11,660.60	7,190.00	36.18	36.02	-90.17	1,650.05	1,578.14	71.91	22.945	0			
11,800.00	7,190.00	11,760.60	7,190.00	36.84	36.68	-90.17	1,650.05	1,576.82	73.23	22.531	0			
11,900.00	7,190.00	11,860.60	7,190.00	37.50	37.34	-90.17	1,650.05	1,575.49	74.56	22.131	0			
12,000.00	7,190.00	11,960.60	7,190.00	38.16	38.00	-90.17	1,650.05	1,574.16	75.89	21.744	0			
12,100.00	7,190.00	12,060.60	7,190.00	38.82	38.67	-90.17	1,650.05	1,572.83	77.21	21.370	0			
12,200.00	7,190.00	12,160.60	7,190.00	39.48	39.33	-90.17	1,650.05	1,571.50	78.55	21.007	0			
12,300.00	7,190.00	12,260.60	7,190.00	40.15	40.00	-90.17	1,650.04	1,570.16	79.88	20.656	0			
12,400.00	7,190.00	12,360.60	7,190.00	40.81	40.66	-90.17	1,650.04	1,568.82	81.22	20.316	0			
12,500.00	7,190.00	12,460.60	7,190.00	41.48	41.33	-90.17	1,650.04	1,567.48	82.56	19.986	0			
12,600.00	7,190.00	12,560.60	7,190.00	42.15	42.00	-90.17	1,650.04	1,566.14	83.90	19.667	0			
12,700.00	7,190.00	12,660.60	7,190.00	42.82	42.67	-90.17	1,650.04	1,564.79	85.24	19.357	0			
12,800.00	7,190.00	12,760.60	7,190.00	43.49	43.35	-90.17	1,650.03	1,563.44	86.59	19.056	0			
12,900.00	7,190.00	12,860.60	7,190.00	44.16	44.02	-90.17	1,650.03	1,562.09	87.94	18.764	0			
13,000.00	7,190.00	12,960.60	7,190.00	44.83	44.69	-90.17	1,650.03	1,560.74	89.29	18.480	0			
13,100.00	7,190.00	13,060.60	7,190.00	45.50	45.37	-90.17	1,650.03	1,559.39	90.64	18.204	0			
13,200.00	7,190.00	13,160.60	7,190.00	46.18	46.04	-90.17	1,650.03	1,558.03	91.99	17.937	0			
13,300.00	7,190.00	13,260.60	7,190.00	46.85	46.72	-90.17	1,650.02	1,556.68	93.35	17.676	0			
13,400.00	7,190.00	13,360.60	7,190.00	47.53	47.40	-90.17	1,650.02	1,555.32	94.70	17.423	0			
13,500.00	7,190.00	13,460.60	7,190.00	48.21	48.07	-90.17	1,650.02	1,553.96	96.06	17.177	0			
13,600.00	7,190.00	13,560.60	7,190.00	48.88	48.75	-90.17	1,650.02	1,552.60	97.42	16.937	0			
13,700.00	7,190.00	13,660.60	7,190.00	49.56	49.43	-90.17	1,650.02	1,551.24	98.78	16.704	0			
13,800.00	7,190.00	13,760.60	7,190.00	50.24	50.11	-90.17	1,650.01	1,549.87	100.14	16.477	0			
13,900.00	7,190.00	13,860.60	7,190.00	50.92	50.79	-90.17	1,650.01	1,548.51	101.50	16.255	0			
14,000.00	7,190.00	13,960.60	7,190.00	51.60	51.47	-90.17	1,650.01	1,547.14	102.87	16.040	0			
14,100.00	7,190.00	14,060.60	7,190.00	52.28	52.16	-90.17	1,650.01	1,545.77	104.23	15.830	0			
14,200.00	7,190.00	14,160.60	7,190.00	52.96	52.84	-90.17	1,650.00	1,544.40	105.60	15.625	0			
14,300.00	7,190.00	14,260.60	7,190.00	53.65	53.52	-90.17	1,650.00	1,543.03	106.97	15.425	0			
14,400.00	7,190.00	14,360.60	7,190.00	54.33	54.20	-90.17	1,650.00	1,541.66	108.34	15.230	0			
14,500.00	7,190.00	14,460.60	7,190.00	55.01	54.89	-90.17	1,650.00	1,540.29	109.71	15.040	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 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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 4 - 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	7,190.00	14,560.60	7,190.00	55.69	55.57	-90.17	1,649.99	1,538.92	111.08	14.855	0					
14,700.00	7,190.00	14,660.60	7,190.00	56.38	56.26	-90.17	1,649.99	1,537.54	112.45	14.673	0					
14,800.00	7,190.00	14,760.60	7,190.00	57.06	56.94	-90.17	1,649.99	1,536.17	113.82	14.497	0					
14,900.00	7,190.00	14,860.60	7,190.00	57.75	57.63	-90.17	1,649.99	1,534.79	115.19	14.324	0					
15,000.00	7,190.00	14,960.60	7,190.00	58.43	58.32	-90.17	1,649.98	1,533.42	116.57	14.155	0					
15,100.00	7,190.00	15,060.60	7,190.00	59.12	59.00	-90.17	1,649.98	1,532.04	117.94	13.990	0					
15,200.00	7,190.00	15,160.60	7,190.00	59.81	59.69	-90.17	1,649.98	1,530.66	119.32	13.829	0					
15,300.00	7,190.00	15,260.60	7,190.00	60.49	60.38	-90.17	1,649.98	1,529.28	120.69	13.671	0					
15,400.00	7,190.00	15,360.60	7,190.00	61.18	61.06	-90.17	1,649.97	1,527.90	122.07	13.517	0					
15,500.00	7,190.00	15,460.60	7,190.00	61.87	61.75	-90.17	1,649.97	1,526.52	123.45	13.366	0					
15,600.00	7,190.00	15,560.60	7,190.00	62.55	62.44	-90.17	1,649.97	1,525.14	124.83	13.218	0					
15,700.00	7,190.00	15,660.60	7,190.00	63.24	63.13	-90.17	1,649.96	1,523.76	126.20	13.074	0					
15,800.00	7,190.00	15,760.60	7,190.00	63.93	63.82	-90.17	1,649.96	1,522.38	127.58	12.932	0					
15,900.00	7,190.00	15,860.60	7,190.00	64.62	64.51	-90.17	1,649.96	1,521.00	128.96	12.794	0					
16,000.00	7,190.00	15,960.60	7,190.00	65.31	65.20	-90.17	1,649.96	1,519.61	130.34	12.658	0					
16,100.00	7,190.00	16,060.60	7,190.00	66.00	65.89	-90.17	1,649.95	1,518.23	131.72	12.526	0					
16,200.00	7,190.00	16,160.60	7,190.00	66.69	66.58	-90.17	1,649.95	1,516.84	133.11	12.396	0					
16,300.00	7,190.00	16,260.60	7,190.00	67.38	67.27	-90.17	1,649.95	1,515.46	134.49	12.268	0					
16,400.00	7,190.00	16,360.60	7,190.00	68.07	67.96	-90.17	1,649.94	1,514.07	135.87	12.143	0					
16,500.00	7,190.00	16,460.60	7,190.00	68.76	68.65	-90.17	1,649.94	1,512.68	137.25	12.021	0					
16,600.00	7,190.00	16,560.60	7,190.00	69.45	69.34	-90.17	1,649.94	1,511.30	138.64	11.901	0					
16,700.00	7,190.00	16,660.60	7,190.00	70.14	70.03	-90.17	1,649.93	1,509.91	140.02	11.783	0					
16,800.00	7,190.00	16,760.60	7,190.00	70.83	70.73	-90.17	1,649.93	1,508.52	141.41	11.668	0					
16,900.00	7,190.00	16,860.60	7,190.00	71.52	71.42	-90.17	1,649.93	1,507.13	142.79	11.555	0					
17,000.00	7,190.00	16,960.60	7,190.00	72.21	72.11	-90.17	1,649.92	1,505.75	144.18	11.444	0					
17,100.00	7,190.00	17,060.60	7,190.00	72.91	72.80	-90.17	1,649.92	1,504.36	145.56	11.335	0					
17,200.00	7,190.00	17,160.60	7,190.00	73.60	73.50	-90.17	1,649.92	1,502.97	146.95	11.228	0					
17,264.30	7,190.00	17,224.90	7,190.00	74.04	73.94	-90.17	1,649.91	1,502.07	147.84	11.160	0					
17,297.69	7,190.00	17,242.86	7,190.00	74.28	74.07	-90.17	1,649.98	1,501.79	148.20	11.134	0	SF				



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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 5 - 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	0.03	168.01					0	CC, ES			
100.00	100.00	96.00	96.00	0.15	0.14	0.03	167.96	167.67	0.29	584.505	0					
200.00	200.00	196.00	196.00	0.32	0.31	0.03	167.96	167.32	0.64	264.376	0					
300.00	300.00	296.00	296.00	0.50	0.49	0.03	167.96	166.97	0.98	170.626	0					
400.00	400.00	396.00	396.00	0.67	0.66	0.03	167.96	166.62	1.33	125.959	0					
500.00	500.00	496.00	496.00	0.84	0.84	0.03	167.96	166.28	1.68	99.827	0					
600.00	600.00	596.00	596.00	1.02	1.01	0.03	167.96	165.93	2.03	82.674	0					
700.00	700.00	696.00	696.00	1.19	1.19	0.03	167.96	165.58	2.38	70.552	0					
800.00	799.98	795.98	795.98	1.37	1.36	148.50	169.44	166.72	2.73	62.092	0					
900.00	899.84	895.84	895.84	1.54	1.54	149.35	173.93	170.85	3.08	56.553	0					
1,000.00	999.45	992.49	992.47	1.72	1.70	150.22	182.26	178.85	3.41	53.372	0					
1,100.00	1,098.70	1,088.43	1,088.30	1.90	1.87	150.62	195.33	191.58	3.75	52.062	0					
1,200.00	1,197.47	1,183.47	1,183.01	2.08	2.04	150.59	213.06	208.97	4.09	52.134	0					
1,228.56	1,225.57	1,210.41	1,209.81	2.14	2.09	150.51	218.97	214.78	4.18	52.362	0					
1,300.00	1,295.79	1,279.51	1,278.46	2.27	2.21	150.37	234.39	229.96	4.43	52.887	0					
1,400.00	1,394.10	1,377.14	1,375.46	2.46	2.39	150.19	256.01	251.23	4.78	53.506	0					
1,500.00	1,492.40	1,474.77	1,472.45	2.65	2.56	150.04	277.64	272.50	5.14	54.029	0					
1,600.00	1,590.70	1,572.41	1,569.44	2.84	2.74	149.90	299.27	293.78	5.49	54.475	0					
1,700.00	1,689.00	1,670.04	1,666.44	3.03	2.91	149.79	320.90	315.05	5.85	54.860	0					
1,800.00	1,787.31	1,767.67	1,763.43	3.23	3.09	149.69	342.54	336.33	6.21	55.195	0					
1,900.00	1,885.61	1,865.30	1,860.43	3.42	3.27	149.60	364.17	357.61	6.56	55.489	0					
2,000.00	1,983.91	1,962.93	1,957.42	3.62	3.44	149.52	385.80	378.88	6.92	55.750	0					
2,100.00	2,082.22	2,060.56	2,054.41	3.81	3.62	149.46	407.44	400.16	7.28	55.981	0					
2,200.00	2,180.52	2,158.19	2,151.41	4.01	3.80	149.39	429.07	421.44	7.64	56.189	0					
2,300.00	2,278.82	2,255.82	2,248.40	4.20	3.98	149.34	450.71	442.71	7.99	56.376	0					
2,400.00	2,377.12	2,353.45	2,345.40	4.40	4.16	149.28	472.34	463.99	8.35	56.545	0					
2,500.00	2,475.43	2,451.08	2,442.39	4.60	4.34	149.24	493.98	485.27	8.71	56.698	0					
2,600.00	2,573.73	2,548.71	2,539.38	4.79	4.51	149.19	515.62	506.55	9.07	56.839	0					
2,700.00	2,672.03	2,646.34	2,636.38	4.99	4.69	149.15	537.25	527.82	9.43	56.968	0					
2,800.00	2,770.33	2,743.97	2,733.37	5.19	4.87	149.12	558.89	549.10	9.79	57.086	0					
2,900.00	2,868.64	2,841.60	2,830.37	5.38	5.05	149.08	580.53	570.38	10.15	57.195	0					
3,000.00	2,966.94	2,939.23	2,927.36	5.58	5.23	149.05	602.17	591.66	10.51	57.296	0					
3,100.00	3,065.24	3,036.86	3,024.35	5.78	5.41	149.02	623.80	612.93	10.87	57.390	0					
3,200.00	3,163.55	3,134.49	3,121.35	5.98	5.59	149.00	645.44	634.21	11.23	57.477	0					
3,300.00	3,261.85	3,232.12	3,218.34	6.17	5.77	148.97	667.08	655.49	11.59	57.558	0					
3,400.00	3,360.15	3,329.76	3,315.34	6.37	5.95	148.95	688.72	676.77	11.95	57.634	0					
3,500.00	3,458.45	3,427.39	3,412.33	6.57	6.13	148.93	710.35	698.04	12.31	57.705	0					
3,600.00	3,556.76	3,525.02	3,509.32	6.77	6.31	148.90	731.99	719.32	12.67	57.772	0					
3,700.00	3,655.06	3,622.65	3,606.32	6.97	6.49	148.88	753.63	740.60	13.03	57.835	0					
3,800.00	3,753.36	3,720.28	3,703.31	7.17	6.66	148.87	775.27	761.88	13.39	57.894	0					
3,900.00	3,851.67	3,817.91	3,800.31	7.36	6.84	148.85	796.91	783.16	13.75	57.950	0					
4,000.00	3,949.97	3,915.54	3,897.30	7.56	7.02	148.83	818.55	804.43	14.11	58.003	0					
4,100.00	4,048.27	4,013.17	3,994.29	7.76	7.20	148.82	840.18	825.71	14.47	58.053	0					
4,200.00	4,146.57	4,110.80	4,091.29	7.96	7.38	148.80	861.82	846.99	14.83	58.101	0					
4,300.00	4,244.88	4,208.43	4,188.28	8.16	7.56	148.79	883.46	868.27	15.19	58.146	0					
4,400.00	4,343.18	4,306.06	4,285.28	8.36	7.74	148.77	905.10	889.55	15.55	58.188	0					
4,500.00	4,441.48	4,403.69	4,382.27	8.55	7.92	148.76	926.74	910.82	15.92	58.229	0					
4,600.00	4,539.78	4,501.32	4,479.27	8.75	8.10	148.75	948.38	932.10	16.28	58.268	0					
4,700.00	4,638.09	4,598.95	4,576.26	8.95	8.28	148.73	970.02	953.38	16.64	58.305	0					
4,800.00	4,736.39	4,696.58	4,673.25	9.15	8.46	148.72	991.66	974.66	17.00	58.340	0					
4,900.00	4,834.69	4,794.21	4,770.25	9.35	8.64	148.71	1,013.29	995.94	17.36	58.374	0					
5,000.00	4,933.00	4,891.84	4,867.24	9.55	8.82	148.70	1,034.93	1,017.21	17.72	58.406	0					
5,100.00	5,031.30	4,989.47	4,964.24	9.75	9.00	148.69	1,056.57	1,038.49	18.08	58.437	0					
5,200.00	5,129.60	5,087.11	5,061.23	9.95	9.18	148.68	1,078.21	1,059.77	18.44	58.467	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 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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	5,227.90	5,184.74	5,158.22	10.14	9.36	148.67	1,099.85	1,081.05	18.80	58.495	0			
5,400.00	5,326.21	5,282.37	5,255.22	10.34	9.54	148.66	1,121.49	1,102.33	19.16	58.523	0			
5,500.00	5,424.51	5,380.00	5,352.21	10.54	9.72	148.66	1,143.13	1,123.60	19.52	58.549	0			
5,600.00	5,522.81	5,477.63	5,449.21	10.74	9.90	148.65	1,164.77	1,144.88	19.89	58.574	0			
5,700.00	5,621.11	5,575.26	5,546.20	10.94	10.08	148.64	1,186.41	1,166.16	20.25	58.599	0			
5,800.00	5,719.42	5,672.89	5,643.19	11.14	10.26	148.63	1,208.04	1,187.44	20.61	58.622	0			
5,900.00	5,817.72	5,770.52	5,740.19	11.34	10.44	148.62	1,229.68	1,208.72	20.97	58.645	0			
6,000.00	5,916.02	5,868.15	5,837.18	11.54	10.62	148.62	1,251.32	1,229.99	21.33	58.666	0			
6,011.99	5,927.81	5,879.86	5,848.81	11.56	10.64	148.62	1,253.92	1,232.55	21.37	58.669	0			
6,100.00	6,014.56	5,966.02	5,934.41	11.73	10.80	148.77	1,271.83	1,250.11	21.73	58.539	0			
6,200.00	6,113.63	6,064.41	6,032.17	11.91	10.98	148.83	1,289.44	1,267.32	22.11	58.306	0			
6,300.00	6,213.11	6,164.37	6,131.47	12.09	11.16	148.79	1,304.10	1,281.61	22.49	57.982	0			
6,400.00	6,312.88	6,295.60	6,262.16	12.26	11.40	148.66	1,314.53	1,291.63	22.90	57.392	0			
6,500.00	6,412.83	6,427.88	6,394.30	12.42	11.63	148.59	1,319.56	1,296.27	23.30	56.646	0			
6,540.55	6,453.38	6,481.66	6,448.07	12.49	11.72	0.41	1,320.05	1,296.34	23.71	55.679	0			
6,600.00	6,512.83	6,542.41	6,508.83	12.58	11.82	0.41	1,320.05	1,296.14	23.91	55.211	0			
6,640.55	6,553.38	6,582.96	6,549.38	12.65	11.89	0.41	1,320.05	1,296.01	24.04	54.899	0			
6,650.00	6,562.83	6,592.33	6,558.75	12.66	11.90	-89.59	1,320.05	1,296.23	23.82	55.420	0			
6,700.00	6,612.74	6,641.61	6,607.96	12.73	11.98	-89.61	1,320.05	1,296.07	23.98	55.057	0			
6,750.00	6,662.29	6,690.92	6,656.88	12.81	12.05	-89.62	1,320.05	1,295.92	24.12	54.718	0			
6,800.00	6,711.16	6,740.27	6,705.21	12.87	12.12	-89.64	1,320.04	1,295.78	24.27	54.400	0			
6,850.00	6,759.07	6,789.65	6,752.66	12.94	12.19	-89.67	1,320.04	1,295.64	24.40	54.101	0			
6,900.00	6,805.70	6,839.07	6,798.95	13.00	12.25	-89.69	1,320.04	1,295.51	24.53	53.818	0			
6,950.00	6,850.78	6,888.54	6,843.80	13.06	12.32	-89.72	1,320.03	1,295.38	24.65	53.546	0			
7,000.00	6,894.03	6,938.05	6,886.94	13.11	12.38	-89.74	1,320.03	1,295.26	24.77	53.284	0			
7,050.00	6,935.18	6,987.61	6,928.10	13.17	12.44	-89.77	1,320.03	1,295.13	24.89	53.025	0			
7,100.00	6,973.97	7,037.23	6,967.03	13.23	12.50	-89.80	1,320.03	1,295.01	25.02	52.767	0			
7,150.00	7,010.17	7,086.90	7,003.49	13.28	12.56	-89.84	1,320.02	1,294.88	25.14	52.503	0			
7,200.00	7,043.55	7,136.63	7,037.25	13.34	12.62	-89.87	1,320.02	1,294.75	25.27	52.229	0			
7,250.00	7,073.91	7,186.41	7,068.09	13.40	12.69	-89.90	1,320.02	1,294.61	25.41	51.941	0			
7,300.00	7,101.06	7,236.26	7,095.82	13.47	12.75	-89.94	1,320.02	1,294.46	25.56	51.634	0			
7,350.00	7,124.84	7,286.17	7,120.25	13.54	12.83	-89.97	1,320.02	1,294.29	25.73	51.305	0			
7,376.16	7,135.88	7,312.32	7,131.67	13.58	12.86	-89.99	1,320.02	1,294.20	25.82	51.121	0			
7,400.00	7,145.09	7,336.15	7,141.23	13.61	12.90	-90.01	1,320.02	1,294.11	25.91	50.951	0			
7,450.00	7,161.69	7,386.18	7,158.60	13.70	12.99	-90.04	1,320.02	1,293.92	26.10	50.571	0			
7,500.00	7,174.55	7,436.28	7,172.25	13.78	13.09	-90.08	1,320.02	1,293.71	26.31	50.163	0			
7,550.00	7,183.57	7,486.45	7,182.08	13.88	13.20	-90.11	1,320.02	1,293.48	26.54	49.728	0			
7,600.00	7,188.71	7,536.67	7,188.01	13.99	13.33	-90.14	1,320.02	1,293.23	26.79	49.269	0			
7,640.55	7,190.00	7,577.45	7,189.93	14.08	13.44	-90.17	1,320.03	1,293.02	27.00	48.882	0			
7,700.00	7,190.00	7,636.96	7,190.00	14.23	13.61	-90.17	1,320.03	1,292.69	27.34	48.287	0			
7,800.00	7,190.00	7,736.96	7,190.00	14.51	13.92	-90.17	1,320.03	1,292.09	27.94	47.248	0			
7,900.00	7,190.00	7,836.96	7,190.00	14.83	14.25	-90.17	1,320.03	1,291.43	28.60	46.160	0			
8,000.00	7,190.00	7,936.96	7,190.00	15.17	14.61	-90.17	1,320.03	1,290.72	29.31	45.040	0			
8,100.00	7,190.00	8,036.96	7,190.00	15.54	14.99	-90.17	1,320.03	1,289.96	30.07	43.902	0			
8,200.00	7,190.00	8,136.96	7,190.00	15.93	15.39	-90.17	1,320.03	1,289.15	30.87	42.757	0			
8,300.00	7,190.00	8,236.96	7,190.00	16.34	15.82	-90.17	1,320.03	1,288.31	31.72	41.614	0			
8,400.00	7,190.00	8,336.96	7,190.00	16.78	16.26	-90.17	1,320.03	1,287.42	32.61	40.483	0			
8,500.00	7,190.00	8,436.96	7,190.00	17.23	16.72	-90.17	1,320.03	1,286.50	33.53	39.370	0			
8,600.00	7,190.00	8,536.96	7,190.00	17.69	17.20	-90.17	1,320.03	1,285.54	34.48	38.280	0			
8,700.00	7,190.00	8,636.96	7,190.00	18.18	17.70	-90.17	1,320.03	1,284.56	35.47	37.217	0			
8,800.00	7,190.00	8,736.96	7,190.00	18.67	18.20	-90.17	1,320.03	1,283.55	36.48	36.184	0			
8,900.00	7,190.00	8,836.96	7,190.00	19.18	18.72	-90.17	1,320.03	1,282.51	37.52	35.183	0			
9,000.00	7,190.00	8,936.96	7,190.00	19.70	19.25	-90.17	1,320.03	1,281.45	38.58	34.215	0			
9,100.00	7,190.00	9,036.96	7,190.00	20.24	19.79	-90.17	1,320.03	1,280.36	39.66	33.281	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 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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	7,190.00	9,136.96	7,190.00	20.78	20.35	-90.17	1,320.03	1,279.26	40.77	32.381	0			
9,300.00	7,190.00	9,236.96	7,190.00	21.33	20.91	-90.17	1,320.03	1,278.14	41.89	31.514	0			
9,400.00	7,190.00	9,336.96	7,190.00	21.89	21.48	-90.17	1,320.03	1,277.00	43.02	30.681	0			
9,500.00	7,190.00	9,436.96	7,190.00	22.46	22.05	-90.17	1,320.03	1,275.85	44.18	29.880	0			
9,600.00	7,190.00	9,536.96	7,190.00	23.04	22.64	-90.17	1,320.03	1,274.68	45.35	29.111	0			
9,700.00	7,190.00	9,636.96	7,190.00	23.62	23.23	-90.17	1,320.03	1,273.50	46.53	28.372	0			
9,800.00	7,190.00	9,736.96	7,190.00	24.21	23.82	-90.17	1,320.02	1,272.31	47.72	27.662	0			
9,900.00	7,190.00	9,836.96	7,190.00	24.80	24.43	-90.17	1,320.02	1,271.10	48.92	26.981	0			
10,000.00	7,190.00	9,936.96	7,190.00	25.40	25.03	-90.17	1,320.02	1,269.88	50.14	26.327	0			
10,100.00	7,190.00	10,036.96	7,190.00	26.01	25.65	-90.17	1,320.02	1,268.66	51.36	25.699	0			
10,200.00	7,190.00	10,136.96	7,190.00	26.62	26.26	-90.17	1,320.02	1,267.42	52.60	25.096	0			
10,300.00	7,190.00	10,236.96	7,190.00	27.23	26.89	-90.17	1,320.02	1,266.18	53.84	24.517	0			
10,400.00	7,190.00	10,336.96	7,190.00	27.85	27.51	-90.17	1,320.02	1,264.93	55.09	23.961	0			
10,500.00	7,190.00	10,436.96	7,190.00	28.48	28.14	-90.17	1,320.02	1,263.67	56.35	23.426	0			
10,600.00	7,190.00	10,536.96	7,190.00	29.10	28.77	-90.17	1,320.02	1,262.41	57.61	22.912	0			
10,700.00	7,190.00	10,636.96	7,190.00	29.73	29.41	-90.17	1,320.02	1,261.13	58.88	22.417	0			
10,800.00	7,190.00	10,736.96	7,190.00	30.37	30.05	-90.17	1,320.02	1,259.86	60.16	21.941	0			
10,900.00	7,190.00	10,836.96	7,190.00	31.00	30.69	-90.17	1,320.02	1,258.57	61.44	21.483	0			
11,000.00	7,190.00	10,936.96	7,190.00	31.64	31.33	-90.17	1,320.02	1,257.28	62.73	21.042	0			
11,100.00	7,190.00	11,036.96	7,190.00	32.28	31.98	-90.17	1,320.02	1,255.99	64.03	20.617	0			
11,200.00	7,190.00	11,136.96	7,190.00	32.93	32.63	-90.17	1,320.01	1,254.69	65.32	20.207	0			
11,300.00	7,190.00	11,236.96	7,190.00	33.57	33.28	-90.17	1,320.01	1,253.39	66.63	19.812	0			
11,400.00	7,190.00	11,336.96	7,190.00	34.22	33.93	-90.17	1,320.01	1,252.08	67.93	19.431	0			
11,500.00	7,190.00	11,436.96	7,190.00	34.87	34.59	-90.17	1,320.01	1,250.77	69.24	19.063	0			
11,600.00	7,190.00	11,536.96	7,190.00	35.53	35.25	-90.17	1,320.01	1,249.45	70.56	18.708	0			
11,700.00	7,190.00	11,636.96	7,190.00	36.18	35.90	-90.17	1,320.01	1,248.13	71.88	18.365	0			
11,800.00	7,190.00	11,736.96	7,190.00	36.84	36.57	-90.17	1,320.01	1,246.81	73.20	18.034	0			
11,900.00	7,190.00	11,836.96	7,190.00	37.50	37.23	-90.17	1,320.01	1,245.49	74.52	17.713	0			
12,000.00	7,190.00	11,936.96	7,190.00	38.16	37.89	-90.17	1,320.01	1,244.16	75.85	17.403	0			
12,100.00	7,190.00	12,036.96	7,190.00	38.82	38.56	-90.17	1,320.00	1,242.83	77.18	17.103	0			
12,200.00	7,190.00	12,136.96	7,190.00	39.48	39.22	-90.17	1,320.00	1,241.49	78.51	16.813	0			
12,300.00	7,190.00	12,236.96	7,190.00	40.15	39.89	-90.17	1,320.00	1,240.15	79.85	16.532	0			
12,400.00	7,190.00	12,336.96	7,190.00	40.81	40.56	-90.17	1,320.00	1,238.82	81.18	16.259	0			
12,500.00	7,190.00	12,436.96	7,190.00	41.48	41.23	-90.17	1,320.00	1,237.47	82.52	15.995	0			
12,600.00	7,190.00	12,536.96	7,190.00	42.15	41.90	-90.17	1,320.00	1,236.13	83.87	15.739	0			
12,700.00	7,190.00	12,636.96	7,190.00	42.82	42.57	-90.17	1,320.00	1,234.78	85.21	15.491	0			
12,800.00	7,190.00	12,736.96	7,190.00	43.49	43.25	-90.17	1,319.99	1,233.44	86.56	15.250	0			
12,900.00	7,190.00	12,836.96	7,190.00	44.16	43.92	-90.17	1,319.99	1,232.09	87.91	15.016	0			
13,000.00	7,190.00	12,936.96	7,190.00	44.83	44.60	-90.17	1,319.99	1,230.74	89.26	14.789	0			
13,100.00	7,190.00	13,036.96	7,190.00	45.50	45.27	-90.17	1,319.99	1,229.38	90.61	14.568	0			
13,200.00	7,190.00	13,136.96	7,190.00	46.18	45.95	-90.17	1,319.99	1,228.03	91.96	14.354	0			
13,300.00	7,190.00	13,236.96	7,190.00	46.85	46.63	-90.17	1,319.99	1,226.67	93.32	14.145	0			
13,400.00	7,190.00	13,336.96	7,190.00	47.53	47.30	-90.17	1,319.98	1,225.31	94.67	13.943	0			
13,500.00	7,190.00	13,436.96	7,190.00	48.21	47.98	-90.17	1,319.98	1,223.95	96.03	13.746	0			
13,600.00	7,190.00	13,536.96	7,190.00	48.88	48.66	-90.17	1,319.98	1,222.59	97.39	13.554	0			
13,700.00	7,190.00	13,636.96	7,190.00	49.56	49.34	-90.17	1,319.98	1,221.23	98.75	13.367	0			
13,800.00	7,190.00	13,736.96	7,190.00	50.24	50.02	-90.17	1,319.98	1,219.86	100.11	13.185	0			
13,900.00	7,190.00	13,836.96	7,190.00	50.92	50.71	-90.17	1,319.97	1,218.50	101.48	13.008	0			
14,000.00	7,190.00	13,936.96	7,190.00	51.60	51.39	-90.17	1,319.97	1,217.13	102.84	12.835	0			
14,100.00	7,190.00	14,036.96	7,190.00	52.28	52.07	-90.17	1,319.97	1,215.76	104.21	12.667	0			
14,200.00	7,190.00	14,136.96	7,190.00	52.96	52.75	-90.17	1,319.97	1,214.40	105.57	12.503	0			
14,300.00	7,190.00	14,236.96	7,190.00	53.65	53.44	-90.17	1,319.97	1,213.03	106.94	12.343	0			
14,400.00	7,190.00	14,336.96	7,190.00	54.33	54.12	-90.17	1,319.96	1,211.66	108.31	12.187	0			
14,500.00	7,190.00	14,436.96	7,190.00	55.01	54.81	-90.17	1,319.96	1,210.28	109.68	12.035	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 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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 5 - 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	7,190.00	14,536.96	7,190.00	55.69	55.49	-90.17	1,319.96	1,208.91	111.05	11.886	0					
14,700.00	7,190.00	14,636.96	7,190.00	56.38	56.18	-90.17	1,319.96	1,207.54	112.42	11.741	0					
14,800.00	7,190.00	14,736.96	7,190.00	57.06	56.87	-90.17	1,319.95	1,206.16	113.79	11.600	0					
14,900.00	7,190.00	14,836.96	7,190.00	57.75	57.55	-90.17	1,319.95	1,204.79	115.17	11.461	0					
15,000.00	7,190.00	14,936.96	7,190.00	58.43	58.24	-90.17	1,319.95	1,203.41	116.54	11.326	0					
15,100.00	7,190.00	15,036.96	7,190.00	59.12	58.93	-90.17	1,319.95	1,202.03	117.91	11.194	0					
15,200.00	7,190.00	15,136.96	7,190.00	59.81	59.61	-90.17	1,319.95	1,200.66	119.29	11.065	0					
15,300.00	7,190.00	15,236.96	7,190.00	60.49	60.30	-90.17	1,319.94	1,199.28	120.67	10.939	0					
15,400.00	7,190.00	15,336.96	7,190.00	61.18	60.99	-90.17	1,319.94	1,197.90	122.04	10.815	0					
15,500.00	7,190.00	15,436.96	7,190.00	61.87	61.68	-90.17	1,319.94	1,196.52	123.42	10.695	0					
15,600.00	7,190.00	15,536.96	7,190.00	62.55	62.37	-90.17	1,319.94	1,195.14	124.80	10.576	0					
15,700.00	7,190.00	15,636.96	7,190.00	63.24	63.06	-90.17	1,319.93	1,193.75	126.18	10.461	0					
15,800.00	7,190.00	15,736.96	7,190.00	63.93	63.75	-90.17	1,319.93	1,192.37	127.56	10.348	0					
15,900.00	7,190.00	15,836.96	7,190.00	64.62	64.44	-90.17	1,319.93	1,190.99	128.94	10.237	0					
16,000.00	7,190.00	15,936.96	7,190.00	65.31	65.13	-90.17	1,319.92	1,189.61	130.32	10.128	0					
16,100.00	7,190.00	16,036.96	7,190.00	66.00	65.82	-90.17	1,319.92	1,188.22	131.70	10.022	0					
16,200.00	7,190.00	16,136.96	7,190.00	66.69	66.51	-90.17	1,319.92	1,186.84	133.08	9.918	0					
16,300.00	7,190.00	16,236.96	7,190.00	67.38	67.20	-90.17	1,319.92	1,185.45	134.46	9.816	0					
16,400.00	7,190.00	16,336.96	7,190.00	68.07	67.89	-90.17	1,319.91	1,184.07	135.85	9.716	0					
16,500.00	7,190.00	16,436.96	7,190.00	68.76	68.59	-90.17	1,319.91	1,182.68	137.23	9.618	0					
16,600.00	7,190.00	16,536.96	7,190.00	69.45	69.28	-90.17	1,319.91	1,181.29	138.61	9.522	0					
16,700.00	7,190.00	16,636.96	7,190.00	70.14	69.97	-90.17	1,319.90	1,179.91	140.00	9.428	0					
16,800.00	7,190.00	16,736.96	7,190.00	70.83	70.66	-90.17	1,319.90	1,178.52	141.38	9.336	0					
16,900.00	7,190.00	16,836.96	7,190.00	71.52	71.35	-90.17	1,319.90	1,177.13	142.77	9.245	0					
17,000.00	7,190.00	16,936.96	7,190.00	72.21	72.05	-90.17	1,319.90	1,175.74	144.15	9.156	0					
17,100.00	7,190.00	17,036.96	7,190.00	72.91	72.74	-90.17	1,319.89	1,174.35	145.54	9.069	0					
17,200.00	7,190.00	17,136.96	7,190.00	73.60	73.43	-90.17	1,319.89	1,172.96	146.93	8.983	0					
17,268.14	7,190.00	17,206.71	7,190.00	74.07	73.92	-90.17	1,319.88	1,172.00	147.88	8.925	0					
17,297.69	7,190.00	17,222.47	7,190.00	74.28	74.03	-90.17	1,319.91	1,171.72	148.20	8.906	0	SF				



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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	0.01	139.93						CC, ES	
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	799.98	796.98	796.98	1.37	1.36	148.54	141.39	138.66	2.73	51.777	0			
900.00	899.84	896.84	896.84	1.54	1.54	149.57	145.88	142.80	3.08	47.405	0			
1,000.00	999.45	996.45	996.45	1.72	1.71	151.14	153.46	150.04	3.42	44.850	0			
1,100.00	1,098.70	1,094.26	1,094.24	1.90	1.88	152.53	164.67	160.91	3.76	43.783	0			
1,200.00	1,197.47	1,191.52	1,191.38	2.08	2.05	153.16	179.93	175.83	4.10	43.903	0			
1,228.56	1,225.57	1,219.17	1,218.96	2.14	2.10	153.21	185.01	180.82	4.19	44.111	0			
1,300.00	1,295.79	1,288.32	1,287.84	2.27	2.22	153.16	198.34	193.90	4.44	44.633	0			
1,400.00	1,394.10	1,386.52	1,385.56	2.46	2.40	152.85	217.24	212.44	4.80	45.287	0			
1,500.00	1,492.40	1,484.71	1,483.29	2.65	2.57	152.60	236.14	230.99	5.15	45.842	0			
1,600.00	1,590.70	1,582.90	1,581.01	2.84	2.75	152.38	255.04	249.53	5.51	46.318	0			
1,700.00	1,689.00	1,681.09	1,678.74	3.03	2.92	152.20	273.95	268.09	5.86	46.731	0			
1,800.00	1,787.31	1,779.29	1,776.46	3.23	3.10	152.03	292.86	286.64	6.22	47.092	0			
1,900.00	1,885.61	1,877.48	1,874.19	3.42	3.27	151.89	311.77	305.19	6.58	47.410	0			
2,000.00	1,983.91	1,975.67	1,971.91	3.62	3.45	151.76	330.68	323.75	6.93	47.693	0			
2,100.00	2,082.22	2,073.86	2,069.64	3.81	3.63	151.65	349.60	342.31	7.29	47.945	0			
2,200.00	2,180.52	2,172.06	2,167.36	4.01	3.80	151.55	368.52	360.87	7.65	48.172	0			
2,300.00	2,278.82	2,270.25	2,265.08	4.20	3.98	151.46	387.43	379.42	8.01	48.377	0			
2,400.00	2,377.12	2,368.44	2,362.81	4.40	4.16	151.38	406.35	397.98	8.37	48.563	0			
2,500.00	2,475.43	2,466.64	2,460.53	4.60	4.33	151.30	425.27	416.54	8.73	48.732	0			
2,600.00	2,573.73	2,564.83	2,558.26	4.79	4.51	151.23	444.19	435.10	9.09	48.887	0			
2,700.00	2,672.03	2,663.02	2,655.98	4.99	4.69	151.17	463.11	453.66	9.45	49.029	0			
2,800.00	2,770.33	2,761.21	2,753.71	5.19	4.87	151.11	482.03	472.23	9.81	49.161	0			
2,900.00	2,868.64	2,859.41	2,851.43	5.38	5.04	151.06	500.95	490.79	10.17	49.282	0			
3,000.00	2,966.94	2,957.60	2,949.16	5.58	5.22	151.01	519.87	509.35	10.53	49.394	0			
3,100.00	3,065.24	3,055.79	3,046.88	5.78	5.40	150.96	538.80	527.91	10.89	49.499	0			
3,200.00	3,163.55	3,153.98	3,144.61	5.98	5.58	150.92	557.72	546.47	11.25	49.596	0			
3,300.00	3,261.85	3,252.18	3,242.33	6.17	5.76	150.88	576.64	565.03	11.61	49.687	0			
3,400.00	3,360.15	3,350.37	3,340.05	6.37	5.93	150.84	595.56	583.60	11.97	49.772	0			
3,500.00	3,458.45	3,448.56	3,437.78	6.57	6.11	150.80	614.49	602.16	12.33	49.852	0			
3,600.00	3,556.76	3,546.75	3,535.50	6.77	6.29	150.77	633.41	620.72	12.69	49.927	0			
3,700.00	3,655.06	3,644.95	3,633.23	6.97	6.47	150.74	652.33	639.29	13.05	49.997	0			
3,800.00	3,753.36	3,743.14	3,730.95	7.17	6.65	150.71	671.26	657.85	13.41	50.064	0			
3,900.00	3,851.67	3,841.33	3,828.68	7.36	6.82	150.68	690.18	676.41	13.77	50.127	0			
4,000.00	3,949.97	3,939.52	3,926.40	7.56	7.00	150.65	709.10	694.97	14.13	50.186	0			
4,100.00	4,048.27	4,037.72	4,024.13	7.76	7.18	150.63	728.03	713.54	14.49	50.243	0			
4,200.00	4,146.57	4,135.91	4,121.85	7.96	7.36	150.60	746.95	732.10	14.85	50.296	0			
4,300.00	4,244.88	4,234.10	4,219.58	8.16	7.54	150.58	765.88	750.66	15.21	50.347	0			
4,400.00	4,343.18	4,332.29	4,317.30	8.36	7.71	150.56	784.80	769.23	15.57	50.395	0			
4,500.00	4,441.48	4,430.49	4,415.02	8.55	7.89	150.54	803.73	787.79	15.93	50.442	0			
4,600.00	4,539.78	4,528.68	4,512.75	8.75	8.07	150.52	822.65	806.35	16.29	50.486	0			
4,700.00	4,638.09	4,626.87	4,610.47	8.95	8.25	150.50	841.57	824.92	16.66	50.527	0			
4,800.00	4,736.39	4,725.06	4,708.20	9.15	8.43	150.48	860.50	843.48	17.02	50.568	0			
4,900.00	4,834.69	4,823.26	4,805.92	9.35	8.60	150.46	879.42	862.05	17.38	50.606	0			
5,000.00	4,933.00	4,921.45	4,903.65	9.55	8.78	150.45	898.35	880.61	17.74	50.643	0			
5,100.00	5,031.30	5,019.64	5,001.37	9.75	8.96	150.43	917.27	899.17	18.10	50.678	0			
5,200.00	5,129.60	5,117.84	5,099.10	9.95	9.14	150.42	936.20	917.74	18.46	50.712	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 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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				
5,300.00	5,227.90	5,216.03	5,196.82	10.14	9.32	150.40	955.12	936.30	18.82	50.744	0					
5,400.00	5,326.21	5,314.22	5,294.55	10.34	9.50	150.39	974.05	954.87	19.18	50.775	0					
5,500.00	5,424.51	5,412.41	5,392.27	10.54	9.67	150.37	992.97	973.43	19.54	50.805	0					
5,600.00	5,522.81	5,510.61	5,489.99	10.74	9.85	150.36	1,011.90	991.99	19.91	50.834	0					
5,700.00	5,621.11	5,608.80	5,587.72	10.94	10.03	150.35	1,030.82	1,010.56	20.27	50.861	0					
5,800.00	5,719.42	5,706.99	5,685.44	11.14	10.21	150.34	1,049.75	1,029.12	20.63	50.888	0					
5,900.00	5,817.72	5,805.18	5,783.17	11.34	10.39	150.33	1,068.68	1,047.69	20.99	50.914	0					
6,000.00	5,916.02	5,903.38	5,880.89	11.54	10.57	150.31	1,087.60	1,066.25	21.35	50.939	0					
6,011.99	5,927.81	5,915.15	5,892.61	11.56	10.59	150.31	1,089.87	1,068.48	21.39	50.942	0					
6,100.00	6,014.56	6,001.78	5,978.82	11.73	10.75	150.42	1,105.37	1,083.63	21.74	50.835	0					
6,200.00	6,113.63	6,100.64	6,077.21	11.91	10.92	150.44	1,120.17	1,098.04	22.13	50.621	0					
6,300.00	6,213.11	6,199.84	6,175.94	12.09	11.11	150.34	1,131.97	1,109.47	22.50	50.312	0					
6,400.00	6,312.88	6,299.27	6,274.90	12.26	11.29	150.12	1,140.78	1,117.93	22.85	49.916	0					
6,500.00	6,412.83	6,398.80	6,373.96	12.42	11.47	149.80	1,146.61	1,123.42	23.19	49.435	0					
6,540.55	6,453.38	6,439.17	6,414.13	12.49	11.54	1.46	1,148.14	1,124.58	23.56	48.738	0					
6,600.00	6,512.83	6,498.33	6,473.01	12.58	11.65	1.19	1,150.03	1,126.27	23.76	48.412	0					
6,640.55	6,553.38	6,540.10	6,514.59	12.65	11.72	1.00	1,151.32	1,127.43	23.89	48.187	0					
6,650.00	6,562.83	6,550.95	6,525.39	12.66	11.74	-89.02	1,151.61	1,127.89	23.72	48.552	0					
6,700.00	6,612.74	6,608.21	6,582.46	12.73	11.84	-89.28	1,152.91	1,129.01	23.90	48.235	0					
6,750.00	6,662.29	6,665.11	6,639.26	12.81	11.94	-89.72	1,153.89	1,129.81	24.08	47.918	0					
6,800.00	6,711.16	6,721.50	6,695.60	12.87	12.04	-90.34	1,154.62	1,130.36	24.26	47.601	0					
6,850.00	6,759.07	6,777.23	6,751.32	12.94	12.14	-91.13	1,155.21	1,130.78	24.43	47.289	0					
6,900.00	6,805.70	6,828.62	6,802.70	13.00	12.22	-92.00	1,155.81	1,131.21	24.59	47.002	0					
6,950.00	6,850.78	6,873.70	6,847.78	13.06	12.30	-92.87	1,156.83	1,132.09	24.74	46.763	0					
7,000.00	6,894.03	6,918.21	6,892.30	13.11	12.37	-93.82	1,158.51	1,133.63	24.88	46.564	0					
7,050.00	6,935.18	6,969.12	6,943.12	13.17	12.46	-94.92	1,160.85	1,135.82	25.02	46.390	0					
7,100.00	6,973.97	7,022.78	6,996.26	13.23	12.54	-96.03	1,163.75	1,138.59	25.16	46.253	0					
7,150.00	7,010.17	7,079.59	7,051.65	13.28	12.62	-97.15	1,167.17	1,141.88	25.29	46.150	0					
7,200.00	7,043.55	7,140.04	7,109.11	13.34	12.70	-98.28	1,171.05	1,145.63	25.42	46.077	0					
7,250.00	7,073.91	7,204.67	7,168.28	13.40	12.78	-99.42	1,175.28	1,149.75	25.54	46.026	0					
7,300.00	7,101.06	7,274.04	7,228.50	13.47	12.87	-100.56	1,179.77	1,154.11	25.65	45.989	0					
7,350.00	7,124.84	7,348.69	7,288.71	13.54	12.96	-101.68	1,184.34	1,158.56	25.78	45.949	0					
7,400.00	7,145.09	7,429.08	7,347.31	13.61	13.06	-102.78	1,188.81	1,162.90	25.91	45.885	0					
7,450.00	7,161.69	7,515.50	7,402.04	13.70	13.18	-103.80	1,192.97	1,166.90	26.06	45.770	0					
7,500.00	7,174.55	7,607.85	7,449.96	13.78	13.32	-104.70	1,196.59	1,170.33	26.26	45.572	0					
7,550.00	7,183.57	7,705.58	7,487.68	13.88	13.49	-105.41	1,199.43	1,172.93	26.50	45.254	0					
7,600.00	7,188.71	7,807.49	7,511.88	13.99	13.72	-105.89	1,201.30	1,174.48	26.82	44.791	0					
7,640.55	7,190.00	7,892.03	7,519.77	14.08	13.93	-106.07	1,201.99	1,174.86	27.13	44.306	0					
7,700.00	7,190.00	7,960.50	7,520.00	14.23	14.12	-106.08	1,202.02	1,174.53	27.49	43.733	0					
7,800.00	7,190.00	8,060.50	7,520.00	14.51	14.42	-106.08	1,202.02	1,173.93	28.09	42.799	0					
7,900.00	7,190.00	8,160.50	7,520.00	14.83	14.75	-106.08	1,202.02	1,173.28	28.74	41.828	0					
8,000.00	7,190.00	8,260.50	7,520.00	15.17	15.10	-106.08	1,202.02	1,172.58	29.44	40.832	0					
8,100.00	7,190.00	8,360.50	7,520.00	15.54	15.48	-106.08	1,202.02	1,171.83	30.18	39.823	0					
8,200.00	7,190.00	8,460.50	7,520.00	15.93	15.87	-106.08	1,202.02	1,171.05	30.97	38.810	0					
8,300.00	7,190.00	8,560.50	7,520.00	16.34	16.29	-106.08	1,202.02	1,170.22	31.80	37.801	0					
8,400.00	7,190.00	8,660.50	7,520.00	16.78	16.73	-106.08	1,202.02	1,169.36	32.66	36.802	0					
8,500.00	7,190.00	8,760.50	7,520.00	17.23	17.18	-106.08	1,202.02	1,168.46	33.56	35.819	0					
8,600.00	7,190.00	8,860.50	7,520.00	17.69	17.65	-106.08	1,202.02	1,167.53	34.48	34.857	0					
8,700.00	7,190.00	8,960.50	7,520.00	18.18	18.14	-106.08	1,202.02	1,166.58	35.44	33.917	0					
8,800.00	7,190.00	9,060.50	7,520.00	18.67	18.64	-106.08	1,202.02	1,165.59	36.42	33.004	0					
8,900.00	7,190.00	9,160.50	7,520.00	19.18	19.15	-106.08	1,202.01	1,164.59	37.43	32.118	0					
9,000.00	7,190.00	9,260.50	7,520.00	19.70	19.68	-106.08	1,202.01	1,163.56	38.45	31.260	0					
9,100.00	7,190.00	9,360.50	7,520.00	20.24	20.21	-106.08	1,202.01	1,162.51	39.50	30.431	0					
9,200.00	7,190.00	9,460.50	7,520.00	20.78	20.76	-106.08	1,202.01	1,161.45	40.57	29.631	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 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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	
9,300.00	7,190.00	9,560.50	7,520.00	21.33	21.31	-106.08	1,202.01	1,160.36	41.65	28.860	0		
9,400.00	7,190.00	9,660.50	7,520.00	21.89	21.88	-106.08	1,202.01	1,159.26	42.75	28.118	0		
9,500.00	7,190.00	9,760.50	7,520.00	22.46	22.45	-106.08	1,202.01	1,158.15	43.86	27.404	0		
9,600.00	7,190.00	9,860.50	7,520.00	23.04	23.03	-106.08	1,202.01	1,157.02	44.99	26.716	0		
9,700.00	7,190.00	9,960.50	7,520.00	23.62	23.61	-106.08	1,202.01	1,155.88	46.13	26.056	0		
9,800.00	7,190.00	10,060.50	7,520.00	24.21	24.20	-106.08	1,202.01	1,154.72	47.28	25.421	0		
9,900.00	7,190.00	10,160.50	7,520.00	24.80	24.80	-106.08	1,202.01	1,153.56	48.45	24.810	0		
10,000.00	7,190.00	10,260.50	7,520.00	25.40	25.40	-106.08	1,202.01	1,152.39	49.62	24.223	0		
10,100.00	7,190.00	10,360.50	7,520.00	26.01	26.01	-106.08	1,202.01	1,151.20	50.80	23.659	0		
10,200.00	7,190.00	10,460.50	7,520.00	26.62	26.62	-106.08	1,202.01	1,150.01	52.00	23.117	0		
10,300.00	7,190.00	10,560.50	7,520.00	27.23	27.24	-106.08	1,202.01	1,148.81	53.20	22.595	0		
10,400.00	7,190.00	10,660.50	7,520.00	27.85	27.86	-106.08	1,202.00	1,147.60	54.40	22.094	0		
10,500.00	7,190.00	10,760.50	7,520.00	28.48	28.49	-106.08	1,202.00	1,146.38	55.62	21.611	0		
10,600.00	7,190.00	10,860.50	7,520.00	29.10	29.12	-106.08	1,202.00	1,145.16	56.84	21.147	0		
10,700.00	7,190.00	10,960.50	7,520.00	29.73	29.75	-106.08	1,202.00	1,143.93	58.07	20.699	0		
10,800.00	7,190.00	11,060.50	7,520.00	30.37	30.38	-106.08	1,202.00	1,142.70	59.30	20.269	0		
10,900.00	7,190.00	11,160.50	7,520.00	31.00	31.02	-106.08	1,202.00	1,141.46	60.54	19.854	0		
11,000.00	7,190.00	11,260.50	7,520.00	31.64	31.66	-106.08	1,202.00	1,140.21	61.79	19.454	0		
11,100.00	7,190.00	11,360.50	7,520.00	32.28	32.30	-106.08	1,202.00	1,138.96	63.04	19.068	0		
11,200.00	7,190.00	11,460.50	7,520.00	32.93	32.95	-106.08	1,202.00	1,137.70	64.29	18.696	0		
11,300.00	7,190.00	11,560.50	7,520.00	33.57	33.60	-106.08	1,201.99	1,136.44	65.55	18.337	0		
11,400.00	7,190.00	11,660.50	7,520.00	34.22	34.25	-106.08	1,201.99	1,135.18	66.81	17.990	0		
11,500.00	7,190.00	11,760.50	7,520.00	34.87	34.90	-106.08	1,201.99	1,133.91	68.08	17.656	0		
11,600.00	7,190.00	11,860.50	7,520.00	35.53	35.56	-106.08	1,201.99	1,132.64	69.35	17.332	0		
11,700.00	7,190.00	11,960.50	7,520.00	36.18	36.21	-106.08	1,201.99	1,131.37	70.62	17.020	0		
11,800.00	7,190.00	12,060.50	7,520.00	36.84	36.87	-106.08	1,201.99	1,130.09	71.90	16.717	0		
11,900.00	7,190.00	12,160.50	7,520.00	37.50	37.53	-106.08	1,201.99	1,128.81	73.18	16.425	0		
12,000.00	7,190.00	12,260.50	7,520.00	38.16	38.19	-106.08	1,201.98	1,127.52	74.46	16.142	0		
12,100.00	7,190.00	12,360.50	7,520.00	38.82	38.85	-106.08	1,201.98	1,126.23	75.75	15.868	0		
12,200.00	7,190.00	12,460.50	7,520.00	39.48	39.52	-106.08	1,201.98	1,124.94	77.04	15.602	0		
12,300.00	7,190.00	12,560.50	7,520.00	40.15	40.18	-106.08	1,201.98	1,123.65	78.33	15.345	0		
12,400.00	7,190.00	12,660.50	7,520.00	40.81	40.85	-106.08	1,201.98	1,122.36	79.62	15.096	0		
12,500.00	7,190.00	12,760.50	7,520.00	41.48	41.52	-106.08	1,201.98	1,121.06	80.92	14.854	0		
12,600.00	7,190.00	12,860.50	7,520.00	42.15	42.19	-106.08	1,201.97	1,119.76	82.22	14.620	0		
12,700.00	7,190.00	12,960.50	7,520.00	42.82	42.86	-106.08	1,201.97	1,118.46	83.52	14.392	0		
12,800.00	7,190.00	13,060.50	7,520.00	43.49	43.53	-106.08	1,201.97	1,117.15	84.82	14.171	0		
12,900.00	7,190.00	13,160.50	7,520.00	44.16	44.20	-106.08	1,201.97	1,115.85	86.12	13.957	0		
13,000.00	7,190.00	13,260.50	7,520.00	44.83	44.87	-106.08	1,201.97	1,114.54	87.43	13.748	0		
13,100.00	7,190.00	13,360.50	7,520.00	45.50	45.55	-106.08	1,201.97	1,113.23	88.74	13.545	0		
13,200.00	7,190.00	13,460.50	7,520.00	46.18	46.22	-106.08	1,201.96	1,111.92	90.04	13.349	0		
13,300.00	7,190.00	13,560.50	7,520.00	46.85	46.90	-106.08	1,201.96	1,110.61	91.36	13.157	0		
13,400.00	7,190.00	13,660.50	7,520.00	47.53	47.58	-106.08	1,201.96	1,109.29	92.67	12.971	0		
13,500.00	7,190.00	13,760.50	7,520.00	48.21	48.25	-106.08	1,201.96	1,107.98	93.98	12.789	0		
13,600.00	7,190.00	13,860.50	7,520.00	48.88	48.93	-106.08	1,201.96	1,106.66	95.30	12.613	0		
13,700.00	7,190.00	13,960.50	7,520.00	49.56	49.61	-106.08	1,201.95	1,105.34	96.61	12.441	0		
13,800.00	7,190.00	14,060.50	7,520.00	50.24	50.29	-106.08	1,201.95	1,104.02	97.93	12.274	0		
13,900.00	7,190.00	14,160.50	7,520.00	50.92	50.97	-106.08	1,201.95	1,102.70	99.25	12.110	0		
14,000.00	7,190.00	14,260.50	7,520.00	51.60	51.65	-106.08	1,201.95	1,101.38	100.57	11.951	0		
14,100.00	7,190.00	14,360.50	7,520.00	52.28	52.33	-106.08	1,201.94	1,100.05	101.89	11.796	0		
14,200.00	7,190.00	14,460.50	7,520.00	52.96	53.01	-106.08	1,201.94	1,098.73	103.21	11.645	0		
14,300.00	7,190.00	14,560.50	7,520.00	53.65	53.70	-106.08	1,201.94	1,097.40	104.54	11.498	0		
14,400.00	7,190.00	14,660.50	7,520.00	54.33	54.38	-106.08	1,201.94	1,096.08	105.86	11.354	0		
14,500.00	7,190.00	14,760.50	7,520.00	55.01	55.06	-106.08	1,201.94	1,094.75	107.19	11.214	0		
14,600.00	7,190.00	14,860.50	7,520.00	55.69	55.75	-106.08	1,201.93	1,093.42	108.51	11.076	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 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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				
14,700.00	7,190.00	14,960.50	7,520.00	56.38	56.43	-106.08	1,201.93	1,092.09	109.84	10.943	0					
14,800.00	7,190.00	15,060.50	7,520.00	57.06	57.12	-106.08	1,201.93	1,090.76	111.17	10.812	0					
14,900.00	7,190.00	15,160.50	7,520.00	57.75	57.80	-106.08	1,201.93	1,089.43	112.50	10.684	0					
15,000.00	7,190.00	15,260.50	7,520.00	58.43	58.49	-106.08	1,201.92	1,088.10	113.83	10.559	0					
15,100.00	7,190.00	15,360.50	7,520.00	59.12	59.18	-106.08	1,201.92	1,086.76	115.16	10.437	0					
15,200.00	7,190.00	15,460.50	7,520.00	59.81	59.86	-106.08	1,201.92	1,085.43	116.49	10.318	0					
15,300.00	7,190.00	15,560.50	7,520.00	60.49	60.55	-106.08	1,201.91	1,084.10	117.82	10.201	0					
15,400.00	7,190.00	15,660.50	7,520.00	61.18	61.24	-106.08	1,201.91	1,082.76	119.15	10.087	0					
15,500.00	7,190.00	15,760.50	7,520.00	61.87	61.92	-106.08	1,201.91	1,081.42	120.49	9.976	0					
15,600.00	7,190.00	15,860.50	7,520.00	62.55	62.61	-106.08	1,201.91	1,080.09	121.82	9.866	0					
15,700.00	7,190.00	15,960.50	7,520.00	63.24	63.30	-106.08	1,201.90	1,078.75	123.15	9.759	0					
15,800.00	7,190.00	16,060.50	7,520.00	63.93	63.99	-106.08	1,201.90	1,077.41	124.49	9.655	0					
15,900.00	7,190.00	16,160.50	7,520.00	64.62	64.68	-106.08	1,201.90	1,076.07	125.83	9.552	0					
16,000.00	7,190.00	16,260.50	7,520.00	65.31	65.37	-106.08	1,201.89	1,074.73	127.16	9.452	0					
16,100.00	7,190.00	16,360.50	7,520.00	66.00	66.06	-106.08	1,201.89	1,073.39	128.50	9.353	0					
16,200.00	7,190.00	16,460.50	7,520.00	66.69	66.75	-106.09	1,201.89	1,072.05	129.84	9.257	0					
16,300.00	7,190.00	16,560.50	7,520.00	67.38	67.44	-106.09	1,201.89	1,070.71	131.17	9.162	0					
16,400.00	7,190.00	16,660.50	7,520.00	68.07	68.13	-106.09	1,201.88	1,069.37	132.51	9.070	0					
16,500.00	7,190.00	16,760.50	7,520.00	68.76	68.82	-106.09	1,201.88	1,068.03	133.85	8.979	0					
16,600.00	7,190.00	16,860.50	7,520.00	69.45	69.51	-106.09	1,201.88	1,066.68	135.19	8.890	0					
16,700.00	7,190.00	16,960.50	7,520.00	70.14	70.20	-106.09	1,201.87	1,065.34	136.53	8.803	0					
16,800.00	7,190.00	17,060.50	7,520.00	70.83	70.89	-106.09	1,201.87	1,064.00	137.87	8.717	0					
16,900.00	7,190.00	17,160.50	7,520.00	71.52	71.59	-106.09	1,201.87	1,062.65	139.21	8.633	0					
17,000.00	7,190.00	17,260.50	7,520.00	72.21	72.28	-106.09	1,201.86	1,061.31	140.55	8.551	0					
17,100.00	7,190.00	17,360.50	7,520.00	72.91	72.97	-106.09	1,201.86	1,059.96	141.90	8.470	0					
17,200.00	7,190.00	17,460.50	7,520.00	73.60	73.66	-106.09	1,201.86	1,058.62	143.24	8.391	0					
17,253.34	7,190.00	17,513.21	7,520.00	73.97	74.03	-106.09	1,201.86	1,057.91	143.95	8.349	0					
17,297.69	7,190.00	17,547.64	7,520.00	74.28	74.27	-106.09	1,201.93	1,057.45	144.48	8.319	0	SF				



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16")
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16")
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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							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	-0.02	111.89						0			
100.00	100.00	97.00	97.00	0.15	0.14	-0.02	111.85	111.56	0.29	387.260	0					
200.00	200.00	197.00	197.00	0.32	0.32	-0.02	111.85	111.21	0.64	175.572	0					
300.00	300.00	297.00	297.00	0.50	0.49	-0.02	111.85	110.86	0.99	113.423	0					
400.00	400.00	397.00	397.00	0.67	0.66	-0.02	111.85	110.51	1.34	83.770	0					
500.00	500.00	497.00	497.00	0.84	0.84	-0.02	111.85	110.16	1.68	66.408	0					
600.00	600.00	597.00	597.00	1.02	1.01	-0.02	111.85	109.81	2.03	55.008	0					
700.00	700.00	697.00	697.00	1.19	1.19	-0.02	111.85	109.47	2.38	46.948	0					
800.00	799.98	796.98	796.98	1.37	1.36	148.60	113.33	110.60	2.73	41.504	0	CC, ES				
900.00	899.84	896.84	896.84	1.54	1.54	149.88	117.83	114.76	3.08	38.292	0					
1,000.00	999.45	996.45	996.45	1.72	1.71	151.81	125.45	122.03	3.42	36.666	0					
1,100.00	1,098.70	1,095.70	1,095.70	1.90	1.88	154.13	136.33	132.56	3.76	36.229	0					
1,200.00	1,197.47	1,194.70	1,194.69	2.08	2.06	156.01	150.50	146.40	4.10	36.694	0					
1,228.56	1,225.57	1,222.95	1,222.91	2.14	2.11	156.34	155.13	150.93	4.20	36.953	0					
1,300.00	1,295.79	1,293.60	1,293.45	2.27	2.23	156.80	166.97	162.53	4.45	37.531	0					
1,400.00	1,394.10	1,392.55	1,392.05	2.46	2.40	156.41	183.40	178.59	4.80	38.186	0					
1,500.00	1,492.40	1,491.17	1,490.17	2.65	2.58	155.65	199.76	194.60	5.16	38.730	0					
1,600.00	1,590.70	1,589.79	1,588.30	2.84	2.75	155.00	216.15	210.64	5.51	39.201	0					
1,700.00	1,689.00	1,688.41	1,686.42	3.03	2.93	154.45	232.57	226.70	5.87	39.613	0					
1,800.00	1,787.31	1,787.03	1,784.55	3.23	3.11	153.97	249.00	242.77	6.23	39.976	0					
1,900.00	1,885.61	1,885.65	1,882.67	3.42	3.28	153.55	265.45	258.86	6.59	40.297	0					
2,000.00	1,983.91	1,984.27	1,980.80	3.62	3.46	153.17	281.91	274.97	6.95	40.583	0					
2,100.00	2,082.22	2,082.89	2,078.93	3.81	3.64	152.84	298.39	291.08	7.31	40.840	0					
2,200.00	2,180.52	2,181.51	2,177.05	4.01	3.81	152.54	314.87	307.20	7.67	41.071	0					
2,300.00	2,278.82	2,280.13	2,275.18	4.20	3.99	152.28	331.35	323.33	8.03	41.281	0					
2,400.00	2,377.12	2,378.75	2,373.30	4.40	4.17	152.03	347.85	339.46	8.39	41.471	0					
2,500.00	2,475.43	2,477.38	2,471.43	4.60	4.35	151.81	364.35	355.60	8.75	41.645	0					
2,600.00	2,573.73	2,576.00	2,569.55	4.79	4.53	151.61	380.85	371.74	9.11	41.805	0					
2,700.00	2,672.03	2,674.62	2,667.68	4.99	4.70	151.43	397.36	387.89	9.47	41.952	0					
2,800.00	2,770.33	2,773.24	2,765.81	5.19	4.88	151.26	413.88	404.04	9.83	42.088	0					
2,900.00	2,868.64	2,871.86	2,863.93	5.38	5.06	151.10	430.39	420.20	10.20	42.213	0					
3,000.00	2,966.94	2,970.48	2,962.06	5.58	5.24	150.96	446.91	436.35	10.56	42.329	0					
3,100.00	3,065.24	3,069.10	3,060.18	5.78	5.42	150.82	463.43	452.51	10.92	42.438	0					
3,200.00	3,163.55	3,167.72	3,158.31	5.98	5.60	150.70	479.96	468.67	11.28	42.539	0					
3,300.00	3,261.85	3,266.34	3,256.44	6.17	5.78	150.58	496.48	484.84	11.65	42.634	0					
3,400.00	3,360.15	3,364.96	3,354.56	6.37	5.96	150.47	513.01	501.00	12.01	42.722	0					
3,500.00	3,458.45	3,463.58	3,452.69	6.57	6.13	150.37	529.54	517.17	12.37	42.805	0					
3,600.00	3,556.76	3,562.20	3,550.81	6.77	6.31	150.27	546.07	533.34	12.73	42.883	0					
3,700.00	3,655.06	3,660.82	3,648.94	6.97	6.49	150.18	562.60	549.51	13.10	42.957	0					
3,800.00	3,753.36	3,759.44	3,747.06	7.17	6.67	150.09	579.14	565.68	13.46	43.027	0					
3,900.00	3,851.67	3,858.06	3,845.19	7.36	6.85	150.01	595.67	581.85	13.82	43.092	0					
4,000.00	3,949.97	3,956.68	3,943.32	7.56	7.03	149.94	612.21	598.02	14.19	43.155	0					
4,100.00	4,048.27	4,055.30	4,041.44	7.76	7.21	149.86	628.74	614.19	14.55	43.214	0					
4,200.00	4,146.57	4,153.92	4,139.57	7.96	7.39	149.80	645.28	630.37	14.91	43.270	0					
4,300.00	4,244.88	4,252.54	4,237.69	8.16	7.57	149.73	661.82	646.54	15.28	43.323	0					
4,400.00	4,343.18	4,351.16	4,335.82	8.36	7.75	149.67	678.36	662.72	15.64	43.373	0					
4,500.00	4,441.48	4,449.78	4,433.94	8.55	7.93	149.61	694.90	678.90	16.00	43.421	0					
4,600.00	4,539.78	4,548.40	4,532.07	8.75	8.10	149.55	711.44	695.07	16.37	43.467	0					
4,700.00	4,638.09	4,647.02	4,630.20	8.95	8.28	149.50	727.98	711.25	16.73	43.511	0					
4,800.00	4,736.39	4,745.64	4,728.32	9.15	8.46	149.45	744.53	727.43	17.09	43.553	0					
4,900.00	4,834.69	4,844.26	4,826.45	9.35	8.64	149.40	761.07	743.61	17.46	43.593	0					
5,000.00	4,933.00	4,942.88	4,924.57	9.55	8.82	149.35	777.61	759.79	17.82	43.632	0					
5,100.00	5,031.30	5,041.50	5,022.70	9.75	9.00	149.31	794.16	775.97	18.19	43.669	0					
5,200.00	5,129.60	5,140.12	5,120.82	9.95	9.18	149.26	810.70	792.15	18.55	43.704	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 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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	5,227.90	5,238.74	5,218.95	10.14	9.36	149.22	827.24	808.33	18.91	43.738	0			
5,400.00	5,326.21	5,337.36	5,317.08	10.34	9.54	149.18	843.79	824.51	19.28	43.771	0			
5,500.00	5,424.51	5,435.98	5,415.20	10.54	9.72	149.14	860.34	840.69	19.64	43.802	0			
5,600.00	5,522.81	5,534.60	5,513.33	10.74	9.90	149.10	876.88	856.88	20.01	43.832	0			
5,700.00	5,621.11	5,633.22	5,611.45	10.94	10.08	149.07	893.43	873.06	20.37	43.862	0			
5,800.00	5,719.42	5,731.84	5,709.58	11.14	10.26	149.03	909.97	889.24	20.73	43.890	0			
5,900.00	5,817.72	5,830.46	5,807.70	11.34	10.44	149.00	926.52	905.42	21.10	43.917	0			
6,000.00	5,916.02	5,929.08	5,905.83	11.54	10.62	148.97	943.07	921.61	21.46	43.943	0			
6,011.99	5,927.81	5,940.90	5,917.60	11.56	10.64	148.97	945.05	923.55	21.50	43.946	0			
6,100.00	6,014.56	6,027.87	6,004.13	11.73	10.80	149.04	958.47	936.62	21.86	43.855	0			
6,200.00	6,113.63	6,127.04	6,102.80	11.91	10.98	148.99	970.94	948.70	22.24	43.655	0			
6,300.00	6,213.11	6,227.53	6,202.80	12.09	11.16	148.82	980.43	957.82	22.61	43.358	0			
6,400.00	6,312.88	6,330.34	6,305.36	12.26	11.34	148.67	986.72	963.75	22.97	42.966	0			
6,500.00	6,412.83	6,433.46	6,408.42	12.42	11.52	148.60	989.72	966.42	23.30	42.484	0			
6,540.55	6,453.38	6,475.33	6,450.28	12.49	11.59	0.42	989.99	966.42	23.58	41.991	0			
6,600.00	6,512.83	6,534.87	6,509.83	12.58	11.69	0.42	989.99	966.22	23.78	41.638	0			
6,640.55	6,553.38	6,575.42	6,550.38	12.65	11.76	0.42	989.99	966.08	23.91	41.401	0			
6,650.00	6,562.83	6,584.80	6,559.75	12.66	11.77	-89.58	989.99	966.20	23.79	41.606	0			
6,700.00	6,612.74	6,634.24	6,609.13	12.73	11.85	-89.60	989.99	966.04	23.95	41.333	0			
6,750.00	6,662.29	6,683.71	6,658.19	12.81	11.93	-89.61	989.99	965.89	24.10	41.078	0			
6,800.00	6,711.16	6,733.20	6,706.64	12.87	12.00	-89.63	989.99	965.75	24.24	40.840	0			
6,850.00	6,759.07	6,782.72	6,754.19	12.94	12.06	-89.66	989.99	965.61	24.37	40.616	0			
6,900.00	6,805.70	6,832.27	6,800.56	13.00	12.13	-89.68	989.98	965.48	24.50	40.406	0			
6,950.00	6,850.78	6,881.86	6,845.45	13.06	12.19	-89.71	989.98	965.36	24.62	40.205	0			
7,000.00	6,894.03	6,931.48	6,888.61	13.11	12.25	-89.73	989.98	965.24	24.74	40.011	0			
7,050.00	6,935.18	6,981.14	6,929.77	13.17	12.31	-89.76	989.98	965.11	24.86	39.818	0			
7,100.00	6,973.97	7,030.84	6,968.66	13.23	12.37	-89.80	989.97	964.99	24.98	39.623	0			
7,150.00	7,010.17	7,080.58	7,005.06	13.28	12.44	-89.83	989.97	964.86	25.11	39.424	0			
7,200.00	7,043.55	7,130.37	7,038.73	13.34	12.50	-89.86	989.97	964.73	25.24	39.218	0			
7,250.00	7,073.91	7,180.20	7,069.46	13.40	12.57	-89.90	989.97	964.59	25.38	39.001	0			
7,300.00	7,101.06	7,230.08	7,097.05	13.47	12.65	-89.93	989.97	964.43	25.53	38.770	0			
7,350.00	7,124.84	7,280.01	7,121.33	13.54	12.73	-89.97	989.97	964.27	25.70	38.522	0			
7,396.07	7,143.63	7,326.05	7,140.63	13.61	12.81	-90.00	989.97	964.10	25.86	38.276	0			
7,400.00	7,145.09	7,329.98	7,142.13	13.61	12.82	-90.00	989.97	964.09	25.88	38.255	0			
7,450.00	7,161.69	7,380.01	7,159.33	13.70	12.91	-90.04	989.97	963.89	26.07	37.968	0			
7,500.00	7,174.55	7,430.08	7,172.79	13.78	13.02	-90.07	989.97	963.68	26.29	37.661	0			
7,550.00	7,183.57	7,480.20	7,182.44	13.88	13.14	-90.11	989.97	963.45	26.52	37.334	0			
7,600.00	7,188.71	7,530.37	7,188.19	13.99	13.26	-90.14	989.97	963.21	26.76	36.989	0			
7,640.55	7,190.00	7,571.10	7,189.96	14.08	13.37	-90.17	989.97	963.00	26.98	36.698	0			
7,700.00	7,190.00	7,630.58	7,190.00	14.23	13.54	-90.17	989.97	962.66	27.31	36.251	0			
7,800.00	7,190.00	7,730.58	7,190.00	14.51	13.84	-90.17	989.97	962.06	27.91	35.469	0			
7,900.00	7,190.00	7,830.58	7,190.00	14.83	14.17	-90.17	989.97	961.40	28.57	34.651	0			
8,000.00	7,190.00	7,930.58	7,190.00	15.17	14.53	-90.17	989.97	960.69	29.28	33.809	0			
8,100.00	7,190.00	8,030.58	7,190.00	15.54	14.91	-90.17	989.97	959.93	30.04	32.953	0			
8,200.00	7,190.00	8,130.58	7,190.00	15.93	15.31	-90.17	989.97	959.12	30.85	32.092	0			
8,300.00	7,190.00	8,230.58	7,190.00	16.34	15.74	-90.17	989.97	958.27	31.70	31.233	0			
8,400.00	7,190.00	8,330.58	7,190.00	16.78	16.18	-90.17	989.97	957.39	32.58	30.383	0			
8,500.00	7,190.00	8,430.58	7,190.00	17.23	16.65	-90.17	989.97	956.47	33.51	29.547	0			
8,600.00	7,190.00	8,530.58	7,190.00	17.69	17.13	-90.17	989.97	955.51	34.46	28.728	0			
8,700.00	7,190.00	8,630.58	7,190.00	18.18	17.62	-90.17	989.97	954.52	35.45	27.929	0			
8,800.00	7,190.00	8,730.58	7,190.00	18.67	18.13	-90.17	989.97	953.51	36.46	27.153	0			
8,900.00	7,190.00	8,830.58	7,190.00	19.18	18.65	-90.17	989.97	952.47	37.50	26.401	0			
9,000.00	7,190.00	8,930.58	7,190.00	19.70	19.18	-90.17	989.97	951.41	38.56	25.674	0			
9,100.00	7,190.00	9,030.58	7,190.00	20.24	19.73	-90.17	989.97	950.33	39.64	24.972	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 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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	7,190.00	9,130.58	7,190.00	20.78	20.28	-90.17	989.97	949.22	40.75	24.296	0		
9,300.00	7,190.00	9,230.58	7,190.00	21.33	20.84	-90.17	989.97	948.10	41.87	23.645	0		
9,400.00	7,190.00	9,330.58	7,190.00	21.89	21.41	-90.17	989.97	946.96	43.01	23.019	0		
9,500.00	7,190.00	9,430.58	7,190.00	22.46	21.99	-90.17	989.97	945.81	44.16	22.418	0		
9,600.00	7,190.00	9,530.58	7,190.00	23.04	22.58	-90.17	989.96	944.64	45.33	21.840	0		
9,700.00	7,190.00	9,630.58	7,190.00	23.62	23.17	-90.17	989.96	943.46	46.51	21.285	0		
9,800.00	7,190.00	9,730.58	7,190.00	24.21	23.77	-90.17	989.96	942.26	47.70	20.753	0		
9,900.00	7,190.00	9,830.58	7,190.00	24.80	24.37	-90.17	989.96	941.06	48.91	20.242	0		
10,000.00	7,190.00	9,930.58	7,190.00	25.40	24.98	-90.17	989.96	939.84	50.12	19.751	0		
10,100.00	7,190.00	10,030.58	7,190.00	26.01	25.59	-90.17	989.96	938.61	51.35	19.279	0		
10,200.00	7,190.00	10,130.58	7,190.00	26.62	26.21	-90.17	989.96	937.38	52.58	18.827	0		
10,300.00	7,190.00	10,230.58	7,190.00	27.23	26.83	-90.17	989.96	936.13	53.83	18.392	0		
10,400.00	7,190.00	10,330.58	7,190.00	27.85	27.46	-90.17	989.96	934.88	55.08	17.974	0		
10,500.00	7,190.00	10,430.58	7,190.00	28.48	28.09	-90.17	989.96	933.62	56.33	17.573	0		
10,600.00	7,190.00	10,530.58	7,190.00	29.10	28.72	-90.17	989.96	932.36	57.60	17.187	0		
10,700.00	7,190.00	10,630.58	7,190.00	29.73	29.36	-90.17	989.95	931.08	58.87	16.816	0		
10,800.00	7,190.00	10,730.58	7,190.00	30.37	30.00	-90.17	989.95	929.81	60.15	16.459	0		
10,900.00	7,190.00	10,830.58	7,190.00	31.00	30.64	-90.17	989.95	928.52	61.43	16.115	0		
11,000.00	7,190.00	10,930.58	7,190.00	31.64	31.29	-90.17	989.95	927.23	62.72	15.784	0		
11,100.00	7,190.00	11,030.58	7,190.00	32.28	31.93	-90.17	989.95	925.94	64.01	15.465	0		
11,200.00	7,190.00	11,130.58	7,190.00	32.93	32.58	-90.17	989.95	924.64	65.31	15.157	0		
11,300.00	7,190.00	11,230.58	7,190.00	33.57	33.24	-90.17	989.95	923.33	66.61	14.861	0		
11,400.00	7,190.00	11,330.58	7,190.00	34.22	33.89	-90.17	989.95	922.03	67.92	14.575	0		
11,500.00	7,190.00	11,430.58	7,190.00	34.87	34.55	-90.17	989.94	920.71	69.23	14.299	0		
11,600.00	7,190.00	11,530.58	7,190.00	35.53	35.20	-90.17	989.94	919.40	70.55	14.033	0		
11,700.00	7,190.00	11,630.58	7,190.00	36.18	35.86	-90.17	989.94	918.08	71.86	13.775	0		
11,800.00	7,190.00	11,730.58	7,190.00	36.84	36.53	-90.17	989.94	916.75	73.19	13.526	0		
11,900.00	7,190.00	11,830.58	7,190.00	37.50	37.19	-90.17	989.94	915.43	74.51	13.286	0		
12,000.00	7,190.00	11,930.58	7,190.00	38.16	37.85	-90.17	989.94	914.10	75.84	13.053	0		
12,100.00	7,190.00	12,030.58	7,190.00	38.82	38.52	-90.17	989.94	912.77	77.17	12.828	0		
12,200.00	7,190.00	12,130.58	7,190.00	39.48	39.19	-90.17	989.93	911.43	78.50	12.611	0		
12,300.00	7,190.00	12,230.58	7,190.00	40.15	39.85	-90.17	989.93	910.10	79.84	12.400	0		
12,400.00	7,190.00	12,330.58	7,190.00	40.81	40.52	-90.17	989.93	908.76	81.17	12.195	0		
12,500.00	7,190.00	12,430.58	7,190.00	41.48	41.19	-90.17	989.93	907.42	82.51	11.997	0		
12,600.00	7,190.00	12,530.58	7,190.00	42.15	41.87	-90.17	989.93	906.07	83.86	11.805	0		
12,700.00	7,190.00	12,630.58	7,190.00	42.82	42.54	-90.17	989.93	904.72	85.20	11.619	0		
12,800.00	7,190.00	12,730.58	7,190.00	43.49	43.21	-90.17	989.92	903.38	86.55	11.438	0		
12,900.00	7,190.00	12,830.58	7,190.00	44.16	43.89	-90.17	989.92	902.03	87.90	11.263	0		
13,000.00	7,190.00	12,930.58	7,190.00	44.83	44.56	-90.17	989.92	900.67	89.25	11.092	0		
13,100.00	7,190.00	13,030.58	7,190.00	45.50	45.24	-90.17	989.92	899.32	90.60	10.927	0		
13,200.00	7,190.00	13,130.58	7,190.00	46.18	45.92	-90.17	989.92	897.96	91.95	10.766	0		
13,300.00	7,190.00	13,230.58	7,190.00	46.85	46.59	-90.17	989.91	896.61	93.31	10.609	0		
13,400.00	7,190.00	13,330.58	7,190.00	47.53	47.27	-90.17	989.91	895.25	94.66	10.457	0		
13,500.00	7,190.00	13,430.58	7,190.00	48.21	47.95	-90.17	989.91	893.89	96.02	10.309	0		
13,600.00	7,190.00	13,530.58	7,190.00	48.88	48.63	-90.17	989.91	892.53	97.38	10.165	0		
13,700.00	7,190.00	13,630.58	7,190.00	49.56	49.31	-90.17	989.90	891.16	98.74	10.025	0		
13,800.00	7,190.00	13,730.58	7,190.00	50.24	49.99	-90.17	989.90	889.80	100.10	9.889	0		
13,900.00	7,190.00	13,830.58	7,190.00	50.92	50.68	-90.17	989.90	888.43	101.47	9.756	0		
14,000.00	7,190.00	13,930.58	7,190.00	51.60	51.36	-90.17	989.90	887.07	102.83	9.626	0		
14,100.00	7,190.00	14,030.58	7,190.00	52.28	52.04	-90.17	989.90	885.70	104.20	9.500	0		
14,200.00	7,190.00	14,130.58	7,190.00	52.96	52.73	-90.17	989.89	884.33	105.56	9.377	0		
14,300.00	7,190.00	14,230.58	7,190.00	53.65	53.41	-90.17	989.89	882.96	106.93	9.257	0		
14,400.00	7,190.00	14,330.58	7,190.00	54.33	54.10	-90.17	989.89	881.59	108.30	9.140	0		
14,500.00	7,190.00	14,430.58	7,190.00	55.01	54.78	-90.17	989.89	880.22	109.67	9.026	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 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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							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	7,190.00	14,530.58	7,190.00	55.69	55.47	-90.17	989.88	878.84	111.04	8.915	0					
14,700.00	7,190.00	14,630.58	7,190.00	56.38	56.15	-90.17	989.88	877.47	112.41	8.806	0					
14,800.00	7,190.00	14,730.58	7,190.00	57.06	56.84	-90.17	989.88	876.09	113.78	8.700	0					
14,900.00	7,190.00	14,830.58	7,190.00	57.75	57.53	-90.17	989.88	874.72	115.16	8.596	0					
15,000.00	7,190.00	14,930.58	7,190.00	58.43	58.21	-90.17	989.87	873.34	116.53	8.494	0					
15,100.00	7,190.00	15,030.58	7,190.00	59.12	58.90	-90.17	989.87	871.96	117.91	8.395	0					
15,200.00	7,190.00	15,130.58	7,190.00	59.81	59.59	-90.17	989.87	870.58	119.28	8.299	0					
15,300.00	7,190.00	15,230.58	7,190.00	60.49	60.28	-90.17	989.86	869.21	120.66	8.204	0					
15,400.00	7,190.00	15,330.58	7,190.00	61.18	60.97	-90.17	989.86	867.83	122.04	8.111	0					
15,500.00	7,190.00	15,430.58	7,190.00	61.87	61.66	-90.17	989.86	866.45	123.41	8.021	0					
15,600.00	7,190.00	15,530.58	7,190.00	62.55	62.34	-90.17	989.86	865.06	124.79	7.932	0					
15,700.00	7,190.00	15,630.58	7,190.00	63.24	63.03	-90.17	989.85	863.68	126.17	7.845	0					
15,800.00	7,190.00	15,730.58	7,190.00	63.93	63.72	-90.17	989.85	862.30	127.55	7.760	0					
15,900.00	7,190.00	15,830.58	7,190.00	64.62	64.41	-90.17	989.85	860.92	128.93	7.677	0					
16,000.00	7,190.00	15,930.58	7,190.00	65.31	65.11	-90.17	989.84	859.53	130.31	7.596	0					
16,100.00	7,190.00	16,030.58	7,190.00	66.00	65.80	-90.17	989.84	858.15	131.69	7.516	0					
16,200.00	7,190.00	16,130.58	7,190.00	66.69	66.49	-90.17	989.84	856.76	133.08	7.438	0					
16,300.00	7,190.00	16,230.58	7,190.00	67.38	67.18	-90.17	989.83	855.38	134.46	7.362	0					
16,400.00	7,190.00	16,330.58	7,190.00	68.07	67.87	-90.17	989.83	853.99	135.84	7.287	0					
16,500.00	7,190.00	16,430.58	7,190.00	68.76	68.56	-90.17	989.83	852.60	137.22	7.213	0					
16,600.00	7,190.00	16,530.58	7,190.00	69.45	69.25	-90.17	989.83	851.22	138.61	7.141	0					
16,700.00	7,190.00	16,630.58	7,190.00	70.14	69.95	-90.17	989.82	849.83	139.99	7.071	0					
16,800.00	7,190.00	16,730.58	7,190.00	70.83	70.64	-90.17	989.82	848.44	141.38	7.001	0					
16,900.00	7,190.00	16,830.58	7,190.00	71.52	71.33	-90.17	989.82	847.05	142.76	6.933	0					
17,000.00	7,190.00	16,930.58	7,190.00	72.21	72.03	-90.17	989.81	845.66	144.15	6.867	0					
17,100.00	7,190.00	17,030.58	7,190.00	72.91	72.72	-90.17	989.81	844.27	145.53	6.801	0					
17,200.00	7,190.00	17,130.58	7,190.00	73.60	73.41	-90.17	989.80	842.88	146.92	6.737	0					
17,266.94	7,190.00	17,197.52	7,190.00	74.06	73.88	-90.17	989.80	841.95	147.85	6.695	0					
17,297.69	7,190.00	17,219.06	7,190.00	74.28	74.03	-90.17	989.84	841.63	148.21	6.679	0	SF				



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16")
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16")
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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 8 - 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	0.00	0.00	0.00	0.00	-0.07	83.85					0	CC, ES			
100.00	100.00	97.00	97.00	0.15	0.14	-0.07	83.79	83.51	0.29	290.128	0					
200.00	200.00	197.00	197.00	0.32	0.32	-0.07	83.79	83.16	0.64	131.535	0					
300.00	300.00	297.00	297.00	0.50	0.49	-0.07	83.79	82.81	0.99	84.974	0					
400.00	400.00	397.00	397.00	0.67	0.66	-0.07	83.79	82.46	1.34	62.759	0					
500.00	500.00	497.00	497.00	0.84	0.84	-0.07	83.79	82.11	1.68	49.752	0					
600.00	600.00	597.00	597.00	1.02	1.01	-0.07	83.79	81.76	2.03	41.211	0					
700.00	700.00	697.00	697.00	1.19	1.19	-0.07	83.79	81.41	2.38	35.172	0					
800.00	799.98	796.98	796.98	1.37	1.36	148.71	85.28	82.55	2.73	31.231	0					
900.00	899.84	896.84	896.84	1.54	1.54	150.40	89.79	86.72	3.08	29.181	0					
1,000.00	999.45	996.45	996.45	1.72	1.71	152.86	97.47	94.05	3.42	28.490	0					
1,100.00	1,098.70	1,097.74	1,097.72	1.90	1.89	155.03	107.56	103.80	3.77	28.560	0					
1,200.00	1,197.47	1,199.30	1,199.14	2.08	2.07	156.06	118.96	114.85	4.11	28.941	0					
1,228.56	1,225.57	1,228.35	1,228.10	2.14	2.12	156.18	122.44	118.23	4.21	29.090	0					
1,300.00	1,295.79	1,301.12	1,300.57	2.27	2.25	156.12	130.75	126.28	4.47	29.281	0					
1,400.00	1,394.10	1,400.91	1,399.76	2.46	2.42	155.47	141.41	136.59	4.82	29.321	0					
1,500.00	1,492.40	1,500.33	1,498.58	2.65	2.60	154.90	152.07	146.89	5.18	29.352	0					
1,600.00	1,590.70	1,599.75	1,597.39	2.84	2.78	154.40	162.74	157.20	5.54	29.376	0					
1,700.00	1,689.00	1,699.17	1,696.21	3.03	2.96	153.97	173.42	167.52	5.90	29.394	0					
1,800.00	1,787.31	1,798.59	1,795.03	3.23	3.14	153.58	184.11	177.85	6.26	29.408	0					
1,900.00	1,885.61	1,898.01	1,893.85	3.42	3.32	153.24	194.81	188.19	6.62	29.419	0					
2,000.00	1,983.91	1,997.43	1,992.66	3.62	3.50	152.93	205.51	198.53	6.98	29.427	0					
2,100.00	2,082.22	2,096.85	2,091.48	3.81	3.68	152.66	216.22	208.88	7.35	29.434	0					
2,200.00	2,180.52	2,196.27	2,190.30	4.01	3.86	152.41	226.94	219.23	7.71	29.438	0					
2,300.00	2,278.82	2,295.69	2,289.12	4.20	4.04	152.18	237.65	229.58	8.07	29.441	0					
2,400.00	2,377.12	2,395.11	2,387.93	4.40	4.22	151.97	248.37	239.94	8.44	29.444	0					
2,500.00	2,475.43	2,494.53	2,486.75	4.60	4.40	151.78	259.10	250.30	8.80	29.445	0					
2,600.00	2,573.73	2,593.95	2,585.57	4.79	4.58	151.61	269.82	260.66	9.16	29.446	0					
2,700.00	2,672.03	2,693.37	2,684.39	4.99	4.76	151.44	280.55	271.03	9.53	29.446	0					
2,800.00	2,770.33	2,792.79	2,783.21	5.19	4.94	151.29	291.28	281.39	9.89	29.446	0					
2,900.00	2,868.64	2,892.21	2,882.02	5.38	5.12	151.15	302.02	291.76	10.26	29.446	0					
3,000.00	2,966.94	2,991.63	2,980.84	5.58	5.31	151.02	312.75	302.13	10.62	29.445	0					
3,100.00	3,065.24	3,091.05	3,079.66	5.78	5.49	150.90	323.49	312.50	10.99	29.444	0					
3,200.00	3,163.55	3,190.47	3,178.48	5.98	5.67	150.79	334.22	322.87	11.35	29.442	0					
3,300.00	3,261.85	3,289.89	3,277.29	6.17	5.85	150.68	344.96	333.24	11.72	29.441	0					
3,400.00	3,360.15	3,389.31	3,376.11	6.37	6.03	150.58	355.70	343.62	12.08	29.439	0					
3,500.00	3,458.45	3,488.73	3,474.93	6.57	6.21	150.49	366.44	353.99	12.45	29.437	0					
3,600.00	3,556.76	3,588.15	3,573.75	6.77	6.40	150.40	377.18	364.37	12.81	29.435	0					
3,700.00	3,655.06	3,687.57	3,672.57	6.97	6.58	150.32	387.92	374.75	13.18	29.434	0					
3,800.00	3,753.36	3,786.99	3,771.38	7.17	6.76	150.24	398.67	385.12	13.55	29.432	0					
3,900.00	3,851.67	3,886.41	3,870.20	7.36	6.94	150.16	409.41	395.50	13.91	29.430	0					
4,000.00	3,949.97	3,985.83	3,969.02	7.56	7.12	150.09	420.16	405.88	14.28	29.428	0					
4,100.00	4,048.27	4,085.25	4,067.84	7.76	7.31	150.02	430.90	416.26	14.64	29.426	0					
4,200.00	4,146.57	4,184.67	4,166.65	7.96	7.49	149.96	441.65	426.64	15.01	29.425	0					
4,300.00	4,244.88	4,284.09	4,265.47	8.16	7.67	149.90	452.39	437.02	15.38	29.423	0					
4,400.00	4,343.18	4,383.51	4,364.29	8.36	7.85	149.84	463.14	447.40	15.74	29.421	0					
4,500.00	4,441.48	4,482.93	4,463.11	8.55	8.04	149.78	473.89	457.78	16.11	29.419	0					
4,600.00	4,539.78	4,582.35	4,561.93	8.75	8.22	149.73	484.63	468.16	16.47	29.417	0					
4,700.00	4,638.09	4,681.77	4,660.74	8.95	8.40	149.68	495.38	478.54	16.84	29.416	0					
4,800.00	4,736.39	4,781.19	4,759.56	9.15	8.58	149.63	506.13	488.92	17.21	29.414	0					
4,900.00	4,834.69	4,880.61	4,858.38	9.35	8.76	149.58	516.88	499.30	17.57	29.412	0					
5,000.00	4,933.00	4,980.03	4,957.20	9.55	8.95	149.54	527.63	509.69	17.94	29.411	0					
5,100.00	5,031.30	5,079.44	5,056.01	9.75	9.13	149.49	538.38	520.07	18.31	29.409	0					
5,200.00	5,129.60	5,178.86	5,154.83	9.95	9.31	149.45	549.12	530.45	18.67	29.408	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 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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	5,227.90	5,278.28	5,253.65	10.14	9.49	149.41	559.87	540.83	19.04	29.406	0			
5,400.00	5,326.21	5,377.70	5,352.47	10.34	9.68	149.37	570.62	551.22	19.41	29.405	0			
5,500.00	5,424.51	5,477.12	5,451.28	10.54	9.86	149.34	581.37	561.60	19.77	29.403	0			
5,600.00	5,522.81	5,576.54	5,550.10	10.74	10.04	149.30	592.12	571.99	20.14	29.402	0			
5,700.00	5,621.11	5,675.96	5,648.92	10.94	10.22	149.27	602.88	582.37	20.51	29.400	0			
5,800.00	5,719.42	5,775.38	5,747.74	11.14	10.41	149.23	613.63	592.75	20.87	29.399	0			
5,900.00	5,817.72	5,874.80	5,846.56	11.34	10.59	149.20	624.38	603.14	21.24	29.397	0			
6,000.00	5,916.02	5,974.22	5,945.37	11.54	10.77	149.17	635.13	613.52	21.61	29.396	0			
6,011.99	5,927.81	5,986.14	5,957.22	11.56	10.79	149.17	636.42	614.77	21.65	29.396	0			
6,100.00	6,014.56	6,073.75	6,044.30	11.73	10.95	149.17	644.72	622.73	21.99	29.314	0			
6,200.00	6,113.63	6,173.03	6,142.97	11.91	11.14	148.99	651.36	628.99	22.37	29.115	0			
6,300.00	6,213.11	6,263.47	6,233.02	12.09	11.30	148.80	655.82	633.11	22.71	28.875	0			
6,400.00	6,312.88	6,354.00	6,323.38	12.26	11.46	148.67	658.74	635.70	23.03	28.601	0			
6,500.00	6,412.83	6,444.58	6,413.92	12.42	11.61	148.60	660.10	636.77	23.33	28.294	0			
6,540.55	6,453.38	6,484.04	6,453.38	12.49	11.68	0.42	660.22	636.55	23.67	27.895	0			
6,561.42	6,474.25	6,501.91	6,471.25	12.52	11.71	0.42	660.21	636.48	23.73	27.819	0			
6,600.00	6,512.83	6,540.49	6,509.83	12.58	11.77	0.42	660.21	636.35	23.86	27.668	0			
6,640.55	6,553.38	6,581.04	6,550.38	12.65	11.84	0.42	660.21	636.21	24.00	27.511	0			
6,650.00	6,562.83	6,590.44	6,559.78	12.66	11.86	-89.58	660.21	636.40	23.81	27.723	0			
6,700.00	6,612.74	6,640.07	6,609.34	12.73	11.94	-89.60	660.21	636.24	23.97	27.541	0			
6,750.00	6,662.29	6,689.73	6,658.58	12.81	12.01	-89.63	660.21	636.09	24.12	27.371	0			
6,800.00	6,711.16	6,739.40	6,707.20	12.87	12.08	-89.65	660.21	635.94	24.26	27.212	0			
6,850.00	6,759.07	6,789.10	6,754.91	12.94	12.15	-89.68	660.20	635.81	24.40	27.063	0			
6,900.00	6,805.70	6,838.83	6,801.42	13.00	12.21	-89.71	660.20	635.68	24.52	26.922	0			
6,950.00	6,850.78	6,888.59	6,846.44	13.06	12.27	-89.75	660.20	635.55	24.65	26.787	0			
7,000.00	6,894.03	6,938.37	6,889.70	13.11	12.33	-89.78	660.20	635.43	24.77	26.657	0			
7,050.00	6,935.18	6,988.19	6,930.92	13.17	12.39	-89.82	660.20	635.31	24.89	26.527	0			
7,100.00	6,973.97	7,038.04	6,969.86	13.23	12.45	-89.85	660.20	635.19	25.01	26.397	0			
7,150.00	7,010.17	7,087.92	7,006.27	13.28	12.51	-89.89	660.20	635.06	25.14	26.265	0			
7,200.00	7,043.55	7,137.84	7,039.92	13.34	12.58	-89.93	660.19	634.93	25.27	26.127	0			
7,250.00	7,073.91	7,187.79	7,070.61	13.40	12.64	-89.97	660.19	634.78	25.41	25.982	0			
7,291.56	7,096.71	7,229.34	7,093.71	13.46	12.70	-90.00	660.19	634.66	25.54	25.854	0			
7,300.00	7,101.06	7,237.77	7,098.13	13.47	12.71	-90.01	660.19	634.63	25.56	25.828	0			
7,350.00	7,124.84	7,287.80	7,122.31	13.54	12.79	-90.05	660.19	634.47	25.73	25.663	0			
7,400.00	7,145.09	7,337.85	7,142.99	13.61	12.86	-90.08	660.19	634.29	25.91	25.485	0			
7,450.00	7,161.69	7,387.94	7,160.04	13.70	12.95	-90.12	660.20	634.09	26.10	25.293	0			
7,500.00	7,174.55	7,438.07	7,173.34	13.78	13.06	-90.16	660.20	633.88	26.31	25.089	0			
7,550.00	7,183.57	7,488.23	7,182.80	13.88	13.18	-90.20	660.20	633.65	26.55	24.870	0			
7,600.00	7,188.71	7,538.42	7,188.37	13.99	13.31	-90.23	660.20	633.41	26.79	24.640	0			
7,640.55	7,190.00	7,579.16	7,189.98	14.08	13.42	-90.26	660.20	633.19	27.01	24.446	0			
7,700.00	7,190.00	7,638.63	7,190.00	14.23	13.59	-90.26	660.20	632.86	27.34	24.148	0			
7,800.00	7,190.00	7,738.63	7,190.00	14.51	13.89	-90.26	660.20	632.26	27.94	23.628	0			
7,900.00	7,190.00	7,838.63	7,190.00	14.83	14.23	-90.26	660.20	631.60	28.60	23.084	0			
8,000.00	7,190.00	7,938.63	7,190.00	15.17	14.58	-90.26	660.20	630.89	29.31	22.523	0			
8,100.00	7,190.00	8,038.63	7,190.00	15.54	14.97	-90.26	660.20	630.13	30.07	21.954	0			
8,200.00	7,190.00	8,138.63	7,190.00	15.93	15.37	-90.26	660.20	629.32	30.88	21.381	0			
8,300.00	7,190.00	8,238.63	7,190.00	16.34	15.80	-90.26	660.20	628.47	31.73	20.809	0			
8,400.00	7,190.00	8,338.63	7,190.00	16.78	16.24	-90.26	660.20	627.59	32.61	20.244	0			
8,500.00	7,190.00	8,438.63	7,190.00	17.23	16.70	-90.26	660.20	626.66	33.53	19.687	0			
8,600.00	7,190.00	8,538.63	7,190.00	17.69	17.18	-90.26	660.20	625.71	34.49	19.142	0			
8,700.00	7,190.00	8,638.63	7,190.00	18.18	17.68	-90.26	660.20	624.72	35.47	18.610	0			
8,800.00	7,190.00	8,738.63	7,190.00	18.67	18.18	-90.26	660.19	623.71	36.49	18.094	0			
8,900.00	7,190.00	8,838.63	7,190.00	19.18	18.70	-90.26	660.19	622.67	37.53	17.593	0			
9,000.00	7,190.00	8,938.63	7,190.00	19.70	19.24	-90.26	660.19	621.60	38.59	17.109	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 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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		
9,100.00	7,190.00	9,038.63	7,190.00	20.24	19.78	-90.26	660.19	620.52	39.67	16.642	0		
9,200.00	7,190.00	9,138.63	7,190.00	20.78	20.33	-90.26	660.19	619.42	40.77	16.192	0		
9,300.00	7,190.00	9,238.63	7,190.00	21.33	20.89	-90.26	660.19	618.29	41.89	15.758	0		
9,400.00	7,190.00	9,338.63	7,190.00	21.89	21.46	-90.26	660.19	617.15	43.03	15.342	0		
9,500.00	7,190.00	9,438.63	7,190.00	22.46	22.04	-90.26	660.18	616.00	44.19	14.941	0		
9,600.00	7,190.00	9,538.63	7,190.00	23.04	22.62	-90.26	660.18	614.83	45.35	14.556	0		
9,700.00	7,190.00	9,638.63	7,190.00	23.62	23.21	-90.26	660.18	613.65	46.53	14.187	0		
9,800.00	7,190.00	9,738.63	7,190.00	24.21	23.81	-90.26	660.18	612.45	47.73	13.832	0		
9,900.00	7,190.00	9,838.63	7,190.00	24.80	24.41	-90.26	660.18	611.24	48.93	13.492	0		
10,000.00	7,190.00	9,938.63	7,190.00	25.40	25.02	-90.26	660.17	610.03	50.15	13.165	0		
10,100.00	7,190.00	10,038.64	7,190.00	26.01	25.64	-90.26	660.17	608.80	51.37	12.851	0		
10,200.00	7,190.00	10,138.64	7,190.00	26.62	26.25	-90.26	660.17	607.56	52.61	12.549	0		
10,300.00	7,190.00	10,238.64	7,190.00	27.23	26.88	-90.26	660.17	606.32	53.85	12.259	0		
10,400.00	7,190.00	10,338.64	7,190.00	27.85	27.50	-90.26	660.16	605.06	55.10	11.981	0		
10,500.00	7,190.00	10,438.64	7,190.00	28.48	28.13	-90.26	660.16	603.80	56.36	11.714	0		
10,600.00	7,190.00	10,538.64	7,190.00	29.10	28.76	-90.26	660.16	602.54	57.62	11.457	0		
10,700.00	7,190.00	10,638.64	7,190.00	29.73	29.40	-90.26	660.16	601.26	58.89	11.209	0		
10,800.00	7,190.00	10,738.64	7,190.00	30.37	30.04	-90.26	660.15	599.98	60.17	10.971	0		
10,900.00	7,190.00	10,838.64	7,190.00	31.00	30.68	-90.26	660.15	598.70	61.45	10.742	0		
11,000.00	7,190.00	10,938.64	7,190.00	31.64	31.33	-90.26	660.15	597.40	62.74	10.521	0		
11,100.00	7,190.00	11,038.64	7,190.00	32.28	31.97	-90.26	660.14	596.11	64.04	10.309	0		
11,200.00	7,190.00	11,138.64	7,190.00	32.93	32.62	-90.26	660.14	594.81	65.33	10.104	0		
11,300.00	7,190.00	11,238.64	7,190.00	33.57	33.27	-90.26	660.14	593.50	66.64	9.907	0		
11,400.00	7,190.00	11,338.64	7,190.00	34.22	33.93	-90.26	660.13	592.19	67.94	9.716	0		
11,500.00	7,190.00	11,438.64	7,190.00	34.87	34.58	-90.26	660.13	590.88	69.25	9.532	0		
11,600.00	7,190.00	11,538.64	7,190.00	35.53	35.24	-90.26	660.13	589.56	70.57	9.354	0		
11,700.00	7,190.00	11,638.64	7,190.00	36.18	35.90	-90.26	660.12	588.24	71.89	9.183	0		
11,800.00	7,190.00	11,738.64	7,190.00	36.84	36.56	-90.26	660.12	586.91	73.21	9.017	0		
11,900.00	7,190.00	11,838.64	7,190.00	37.50	37.22	-90.26	660.11	585.58	74.53	8.857	0		
12,000.00	7,190.00	11,938.64	7,190.00	38.16	37.89	-90.26	660.11	584.25	75.86	8.702	0		
12,100.00	7,190.00	12,038.64	7,190.00	38.82	38.55	-90.26	660.11	582.92	77.19	8.552	0		
12,200.00	7,190.00	12,138.64	7,190.00	39.48	39.22	-90.26	660.10	581.58	78.52	8.407	0		
12,300.00	7,190.00	12,238.64	7,190.00	40.15	39.89	-90.26	660.10	580.24	79.86	8.266	0		
12,400.00	7,190.00	12,338.64	7,190.00	40.81	40.56	-90.26	660.09	578.90	81.19	8.130	0		
12,500.00	7,190.00	12,438.64	7,190.00	41.48	41.23	-90.26	660.09	577.55	82.53	7.998	0		
12,600.00	7,190.00	12,538.65	7,190.00	42.15	41.90	-90.26	660.08	576.21	83.88	7.870	0		
12,700.00	7,190.00	12,638.65	7,190.00	42.82	42.57	-90.26	660.08	574.86	85.22	7.745	0		
12,800.00	7,190.00	12,738.65	7,190.00	43.49	43.24	-90.26	660.07	573.51	86.57	7.625	0		
12,900.00	7,190.00	12,838.65	7,190.00	44.16	43.92	-90.26	660.07	572.15	87.92	7.508	0		
13,000.00	7,190.00	12,938.65	7,190.00	44.83	44.59	-90.26	660.06	570.80	89.27	7.394	0		
13,100.00	7,190.00	13,038.65	7,190.00	45.50	45.27	-90.26	660.06	569.44	90.62	7.284	0		
13,200.00	7,190.00	13,138.65	7,190.00	46.18	45.95	-90.26	660.05	568.08	91.97	7.177	0		
13,300.00	7,190.00	13,238.65	7,190.00	46.85	46.62	-90.26	660.05	566.72	93.33	7.072	0		
13,400.00	7,190.00	13,338.65	7,190.00	47.53	47.30	-90.26	660.04	565.36	94.68	6.971	0		
13,500.00	7,190.00	13,438.65	7,190.00	48.21	47.98	-90.26	660.04	563.99	96.04	6.872	0		
13,600.00	7,190.00	13,538.65	7,190.00	48.88	48.66	-90.26	660.03	562.63	97.40	6.776	0		
13,700.00	7,190.00	13,638.65	7,190.00	49.56	49.34	-90.26	660.02	561.26	98.76	6.683	0		
13,800.00	7,190.00	13,738.65	7,190.00	50.24	50.02	-90.26	660.02	559.90	100.12	6.592	0		
13,900.00	7,190.00	13,838.65	7,190.00	50.92	50.71	-90.26	660.01	558.53	101.49	6.503	0		
14,000.00	7,190.00	13,938.65	7,190.00	51.60	51.39	-90.26	660.01	557.16	102.85	6.417	0		
14,100.00	7,190.00	14,038.65	7,190.00	52.28	52.07	-90.26	660.00	555.78	104.22	6.333	0		
14,200.00	7,190.00	14,138.65	7,190.00	52.96	52.75	-90.26	659.99	554.41	105.58	6.251	0		
14,300.00	7,190.00	14,238.65	7,190.00	53.65	53.44	-90.26	659.99	553.04	106.95	6.171	0		
14,400.00	7,190.00	14,338.65	7,190.00	54.33	54.12	-90.26	659.98	551.66	108.32	6.093	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 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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	7,190.00	14,438.65	7,190.00	55.01	54.81	-90.26	659.97	550.29	109.69	6.017	0		
14,600.00	7,190.00	14,538.65	7,190.00	55.69	55.49	-90.26	659.97	548.91	111.06	5.942	0		
14,700.00	7,190.00	14,638.65	7,190.00	56.38	56.18	-90.26	659.96	547.53	112.43	5.870	0		
14,800.00	7,190.00	14,738.65	7,190.00	57.06	56.87	-90.26	659.95	546.15	113.80	5.799	0		
14,900.00	7,190.00	14,838.65	7,190.00	57.75	57.55	-90.26	659.95	544.77	115.18	5.730	0		
15,000.00	7,190.00	14,938.65	7,190.00	58.43	58.24	-90.26	659.94	543.39	116.55	5.662	0		
15,100.00	7,190.00	15,038.66	7,190.00	59.12	58.93	-90.26	659.93	542.01	117.93	5.596	0		
15,200.00	7,190.00	15,138.66	7,190.00	59.81	59.62	-90.26	659.93	540.62	119.30	5.532	0		
15,300.00	7,190.00	15,238.66	7,190.00	60.49	60.30	-90.26	659.92	539.24	120.68	5.468	0		
15,400.00	7,190.00	15,338.66	7,190.00	61.18	60.99	-90.26	659.91	537.86	122.05	5.407	0		
15,500.00	7,190.00	15,438.66	7,190.00	61.87	61.68	-90.26	659.90	536.47	123.43	5.346	0		
15,600.00	7,190.00	15,538.66	7,190.00	62.55	62.37	-90.26	659.90	535.09	124.81	5.287	0		
15,700.00	7,190.00	15,638.66	7,190.00	63.24	63.06	-90.26	659.89	533.70	126.19	5.229	0		
15,800.00	7,190.00	15,738.66	7,190.00	63.93	63.75	-90.26	659.88	532.31	127.57	5.173	0		
15,900.00	7,190.00	15,838.66	7,190.00	64.62	64.44	-90.26	659.87	530.92	128.95	5.117	0		
16,000.00	7,190.00	15,938.66	7,190.00	65.31	65.13	-90.26	659.86	529.53	130.33	5.063	0		
16,100.00	7,190.00	16,038.66	7,190.00	66.00	65.82	-90.26	659.86	528.14	131.71	5.010	0		
16,200.00	7,190.00	16,138.66	7,190.00	66.69	66.51	-90.26	659.85	526.75	133.09	4.958	0		
16,300.00	7,190.00	16,238.66	7,190.00	67.38	67.20	-90.26	659.84	525.36	134.48	4.907	0		
16,400.00	7,190.00	16,338.66	7,190.00	68.07	67.90	-90.26	659.83	523.97	135.86	4.857	0		
16,500.00	7,190.00	16,438.66	7,190.00	68.76	68.59	-90.26	659.82	522.58	137.24	4.808	0		
16,600.00	7,190.00	16,538.66	7,190.00	69.45	69.28	-90.26	659.81	521.19	138.63	4.760	0		
16,700.00	7,190.00	16,638.66	7,190.00	70.14	69.97	-90.26	659.81	519.80	140.01	4.713	0		
16,800.00	7,190.00	16,738.66	7,190.00	70.83	70.66	-90.26	659.80	518.40	141.39	4.666	0		
16,900.00	7,190.00	16,838.66	7,190.00	71.52	71.36	-90.26	659.79	517.01	142.78	4.621	0		
17,000.00	7,190.00	16,938.66	7,190.00	72.21	72.05	-90.26	659.78	515.61	144.17	4.577	0		
17,100.00	7,190.00	17,038.66	7,190.00	72.91	72.74	-90.26	659.77	514.22	145.55	4.533	0		
17,200.00	7,190.00	17,138.66	7,190.00	73.60	73.44	-90.26	659.76	512.82	146.94	4.490	0		
17,268.59	7,190.00	17,207.26	7,190.00	74.07	73.91	-90.26	659.75	511.86	147.89	4.461	0		
17,297.69	7,190.00	17,230.36	7,190.00	74.28	74.07	-90.26	659.78	511.53	148.25	4.450	0		SF



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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 9 - 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	-0.16	56.14					0	CC, ES			
100.00	100.00	98.00	98.00	0.15	0.14	-0.16	56.10	55.81	0.29	193.276	0					
200.00	200.00	198.00	198.00	0.32	0.32	-0.16	56.10	55.47	0.64	87.830	0					
300.00	300.00	298.00	298.00	0.50	0.49	-0.16	56.10	55.12	0.99	56.795	0					
400.00	400.00	398.00	398.00	0.67	0.67	-0.16	56.10	54.77	1.34	41.966	0					
500.00	500.00	498.00	498.00	0.84	0.84	-0.16	56.10	54.42	1.69	33.277	0					
600.00	600.00	598.00	598.00	1.02	1.02	-0.16	56.10	54.07	2.04	27.569	0					
700.00	700.00	698.00	698.00	1.19	1.19	-0.16	56.10	53.72	2.38	23.533	0					
800.00	799.98	797.98	797.98	1.37	1.36	148.92	57.59	54.86	2.73	21.078	0					
900.00	899.84	897.84	897.84	1.54	1.54	151.36	62.13	59.06	3.08	20.181	0					
1,000.00	999.45	999.09	999.07	1.72	1.72	153.75	68.75	65.33	3.43	20.069	0					
1,100.00	1,098.70	1,100.58	1,100.41	1.90	1.89	154.89	76.16	72.39	3.77	20.190	0					
1,200.00	1,197.47	1,202.24	1,201.67	2.08	2.07	155.07	84.27	80.15	4.12	20.459	0					
1,228.56	1,225.57	1,231.26	1,230.53	2.14	2.12	154.98	86.71	82.49	4.22	20.558	0					
1,300.00	1,295.79	1,302.43	1,301.22	2.27	2.25	154.78	92.91	88.44	4.47	20.774	0					
1,400.00	1,394.10	1,402.05	1,400.18	2.46	2.43	154.54	101.60	96.77	4.83	21.035	0					
1,500.00	1,492.40	1,501.67	1,499.15	2.65	2.61	154.34	110.29	105.11	5.19	21.255	0					
1,600.00	1,590.70	1,601.29	1,598.11	2.84	2.79	154.17	118.99	113.44	5.55	21.444	0					
1,700.00	1,689.00	1,700.91	1,697.07	3.03	2.97	154.02	127.68	121.77	5.91	21.608	0					
1,800.00	1,787.31	1,800.53	1,796.03	3.23	3.15	153.89	136.37	130.10	6.27	21.751	0					
1,900.00	1,885.61	1,900.16	1,895.00	3.42	3.33	153.78	145.07	138.44	6.63	21.877	0					
2,000.00	1,983.91	1,999.78	1,993.96	3.62	3.51	153.68	153.76	146.77	6.99	21.988	0					
2,100.00	2,082.22	2,099.40	2,092.92	3.81	3.69	153.59	162.46	155.10	7.35	22.088	0					
2,200.00	2,180.52	2,199.02	2,191.88	4.01	3.88	153.51	171.15	163.43	7.72	22.178	0					
2,300.00	2,278.82	2,298.64	2,290.85	4.20	4.06	153.43	179.85	171.77	8.08	22.258	0					
2,400.00	2,377.12	2,398.26	2,389.81	4.40	4.24	153.37	188.54	180.10	8.44	22.332	0					
2,500.00	2,475.43	2,497.88	2,488.77	4.60	4.42	153.31	197.24	188.43	8.81	22.398	0					
2,600.00	2,573.73	2,597.50	2,587.73	4.79	4.61	153.25	205.94	196.77	9.17	22.459	0					
2,700.00	2,672.03	2,697.12	2,686.70	4.99	4.79	153.20	214.63	205.10	9.53	22.515	0					
2,800.00	2,770.33	2,796.74	2,785.66	5.19	4.97	153.15	223.33	213.43	9.90	22.567	0					
2,900.00	2,868.64	2,896.36	2,884.62	5.38	5.15	153.11	232.03	221.77	10.26	22.615	0					
3,000.00	2,966.94	2,995.99	2,983.58	5.58	5.34	153.07	240.72	230.10	10.62	22.659	0					
3,100.00	3,065.24	3,095.61	3,082.55	5.78	5.52	153.03	249.42	238.43	10.99	22.700	0					
3,200.00	3,163.55	3,195.23	3,181.51	5.98	5.70	153.00	258.12	246.76	11.35	22.738	0					
3,300.00	3,261.85	3,294.85	3,280.47	6.17	5.88	152.96	266.81	255.10	11.72	22.774	0					
3,400.00	3,360.15	3,394.47	3,379.43	6.37	6.07	152.93	275.51	263.43	12.08	22.807	0					
3,500.00	3,458.45	3,494.09	3,478.40	6.57	6.25	152.90	284.21	271.76	12.44	22.838	0					
3,600.00	3,556.76	3,593.71	3,577.36	6.77	6.43	152.88	292.91	280.10	12.81	22.868	0					
3,700.00	3,655.06	3,693.33	3,676.32	6.97	6.62	152.85	301.60	288.43	13.17	22.895	0					
3,800.00	3,753.36	3,792.95	3,775.28	7.17	6.80	152.83	310.30	296.76	13.54	22.922	0					
3,900.00	3,851.67	3,892.57	3,874.25	7.36	6.98	152.80	319.00	305.10	13.90	22.946	0					
4,000.00	3,949.97	3,992.20	3,973.21	7.56	7.17	152.78	327.70	313.43	14.27	22.970	0					
4,100.00	4,048.27	4,091.82	4,072.17	7.76	7.35	152.76	336.39	321.76	14.63	22.992	0					
4,200.00	4,146.57	4,191.44	4,171.13	7.96	7.53	152.74	345.09	330.10	15.00	23.013	0					
4,300.00	4,244.88	4,291.06	4,270.10	8.16	7.72	152.72	353.79	338.43	15.36	23.032	0					
4,400.00	4,343.18	4,390.68	4,369.06	8.36	7.90	152.71	362.49	346.76	15.73	23.051	0					
4,500.00	4,441.48	4,490.30	4,468.02	8.55	8.08	152.69	371.18	355.09	16.09	23.069	0					
4,600.00	4,539.78	4,589.92	4,566.98	8.75	8.27	152.67	379.88	363.43	16.45	23.087	0					
4,700.00	4,638.09	4,689.54	4,665.95	8.95	8.45	152.66	388.58	371.76	16.82	23.103	0					
4,800.00	4,736.39	4,789.16	4,764.91	9.15	8.64	152.64	397.28	380.09	17.18	23.119	0					
4,900.00	4,834.69	4,888.78	4,863.87	9.35	8.82	152.63	405.98	388.43	17.55	23.134	0					
5,000.00	4,933.00	4,988.41	4,962.83	9.55	9.00	152.62	414.67	396.76	17.91	23.148	0					
5,100.00	5,031.30	5,088.03	5,061.80	9.75	9.19	152.60	423.37	405.09	18.28	23.162	0					
5,200.00	5,129.60	5,187.65	5,160.76	9.95	9.37	152.59	432.07	413.43	18.64	23.175	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 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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 9 - 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	5,227.90	5,287.27	5,259.72	10.14	9.55	152.58	440.77	421.76	19.01	23.188	0					
5,400.00	5,326.21	5,386.89	5,358.68	10.34	9.74	152.57	449.47	430.09	19.37	23.200	0					
5,500.00	5,424.51	5,486.51	5,457.65	10.54	9.92	152.56	458.16	438.43	19.74	23.211	0					
5,600.00	5,522.81	5,586.13	5,556.61	10.74	10.10	152.55	466.86	446.76	20.10	23.223	0					
5,700.00	5,621.11	5,685.75	5,655.57	10.94	10.29	152.54	475.56	455.09	20.47	23.233	0					
5,800.00	5,719.42	5,785.37	5,754.53	11.14	10.47	152.53	484.26	463.42	20.83	23.244	0					
5,900.00	5,817.72	5,884.99	5,853.50	11.34	10.66	152.52	492.96	471.76	21.20	23.254	0					
6,000.00	5,916.02	5,984.61	5,952.46	11.54	10.84	152.51	501.66	480.09	21.56	23.264	0					
6,011.99	5,927.81	5,996.56	5,964.33	11.56	10.86	152.51	502.70	481.09	21.61	23.265	0					
6,100.00	6,014.56	6,084.33	6,051.51	11.73	11.02	152.49	509.16	487.21	21.95	23.200	0					
6,200.00	6,113.63	6,184.20	6,150.72	11.91	11.21	152.27	513.60	491.28	22.32	23.012	0					
6,300.00	6,213.11	6,284.11	6,249.97	12.09	11.39	151.85	514.97	492.29	22.68	22.708	0					
6,400.00	6,312.88	6,383.93	6,349.14	12.26	11.58	151.22	513.31	490.29	23.02	22.294	0					
6,500.00	6,412.83	6,483.56	6,448.10	12.42	11.76	150.36	508.67	485.31	23.36	21.777	0					
6,540.55	6,453.38	6,520.47	6,484.79	12.49	11.83	1.82	506.07	482.22	23.86	21.212	0					
6,600.00	6,512.83	6,573.74	6,537.82	12.58	11.92	1.37	502.52	478.48	24.04	20.904	0					
6,640.55	6,553.38	6,610.18	6,574.14	12.65	11.99	1.11	500.51	476.34	24.16	20.713	0					
6,650.00	6,562.83	6,618.67	6,582.62	12.66	12.00	-88.99	500.08	476.23	23.86	20.962	0					
6,700.00	6,612.74	6,663.53	6,627.38	12.73	12.08	-89.69	498.13	474.10	24.03	20.731	0					
6,750.00	6,662.29	6,708.08	6,671.89	12.81	12.16	-90.69	496.72	472.52	24.20	20.523	0					
6,800.00	6,711.16	6,752.17	6,715.95	12.87	12.23	-91.94	496.03	471.65	24.38	20.345	0					
6,814.34	6,725.01	6,764.69	6,728.47	12.89	12.25	-92.34	495.99	471.56	24.43	20.301	0					
6,850.00	6,759.07	6,795.60	6,759.38	12.94	12.30	-93.41	496.25	471.70	24.56	20.206	0					
6,900.00	6,805.70	6,839.93	6,803.70	13.00	12.38	-95.14	497.62	472.88	24.74	20.115	0					
6,950.00	6,850.78	6,885.01	6,848.78	13.06	12.45	-97.13	500.19	475.28	24.91	20.076	0					
7,000.00	6,894.03	6,929.77	6,893.55	13.11	12.53	-99.30	504.30	479.23	25.07	20.112	0					
7,050.00	6,935.18	6,981.20	6,944.88	13.17	12.61	-101.80	509.85	484.64	25.22	20.220	0					
7,100.00	6,973.97	7,035.42	6,998.56	13.23	12.69	-104.28	516.61	491.29	25.32	20.404	0					
7,150.00	7,010.17	7,092.89	7,054.53	13.28	12.77	-106.74	524.42	499.04	25.38	20.663	0					
7,200.00	7,043.55	7,154.07	7,112.58	13.34	12.85	-109.17	533.11	507.71	25.40	20.992	0					
7,250.00	7,073.91	7,219.50	7,172.31	13.40	12.93	-111.55	542.42	517.05	25.37	21.381	0					
7,300.00	7,101.06	7,289.75	7,233.02	13.47	13.02	-113.87	552.06	526.75	25.31	21.815	0					
7,350.00	7,124.84	7,365.33	7,293.57	13.54	13.11	-116.09	561.69	536.46	25.22	22.269	0					
7,400.00	7,145.09	7,446.67	7,352.27	13.61	13.21	-118.18	570.91	545.77	25.14	22.712	0					
7,450.00	7,161.69	7,533.99	7,406.74	13.70	13.33	-120.05	579.30	554.22	25.08	23.098	0					
7,500.00	7,174.55	7,627.13	7,453.99	13.78	13.46	-121.64	586.41	561.32	25.09	23.374	0					
7,550.00	7,183.57	7,725.41	7,490.61	13.88	13.62	-122.84	591.82	566.62	25.20	23.486	0					
7,600.00	7,188.71	7,827.55	7,513.36	13.99	13.83	-123.60	595.18	569.74	25.44	23.394	0					
7,640.55	7,190.00	7,911.99	7,519.95	14.08	14.05	-123.83	596.23	570.48	25.75	23.159	0					
7,700.00	7,190.00	7,975.41	7,520.00	14.23	14.23	-123.84	596.24	570.14	26.10	22.847	0					
7,800.00	7,190.00	8,075.41	7,520.00	14.51	14.53	-123.84	596.24	569.54	26.70	22.328	0					
7,900.00	7,190.00	8,175.41	7,520.00	14.83	14.86	-123.84	596.24	568.89	27.35	21.799	0					
8,000.00	7,190.00	8,275.41	7,520.00	15.17	15.21	-123.84	596.24	568.20	28.04	21.266	0					
8,100.00	7,190.00	8,375.41	7,520.00	15.54	15.58	-123.84	596.24	567.48	28.76	20.733	0					
8,200.00	7,190.00	8,475.41	7,520.00	15.93	15.98	-123.84	596.24	566.73	29.51	20.203	0					
8,300.00	7,190.00	8,575.41	7,520.00	16.34	16.40	-123.84	596.24	565.94	30.30	19.680	0					
8,400.00	7,190.00	8,675.41	7,520.00	16.78	16.83	-123.84	596.24	565.13	31.11	19.166	0					
8,500.00	7,190.00	8,775.41	7,520.00	17.23	17.29	-123.84	596.24	564.29	31.95	18.663	0					
8,600.00	7,190.00	8,875.41	7,520.00	17.69	17.76	-123.84	596.24	563.43	32.81	18.173	0					
8,700.00	7,190.00	8,975.41	7,520.00	18.18	18.24	-123.84	596.24	562.54	33.69	17.696	0					
8,800.00	7,190.00	9,075.41	7,520.00	18.67	18.74	-123.84	596.24	561.64	34.60	17.233	0					
8,900.00	7,190.00	9,175.41	7,520.00	19.18	19.25	-123.84	596.24	560.71	35.52	16.785	0					
9,000.00	7,190.00	9,275.41	7,520.00	19.70	19.77	-123.84	596.24	559.77	36.46	16.352	0					
9,100.00	7,190.00	9,375.41	7,520.00	20.24	20.31	-123.84	596.24	558.82	37.42	15.933	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 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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	7,190.00	9,475.41	7,520.00	20.78	20.85	-123.84	596.24	557.84	38.39	15.530	0		
9,300.00	7,190.00	9,575.41	7,520.00	21.33	21.40	-123.84	596.24	556.86	39.38	15.141	0		
9,400.00	7,190.00	9,675.41	7,520.00	21.89	21.97	-123.84	596.23	555.86	40.38	14.766	0		
9,500.00	7,190.00	9,775.41	7,520.00	22.46	22.54	-123.84	596.23	554.85	41.39	14.406	0		
9,600.00	7,190.00	9,875.41	7,520.00	23.04	23.11	-123.84	596.23	553.82	42.41	14.059	0		
9,700.00	7,190.00	9,975.41	7,520.00	23.62	23.70	-123.84	596.23	552.79	43.44	13.725	0		
9,800.00	7,190.00	10,075.41	7,520.00	24.21	24.29	-123.84	596.23	551.75	44.48	13.403	0		
9,900.00	7,190.00	10,175.41	7,520.00	24.80	24.88	-123.84	596.23	550.70	45.53	13.094	0		
10,000.00	7,190.00	10,275.41	7,520.00	25.40	25.48	-123.84	596.23	549.64	46.59	12.797	0		
10,100.00	7,190.00	10,375.41	7,520.00	26.01	26.09	-123.84	596.23	548.57	47.66	12.510	0		
10,200.00	7,190.00	10,475.41	7,520.00	26.62	26.70	-123.84	596.23	547.50	48.73	12.235	0		
10,300.00	7,190.00	10,575.41	7,520.00	27.23	27.32	-123.84	596.23	546.42	49.81	11.969	0		
10,400.00	7,190.00	10,675.41	7,520.00	27.85	27.94	-123.84	596.23	545.33	50.90	11.714	0		
10,500.00	7,190.00	10,775.41	7,520.00	28.48	28.56	-123.84	596.23	544.23	51.99	11.468	0		
10,600.00	7,190.00	10,875.41	7,520.00	29.10	29.19	-123.84	596.23	543.14	53.09	11.230	0		
10,700.00	7,190.00	10,975.41	7,520.00	29.73	29.82	-123.84	596.23	542.03	54.19	11.002	0		
10,800.00	7,190.00	11,075.41	7,520.00	30.37	30.45	-123.84	596.22	540.92	55.30	10.781	0		
10,900.00	7,190.00	11,175.41	7,520.00	31.00	31.09	-123.84	596.22	539.81	56.42	10.568	0		
11,000.00	7,190.00	11,275.41	7,520.00	31.64	31.73	-123.84	596.22	538.69	57.53	10.363	0		
11,100.00	7,190.00	11,375.41	7,520.00	32.28	32.37	-123.84	596.22	537.57	58.65	10.165	0		
11,200.00	7,190.00	11,475.41	7,520.00	32.93	33.02	-123.84	596.22	536.44	59.78	9.974	0		
11,300.00	7,190.00	11,575.41	7,520.00	33.57	33.67	-123.84	596.22	535.31	60.91	9.789	0		
11,400.00	7,190.00	11,675.41	7,520.00	34.22	34.32	-123.84	596.22	534.18	62.04	9.610	0		
11,500.00	7,190.00	11,775.41	7,520.00	34.87	34.97	-123.84	596.22	533.04	63.18	9.437	0		
11,600.00	7,190.00	11,875.41	7,520.00	35.53	35.62	-123.84	596.22	531.90	64.31	9.270	0		
11,700.00	7,190.00	11,975.41	7,520.00	36.18	36.28	-123.84	596.21	530.76	65.46	9.109	0		
11,800.00	7,190.00	12,075.41	7,520.00	36.84	36.93	-123.84	596.21	529.61	66.60	8.952	0		
11,900.00	7,190.00	12,175.41	7,520.00	37.50	37.59	-123.84	596.21	528.46	67.75	8.800	0		
12,000.00	7,190.00	12,275.41	7,520.00	38.16	38.25	-123.84	596.21	527.31	68.90	8.654	0		
12,100.00	7,190.00	12,375.41	7,520.00	38.82	38.91	-123.84	596.21	526.16	70.05	8.511	0		
12,200.00	7,190.00	12,475.41	7,520.00	39.48	39.58	-123.84	596.21	525.00	71.20	8.373	0		
12,300.00	7,190.00	12,575.41	7,520.00	40.15	40.24	-123.84	596.21	523.85	72.36	8.239	0		
12,400.00	7,190.00	12,675.41	7,520.00	40.81	40.91	-123.84	596.20	522.69	73.52	8.110	0		
12,500.00	7,190.00	12,775.41	7,520.00	41.48	41.58	-123.84	596.20	521.53	74.68	7.984	0		
12,600.00	7,190.00	12,875.41	7,520.00	42.15	42.25	-123.84	596.20	520.36	75.84	7.861	0		
12,700.00	7,190.00	12,975.41	7,520.00	42.82	42.91	-123.84	596.20	519.20	77.00	7.742	0		
12,800.00	7,190.00	13,075.41	7,520.00	43.49	43.59	-123.84	596.20	518.03	78.17	7.627	0		
12,900.00	7,190.00	13,175.41	7,520.00	44.16	44.26	-123.84	596.20	516.86	79.34	7.515	0		
13,000.00	7,190.00	13,275.41	7,520.00	44.83	44.93	-123.84	596.20	515.69	80.51	7.406	0		
13,100.00	7,190.00	13,375.41	7,520.00	45.50	45.60	-123.84	596.19	514.52	81.68	7.299	0		
13,200.00	7,190.00	13,475.41	7,520.00	46.18	46.28	-123.84	596.19	513.34	82.85	7.196	0		
13,300.00	7,190.00	13,575.41	7,520.00	46.85	46.95	-123.84	596.19	512.17	84.02	7.096	0		
13,400.00	7,190.00	13,675.41	7,520.00	47.53	47.63	-123.84	596.19	510.99	85.20	6.998	0		
13,500.00	7,190.00	13,775.41	7,520.00	48.21	48.31	-123.84	596.19	509.81	86.37	6.902	0		
13,600.00	7,190.00	13,875.41	7,520.00	48.88	48.98	-123.84	596.19	508.64	87.55	6.810	0		
13,700.00	7,190.00	13,975.41	7,520.00	49.56	49.66	-123.84	596.18	507.46	88.73	6.719	0		
13,800.00	7,190.00	14,075.41	7,520.00	50.24	50.34	-123.84	596.18	506.27	89.91	6.631	0		
13,900.00	7,190.00	14,175.41	7,520.00	50.92	51.02	-123.84	596.18	505.09	91.09	6.545	0		
14,000.00	7,190.00	14,275.41	7,520.00	51.60	51.70	-123.84	596.18	503.91	92.27	6.461	0		
14,100.00	7,190.00	14,375.41	7,520.00	52.28	52.38	-123.84	596.18	502.72	93.45	6.380	0		
14,200.00	7,190.00	14,475.41	7,520.00	52.96	53.06	-123.84	596.17	501.54	94.63	6.300	0		
14,300.00	7,190.00	14,575.41	7,520.00	53.65	53.75	-123.84	596.17	500.35	95.82	6.222	0		
14,400.00	7,190.00	14,675.41	7,520.00	54.33	54.43	-123.84	596.17	499.17	97.00	6.146	0		
14,500.00	7,190.00	14,775.41	7,520.00	55.01	55.11	-123.84	596.17	497.98	98.19	6.072	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 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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	7,190.00	14,875.41	7,520.00	55.69	55.80	-123.84	596.17	496.79	99.38	5.999	0		
14,700.00	7,190.00	14,975.41	7,520.00	56.38	56.48	-123.84	596.16	495.60	100.56	5.928	0		
14,800.00	7,190.00	15,075.41	7,520.00	57.06	57.17	-123.84	596.16	494.41	101.75	5.859	0		
14,900.00	7,190.00	15,175.41	7,520.00	57.75	57.85	-123.84	596.16	493.22	102.94	5.791	0		
15,000.00	7,190.00	15,275.41	7,520.00	58.43	58.54	-123.84	596.16	492.03	104.13	5.725	0		
15,100.00	7,190.00	15,375.41	7,520.00	59.12	59.22	-123.84	596.15	490.83	105.32	5.660	0		
15,200.00	7,190.00	15,475.41	7,520.00	59.81	59.91	-123.84	596.15	489.64	106.51	5.597	0		
15,300.00	7,190.00	15,575.41	7,520.00	60.49	60.60	-123.84	596.15	488.44	107.71	5.535	0		
15,400.00	7,190.00	15,675.41	7,520.00	61.18	61.28	-123.84	596.15	487.25	108.90	5.474	0		
15,500.00	7,190.00	15,775.41	7,520.00	61.87	61.97	-123.84	596.15	486.05	110.09	5.415	0		
15,600.00	7,190.00	15,875.41	7,520.00	62.55	62.66	-123.84	596.14	484.86	111.28	5.357	0		
15,700.00	7,190.00	15,975.41	7,520.00	63.24	63.35	-123.84	596.14	483.66	112.48	5.300	0		
15,800.00	7,190.00	16,075.41	7,520.00	63.93	64.03	-123.84	596.14	482.46	113.67	5.244	0		
15,900.00	7,190.00	16,175.41	7,520.00	64.62	64.72	-123.84	596.14	481.27	114.87	5.190	0		
16,000.00	7,190.00	16,275.41	7,520.00	65.31	65.41	-123.84	596.13	480.07	116.06	5.136	0		
16,100.00	7,190.00	16,375.41	7,520.00	66.00	66.10	-123.84	596.13	478.87	117.26	5.084	0		
16,200.00	7,190.00	16,475.41	7,520.00	66.69	66.79	-123.84	596.13	477.67	118.46	5.032	0		
16,300.00	7,190.00	16,575.41	7,520.00	67.38	67.48	-123.84	596.13	476.47	119.65	4.982	0		
16,400.00	7,190.00	16,675.41	7,520.00	68.07	68.17	-123.84	596.12	475.27	120.85	4.933	0		
16,500.00	7,190.00	16,775.41	7,520.00	68.76	68.86	-123.84	596.12	474.07	122.05	4.884	0		
16,600.00	7,190.00	16,875.41	7,520.00	69.45	69.55	-123.84	596.12	472.87	123.25	4.837	0		
16,700.00	7,190.00	16,975.41	7,520.00	70.14	70.25	-123.84	596.11	471.67	124.45	4.790	0		
16,800.00	7,190.00	17,075.41	7,520.00	70.83	70.94	-123.84	596.11	470.46	125.65	4.744	0		
16,900.00	7,190.00	17,175.41	7,520.00	71.52	71.63	-123.84	596.11	469.26	126.85	4.699	0		
17,000.00	7,190.00	17,275.41	7,520.00	72.21	72.32	-123.84	596.11	468.06	128.05	4.655	0		
17,100.00	7,190.00	17,375.41	7,520.00	72.91	73.01	-123.85	596.10	466.86	129.25	4.612	0		
17,200.00	7,190.00	17,475.41	7,520.00	73.60	73.70	-123.85	596.10	465.65	130.45	4.570	0		
17,269.01	7,190.00	17,544.44	7,520.00	74.08	74.18	-123.85	596.10	464.82	131.28	4.541	0		
17,297.69	7,190.00	17,568.49	7,520.00	74.28	74.35	-123.85	596.11	464.52	131.59	4.530	0	SF	

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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 @ 5054.00usft (Xtreme 7 - 16')

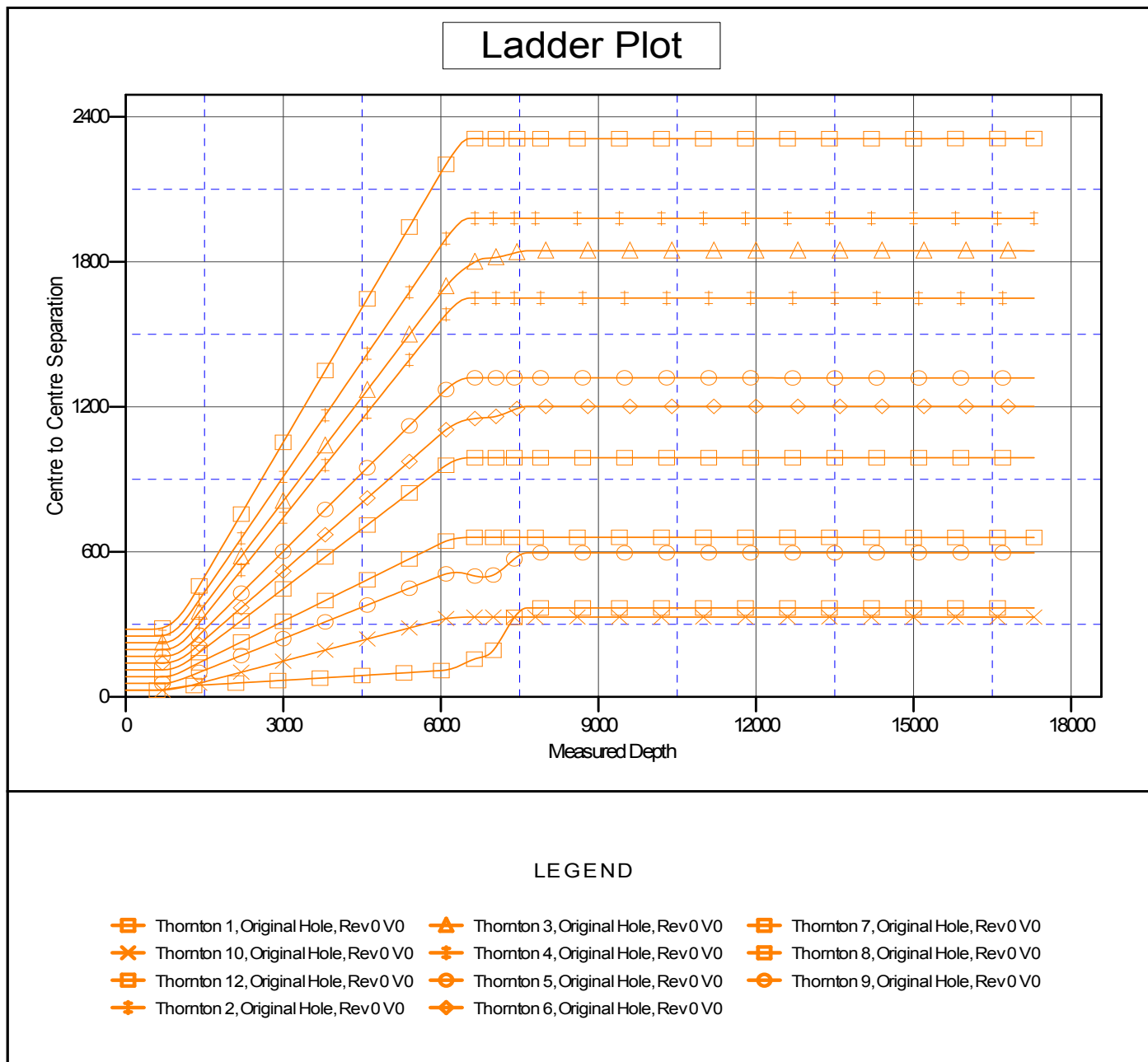
Offset Depths are relative to Offset Datum

Central Meridian is 105° 30' 0.000 W °

Coordinates are relative to: Thornton 11

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 11
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5054.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 11	<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 @ 5054.00usft (Xtreme 7 - 16')

Offset Depths are relative to Offset Datum

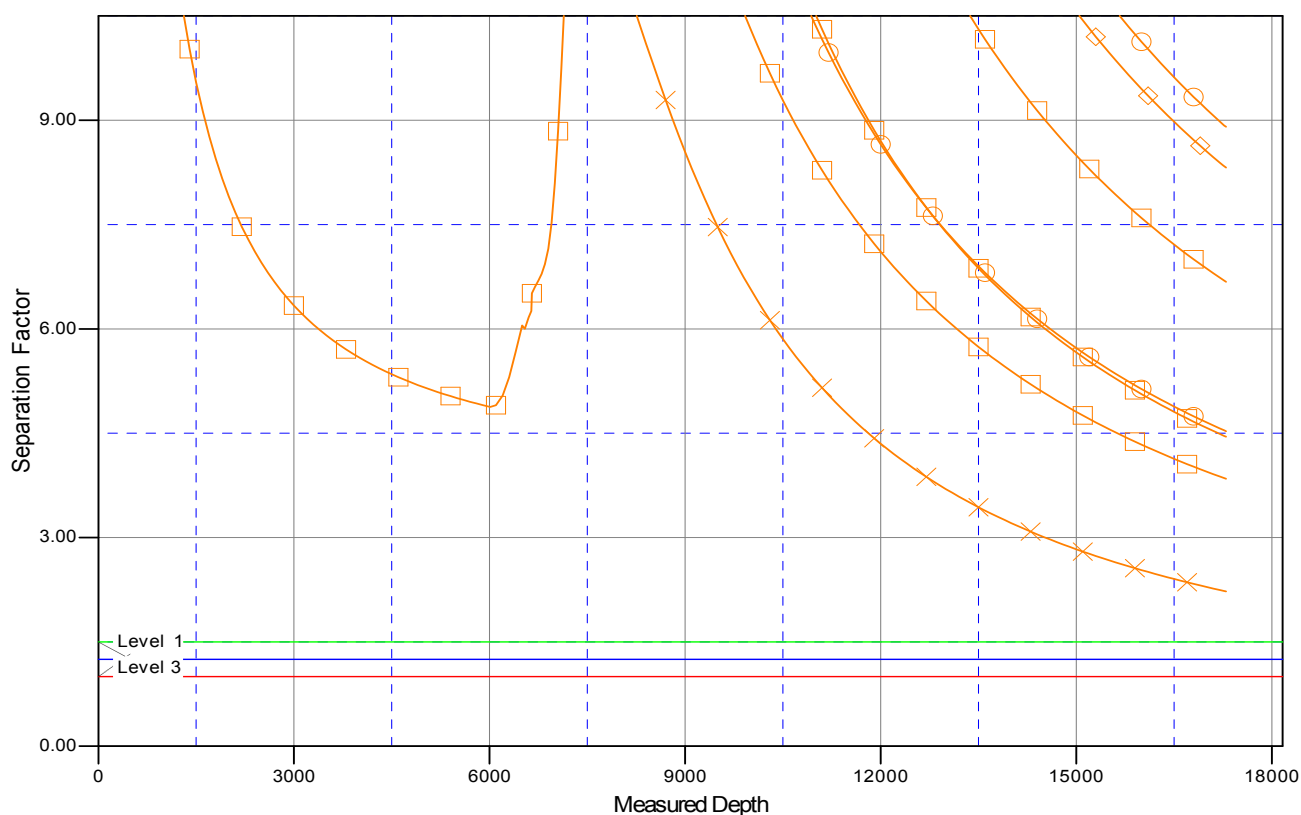
Central Meridian is 105° 30' 0.000 W °

Coordinates are relative to: Thornton 11

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 3, Original Hole, Rev0 V0 | Thornton 7, Original Hole, Rev0 V0 |
| Thornton 10, 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 | Thornton 9, Original Hole, Rev0 V0 |
| Thornton 2, Original Hole, Rev0 V0  | Thornton 6, Original Hole, Rev0 V0 |                                    |