



# **Extraction Oil & Gas**

**Weld Co., Co  
Sec.08-T07N-R66W  
Thornton 12**

**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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

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

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

<b>Survey Tool Program</b>	<b>Date</b>	6/21/2014		
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.00	17,645.24	Rev 0 (Original Hole)	Pathfinder	Pathfinder MWD

<b>Summary</b>						
<b>Site Name</b>	<b>Reference Measured Depth (usft)</b>	<b>Offset Measured Depth (usft)</b>	<b>Distance Between Centres (usft)</b>	<b>Distance Between Ellipses (usft)</b>	<b>Separation Factor</b>	<b>Warning</b>
<b>Offset Well - Wellbore - Design</b>						
Sec.08-T07N-R66W						
Thornton 1 - Original Hole - Rev 0	500.00	494.00	307.86	306.18	183.360 CC, ES	
Thornton 1 - Original Hole - Rev 0	17,645.24	17,324.42	2,496.26	2,348.61	16.906 SF	
Thornton 10 - Original Hole - Rev 0	600.00	598.00	56.11	54.07	27.570 CC, ES	
Thornton 10 - Original Hole - Rev 0	17,645.24	17,254.82	593.89	463.53	4.556 SF	
Thornton 11 - Original Hole - Rev 0	600.00	599.00	28.05	26.02	13.773 CC, ES	
Thornton 11 - Original Hole - Rev 0	17,645.24	17,297.69	368.07	272.33	3.844 SF	
Thornton 2 - Original Hole - Rev 0	600.00	594.00	279.80	277.77	137.962 CC, ES	
Thornton 2 - Original Hole - Rev 0	17,645.24	17,273.45	2,169.41	2,022.13	14.729 SF	
Thornton 3 - Original Hole - Rev 0	600.00	594.00	252.11	250.08	124.311 CC, ES	
Thornton 3 - Original Hole - Rev 0	17,645.24	17,582.23	1,980.05	1,831.33	13.314 SF	
Thornton 4 - Original Hole - Rev 0	600.00	594.00	224.06	222.03	110.479 CC, ES	
Thornton 4 - Original Hole - Rev 0	17,645.24	17,242.86	1,843.70	1,696.96	12.564 SF	
Thornton 5 - Original Hole - Rev 0	600.00	595.00	196.01	193.98	96.566 CC, ES	
Thornton 5 - Original Hole - Rev 0	17,645.24	17,222.47	1,520.09	1,374.24	10.422 SF	
Thornton 6 - Original Hole - Rev 0	600.00	596.00	167.95	165.92	82.672 CC, ES	
Thornton 6 - Original Hole - Rev 0	17,645.24	17,547.64	1,319.91	1,171.19	8.875 SF	
Thornton 7 - Original Hole - Rev 0	600.00	596.00	139.90	137.87	68.864 CC, ES	
Thornton 7 - Original Hole - Rev 0	17,645.24	17,219.06	1,200.00	1,055.80	8.322 SF	
Thornton 8 - Original Hole - Rev 0	600.00	596.00	111.85	109.82	55.055 CC, ES	
Thornton 8 - Original Hole - Rev 0	17,645.24	17,230.36	886.89	746.28	6.307 SF	
Thornton 9 - Original Hole - Rev 0	600.00	597.00	84.16	82.12	41.390 CC, ES	
Thornton 9 - Original Hole - Rev 0	17,645.24	17,568.49	660.14	511.35	4.437 SF	

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								
Measured	Vertical	Measured	Vertical	Reference	Offset	Highside	Between	Between	Minimum	Separation	Risked	Probability of	Warning	
Depth	Depth	Depth	Depth			Toolface	Centres	Ellipses	Separation	Factor	Separation	Collision		
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(°)	(usft)	(usft)	(usft)		Factor			

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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<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	307.92						CC, ES	
100.00	100.00	94.00	94.00	0.15	0.14	0.02	307.86	307.58	0.28	1,082.428	0			
200.00	200.00	194.00	194.00	0.32	0.31	0.02	307.86	307.23	0.63	487.272	0			
300.00	300.00	294.00	294.00	0.50	0.49	0.02	307.86	306.88	0.98	313.866	0			
400.00	400.00	394.00	394.00	0.67	0.66	0.02	307.86	306.53	1.33	231.486	0			
500.00	500.00	494.00	494.00	0.84	0.83	0.02	307.86	306.18	1.68	183.360	0			
600.00	600.00	585.49	585.47	1.02	0.99	-0.07	309.16	307.15	2.01	153.561	0			
700.00	699.98	676.18	676.07	1.19	1.15	151.63	314.92	312.57	2.35	134.249	0			
800.00	799.84	766.16	765.77	1.37	1.31	151.44	326.64	323.97	2.68	122.080	0			
900.00	899.45	854.96	854.06	1.55	1.47	151.29	344.26	341.26	3.00	114.675	0			
1,000.00	998.70	942.16	940.40	1.73	1.63	151.14	367.66	364.33	3.32	110.581	0			
1,100.00	1,097.47	1,027.33	1,024.36	1.91	1.79	151.01	396.69	393.05	3.64	108.890	0			
1,149.61	1,146.24	1,068.73	1,065.00	2.00	1.87	150.94	413.14	409.34	3.80	108.748	0			
1,200.00	1,195.71	1,110.26	1,105.65	2.10	1.95	151.02	430.84	426.87	3.96	108.713	0			
1,300.00	1,293.88	1,195.23	1,188.42	2.29	2.12	151.09	467.82	463.53	4.29	108.938	0			
1,400.00	1,392.04	1,283.24	1,273.85	2.48	2.30	151.08	506.09	501.46	4.63	109.260	0			
1,500.00	1,490.21	1,375.62	1,363.53	2.68	2.48	151.07	544.38	539.40	4.98	109.353	0			
1,600.00	1,588.37	1,468.00	1,453.20	2.87	2.67	151.07	582.66	577.34	5.33	109.417	0			
1,700.00	1,686.54	1,560.37	1,542.87	3.07	2.86	151.06	620.95	615.28	5.67	109.461	0			
1,800.00	1,784.70	1,652.75	1,632.54	3.26	3.05	151.06	659.24	653.22	6.02	109.489	0			
1,900.00	1,882.87	1,745.13	1,722.22	3.46	3.25	151.05	697.53	691.16	6.37	109.506	0			
2,000.00	1,981.03	1,837.51	1,811.89	3.66	3.44	151.05	735.82	729.10	6.72	109.514	0			
2,100.00	2,079.20	1,929.89	1,901.56	3.85	3.63	151.05	774.10	767.04	7.07	109.517	0			
2,200.00	2,177.36	2,022.27	1,991.24	4.05	3.83	151.05	812.39	804.97	7.42	109.515	0			
2,300.00	2,275.53	2,114.65	2,080.91	4.25	4.02	151.04	850.68	842.91	7.77	109.510	0			
2,400.00	2,373.69	2,207.03	2,170.58	4.45	4.22	151.04	888.97	880.85	8.12	109.502	0			
2,500.00	2,471.86	2,299.41	2,260.25	4.65	4.41	151.04	927.26	918.79	8.47	109.493	0			
2,600.00	2,570.02	2,391.79	2,349.93	4.85	4.61	151.04	965.54	956.72	8.82	109.482	0			
2,700.00	2,668.19	2,484.17	2,439.60	5.05	4.81	151.04	1,003.83	994.66	9.17	109.470	0			
2,800.00	2,766.36	2,576.55	2,529.27	5.25	5.00	151.03	1,042.12	1,032.60	9.52	109.457	0			
2,900.00	2,864.52	2,668.93	2,618.95	5.44	5.20	151.03	1,080.41	1,070.53	9.87	109.444	0			
3,000.00	2,962.69	2,761.31	2,708.62	5.64	5.39	151.03	1,118.69	1,108.47	10.22	109.431	0			
3,100.00	3,060.85	2,853.69	2,798.29	5.84	5.59	151.03	1,156.98	1,146.41	10.57	109.418	0			
3,200.00	3,159.02	2,946.07	2,887.96	6.04	5.79	151.03	1,195.27	1,184.35	10.93	109.404	0			
3,300.00	3,257.18	3,038.45	2,977.64	6.24	5.99	151.03	1,233.56	1,222.28	11.28	109.391	0			
3,400.00	3,355.35	3,130.83	3,067.31	6.44	6.18	151.03	1,271.85	1,260.22	11.63	109.378	0			
3,500.00	3,453.51	3,223.21	3,156.98	6.64	6.38	151.03	1,310.13	1,298.15	11.98	109.365	0			
3,600.00	3,551.68	3,315.59	3,246.66	6.84	6.58	151.03	1,348.42	1,336.09	12.33	109.352	0			
3,700.00	3,649.84	3,407.97	3,336.33	7.04	6.78	151.02	1,386.71	1,374.03	12.68	109.340	0			
3,800.00	3,748.01	3,500.35	3,426.00	7.24	6.97	151.02	1,425.00	1,411.96	13.03	109.328	0			
3,900.00	3,846.17	3,592.73	3,515.67	7.44	7.17	151.02	1,463.29	1,449.90	13.39	109.316	0			
4,000.00	3,944.34	3,685.11	3,605.35	7.64	7.37	151.02	1,501.57	1,487.84	13.74	109.304	0			
4,100.00	4,042.50	3,777.49	3,695.02	7.85	7.57	151.02	1,539.86	1,525.77	14.09	109.293	0			
4,200.00	4,140.67	3,869.87	3,784.69	8.05	7.76	151.02	1,578.15	1,563.71	14.44	109.282	0			
4,300.00	4,238.84	3,962.25	3,874.37	8.25	7.96	151.02	1,616.44	1,601.64	14.79	109.271	0			
4,400.00	4,337.00	4,054.63	3,964.04	8.45	8.16	151.02	1,654.73	1,639.58	15.14	109.260	0			
4,500.00	4,435.17	4,147.01	4,053.71	8.65	8.36	151.02	1,693.01	1,677.52	15.50	109.250	0			
4,600.00	4,533.33	4,239.39	4,143.38	8.85	8.56	151.02	1,731.30	1,715.45	15.85	109.240	0			
4,700.00	4,631.50	4,331.77	4,233.06	9.05	8.75	151.02	1,769.59	1,753.39	16.20	109.230	0			
4,800.00	4,729.66	4,424.15	4,322.73	9.25	8.95	151.02	1,807.88	1,791.32	16.55	109.221	0			
4,900.00	4,827.83	4,516.53	4,412.40	9.45	9.15	151.02	1,846.16	1,829.26	16.90	109.211	0			
5,000.00	4,925.99	4,608.91	4,502.08	9.65	9.35	151.02	1,884.45	1,867.20	17.26	109.202	0			
5,100.00	5,024.16	4,701.29	4,591.75	9.85	9.55	151.02	1,922.74	1,905.13	17.61	109.193	0			
5,200.00	5,122.32	4,793.67	4,681.42	10.05	9.75	151.02	1,961.03	1,943.07	17.96	109.185	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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<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	5,220.49	4,886.05	4,771.10	10.25	9.94	151.01	1,999.32	1,981.00	18.31	109.177	0		
5,400.00	5,318.65	4,978.43	4,860.77	10.45	10.14	151.01	2,037.60	2,018.94	18.66	109.169	0		
5,500.00	5,416.82	5,070.81	4,950.44	10.65	10.34	151.01	2,075.89	2,056.88	19.02	109.161	0		
5,600.00	5,514.98	5,163.19	5,040.11	10.85	10.54	151.01	2,114.18	2,094.81	19.37	109.153	0		
5,700.00	5,613.15	5,255.57	5,129.79	11.06	10.74	151.01	2,152.47	2,132.75	19.72	109.145	0		
5,800.00	5,711.32	5,347.95	5,219.46	11.26	10.94	151.01	2,190.76	2,170.68	20.07	109.138	0		
5,900.00	5,809.48	5,440.33	5,309.13	11.46	11.13	151.01	2,229.04	2,208.62	20.43	109.131	0		
6,000.00	5,907.65	5,532.71	5,398.81	11.66	11.33	151.01	2,267.33	2,246.55	20.78	109.124	0		
6,100.00	6,005.81	5,625.09	5,488.48	11.86	11.53	151.01	2,305.62	2,284.49	21.13	109.117	0		
6,200.00	6,103.98	5,717.47	5,578.15	12.06	11.73	151.01	2,343.91	2,322.43	21.48	109.111	0		
6,300.00	6,202.14	5,809.85	5,667.82	12.26	11.93	151.01	2,382.20	2,360.36	21.83	109.104	0		
6,335.65	6,237.14	5,842.78	5,699.79	12.33	12.00	151.01	2,395.84	2,373.88	21.96	109.102	0		
6,400.00	6,300.44	5,902.46	5,757.73	12.46	12.13	151.25	2,419.90	2,397.66	22.24	108.810	0		
6,500.00	6,399.28	6,319.82	6,168.53	12.65	12.92	151.61	2,449.23	2,426.00	23.23	105.452	0		
6,600.00	6,498.59	6,644.35	6,492.59	12.82	13.43	152.04	2,462.31	2,438.30	24.01	102.554	0		
6,700.00	6,598.25	6,743.08	6,591.30	13.00	13.58	152.22	2,469.57	2,445.18	24.39	101.239	0		
6,800.00	6,698.13	6,838.29	6,685.56	13.16	13.71	152.61	2,473.89	2,449.13	24.76	99.927	0		
6,885.26	6,783.38	6,915.12	6,759.58	13.29	13.80	1.20	2,475.41	2,448.73	26.69	92.754	0		
6,900.00	6,798.12	6,927.87	6,771.60	13.32	13.82	1.30	2,475.53	2,448.80	26.73	92.610	0		
6,985.26	6,883.38	7,000.00	6,837.81	13.45	13.90	1.96	2,476.57	2,449.60	26.98	91.809	0		
7,000.00	6,898.12	7,009.33	6,846.13	13.47	13.91	-87.92	2,476.82	2,451.36	25.46	97.288	0		
7,050.00	6,948.01	7,050.00	6,881.62	13.55	13.96	-87.43	2,477.79	2,452.15	25.64	96.641	0		
7,100.00	6,997.50	7,085.45	6,911.47	13.62	13.99	-86.99	2,478.89	2,453.08	25.81	96.052	0		
7,150.00	7,046.29	7,122.51	6,941.49	13.68	14.03	-86.54	2,480.10	2,454.13	25.98	95.475	0		
7,200.00	7,094.07	7,158.99	6,969.75	13.75	14.08	-86.11	2,481.41	2,455.27	26.14	94.937	0		
7,250.00	7,140.56	7,200.00	6,999.89	13.81	14.12	-85.65	2,482.78	2,456.47	26.31	94.376	0		
7,300.00	7,185.46	7,230.51	7,021.11	13.87	14.16	-85.29	2,484.17	2,457.73	26.44	93.969	0		
7,350.00	7,228.49	7,265.64	7,044.23	13.92	14.20	-84.91	2,485.58	2,459.01	26.57	93.547	0		
7,400.00	7,269.40	7,300.00	7,065.38	13.98	14.24	-84.56	2,486.98	2,460.29	26.69	93.178	0		
7,450.00	7,307.93	7,334.92	7,085.35	14.04	14.28	-84.22	2,488.34	2,461.53	26.81	92.817	0		
7,500.00	7,343.84	7,369.14	7,103.37	14.10	14.32	-83.91	2,489.64	2,462.73	26.91	92.501	0		
7,550.00	7,376.91	7,400.00	7,118.26	14.16	14.37	-83.65	2,490.87	2,463.87	27.00	92.271	0		
7,600.00	7,406.94	7,436.91	7,134.32	14.22	14.42	-83.38	2,491.99	2,464.88	27.11	91.938	0		
7,650.00	7,433.74	7,470.52	7,147.25	14.28	14.47	-83.16	2,493.00	2,465.81	27.19	91.675	0		
7,700.00	7,457.15	7,500.00	7,157.23	14.35	14.51	-82.98	2,493.89	2,466.63	27.26	91.491	0		
7,750.00	7,477.02	7,537.35	7,168.01	14.43	14.58	-82.81	2,494.62	2,467.25	27.37	91.131	0		
7,800.00	7,493.23	7,570.61	7,175.84	14.51	14.63	-82.69	2,495.21	2,467.74	27.47	90.837	0		
7,850.00	7,505.69	7,600.00	7,181.34	14.60	14.69	-82.61	2,495.64	2,468.10	27.54	90.604	0		
7,900.00	7,514.30	7,636.94	7,186.35	14.69	14.76	-82.55	2,495.90	2,468.21	27.68	90.162	0		
7,950.00	7,519.02	7,670.07	7,189.03	14.80	14.83	-82.53	2,495.98	2,468.18	27.81	89.766	0		
7,985.26	7,520.00	7,700.00	7,189.98	14.88	14.89	-82.54	2,495.96	2,467.98	27.97	89.230	0		
8,000.00	7,520.00	7,703.19	7,190.00	14.91	14.90	-82.54	2,495.92	2,467.90	28.02	89.078	0		
8,034.34	7,520.00	7,736.54	7,190.00	14.99	14.98	-82.54	2,495.92	2,467.71	28.21	88.476	0		
8,100.00	7,520.00	7,802.20	7,190.00	15.16	15.14	-82.54	2,495.92	2,467.34	28.58	87.327	0		
8,165.14	7,520.00	7,867.33	7,190.00	15.34	15.31	-82.54	2,495.92	2,466.94	28.99	86.110	0		
8,200.00	7,520.00	7,902.19	7,190.00	15.45	15.41	-82.54	2,495.92	2,466.72	29.20	85.471	0		
8,300.00	7,520.00	8,002.19	7,190.00	15.76	15.71	-82.54	2,495.92	2,466.05	29.87	83.546	0		
8,400.00	7,520.00	8,102.19	7,190.00	16.11	16.04	-82.54	2,495.92	2,465.33	30.60	81.575	0		
8,500.00	7,520.00	8,202.19	7,190.00	16.48	16.39	-82.54	2,495.92	2,464.56	31.36	79.578	0		
8,600.00	7,520.00	8,302.19	7,190.00	16.87	16.77	-82.54	2,495.92	2,463.75	32.17	77.574	0		
8,700.00	7,520.00	8,402.19	7,190.00	17.28	17.17	-82.54	2,495.92	2,462.90	33.02	75.579	0		
8,800.00	7,520.00	8,502.19	7,190.00	17.71	17.60	-82.54	2,495.92	2,462.01	33.91	73.605	0		
8,900.00	7,520.00	8,602.19	7,190.00	18.16	18.04	-82.54	2,495.92	2,461.10	34.83	71.662	0		
9,000.00	7,520.00	8,702.18	7,190.00	18.62	18.50	-82.54	2,495.92	2,460.15	35.78	69.759	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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error: 0.00 usft	
Survey Program: 0-Pathfinder												Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision	
9,100.00	7,520.00	8,802.18	7,190.00	19.10	18.97	-82.54	2,495.93	2,459.17	36.76	67.901	0		
9,200.00	7,520.00	8,902.18	7,190.00	19.59	19.46	-82.54	2,495.93	2,458.16	37.76	66.094	0		
9,300.00	7,520.00	9,002.18	7,190.00	20.10	19.96	-82.54	2,495.93	2,457.13	38.79	64.339	0		
9,400.00	7,520.00	9,102.18	7,190.00	20.62	20.48	-82.54	2,495.93	2,456.08	39.85	62.641	0		
9,500.00	7,520.00	9,202.18	7,190.00	21.14	21.00	-82.54	2,495.93	2,455.01	40.92	60.999	0		
9,600.00	7,520.00	9,302.18	7,190.00	21.68	21.54	-82.54	2,495.93	2,453.92	42.01	59.413	0		
9,700.00	7,520.00	9,402.18	7,190.00	22.23	22.08	-82.54	2,495.93	2,452.81	43.12	57.885	0		
9,800.00	7,520.00	9,502.17	7,190.00	22.78	22.63	-82.54	2,495.93	2,451.69	44.24	56.412	0		
9,900.00	7,520.00	9,602.17	7,190.00	23.35	23.19	-82.54	2,495.93	2,450.55	45.39	54.994	0		
10,000.00	7,520.00	9,702.17	7,190.00	23.92	23.76	-82.54	2,495.93	2,449.39	46.54	53.629	0		
10,100.00	7,520.00	9,802.17	7,190.00	24.49	24.34	-82.54	2,495.93	2,448.22	47.71	52.316	0		
10,200.00	7,520.00	9,902.17	7,190.00	25.08	24.92	-82.54	2,495.93	2,447.05	48.89	51.054	0		
10,300.00	7,520.00	10,002.17	7,190.00	25.67	25.51	-82.54	2,495.94	2,445.86	50.08	49.839	0		
10,400.00	7,520.00	10,102.17	7,190.00	26.26	26.10	-82.54	2,495.94	2,444.66	51.28	48.672	0		
10,500.00	7,520.00	10,202.17	7,190.00	26.86	26.70	-82.54	2,495.94	2,443.45	52.49	47.548	0		
10,600.00	7,520.00	10,302.16	7,190.00	27.47	27.31	-82.54	2,495.94	2,442.23	53.71	46.468	0		
10,700.00	7,520.00	10,402.16	7,190.00	28.08	27.92	-82.54	2,495.94	2,441.00	54.94	45.429	0		
10,800.00	7,520.00	10,502.16	7,190.00	28.69	28.53	-82.54	2,495.94	2,439.76	56.18	44.429	0		
10,900.00	7,520.00	10,602.16	7,190.00	29.31	29.15	-82.54	2,495.94	2,438.52	57.42	43.466	0		
11,000.00	7,520.00	10,702.16	7,190.00	29.93	29.77	-82.54	2,495.94	2,437.27	58.67	42.540	0		
11,100.00	7,520.00	10,802.16	7,190.00	30.56	30.40	-82.54	2,495.95	2,436.02	59.93	41.647	0		
11,200.00	7,520.00	10,902.16	7,190.00	31.19	31.02	-82.54	2,495.95	2,434.75	61.19	40.787	0		
11,300.00	7,520.00	11,002.16	7,190.00	31.82	31.66	-82.54	2,495.95	2,433.49	62.46	39.958	0		
11,400.00	7,520.00	11,102.15	7,190.00	32.45	32.29	-82.54	2,495.95	2,432.21	63.74	39.159	0		
11,500.00	7,520.00	11,202.15	7,190.00	33.09	32.93	-82.54	2,495.95	2,430.94	65.02	38.389	0		
11,600.00	7,520.00	11,302.15	7,190.00	33.73	33.57	-82.54	2,495.95	2,429.65	66.30	37.645	0		
11,700.00	7,520.00	11,402.15	7,190.00	34.38	34.21	-82.54	2,495.96	2,428.37	67.59	36.927	0		
11,800.00	7,520.00	11,502.15	7,190.00	35.02	34.85	-82.54	2,495.96	2,427.07	68.88	36.234	0		
11,900.00	7,520.00	11,602.15	7,190.00	35.67	35.50	-82.54	2,495.96	2,425.78	70.18	35.564	0		
12,000.00	7,520.00	11,702.15	7,190.00	36.32	36.15	-82.54	2,495.96	2,424.48	71.48	34.917	0		
12,100.00	7,520.00	11,802.14	7,190.00	36.97	36.80	-82.54	2,495.96	2,423.18	72.79	34.291	0		
12,200.00	7,520.00	11,902.14	7,190.00	37.62	37.45	-82.54	2,495.97	2,421.87	74.09	33.686	0		
12,300.00	7,520.00	12,002.14	7,190.00	38.28	38.11	-82.54	2,495.97	2,420.56	75.41	33.100	0		
12,400.00	7,520.00	12,102.14	7,190.00	38.93	38.76	-82.54	2,495.97	2,419.25	76.72	32.533	0		
12,500.00	7,520.00	12,202.14	7,190.00	39.59	39.42	-82.54	2,495.97	2,417.94	78.04	31.984	0		
12,600.00	7,520.00	12,302.14	7,190.00	40.25	40.08	-82.54	2,495.98	2,416.62	79.36	31.452	0		
12,700.00	7,520.00	12,402.14	7,190.00	40.91	40.74	-82.54	2,495.98	2,415.30	80.68	30.937	0		
12,800.00	7,520.00	12,502.14	7,190.00	41.58	41.41	-82.54	2,495.98	2,413.98	82.00	30.437	0		
12,900.00	7,520.00	12,602.13	7,190.00	42.24	42.07	-82.54	2,495.98	2,412.65	83.33	29.952	0		
13,000.00	7,520.00	12,702.13	7,190.00	42.90	42.73	-82.54	2,495.99	2,411.32	84.66	29.482	0		
13,100.00	7,520.00	12,802.13	7,190.00	43.57	43.40	-82.54	2,495.99	2,409.99	85.99	29.025	0		
13,200.00	7,520.00	12,902.13	7,190.00	44.24	44.07	-82.54	2,495.99	2,408.66	87.33	28.582	0		
13,300.00	7,520.00	13,002.13	7,190.00	44.91	44.74	-82.54	2,495.99	2,407.33	88.66	28.151	0		
13,400.00	7,520.00	13,102.13	7,190.00	45.58	45.41	-82.54	2,496.00	2,406.00	90.00	27.733	0		
13,500.00	7,520.00	13,202.13	7,190.00	46.25	46.08	-82.54	2,496.00	2,404.66	91.34	27.326	0		
13,600.00	7,520.00	13,302.13	7,190.00	46.92	46.75	-82.54	2,496.00	2,403.32	92.68	26.931	0		
13,700.00	7,520.00	13,402.12	7,190.00	47.59	47.42	-82.54	2,496.00	2,401.98	94.02	26.546	0		
13,800.00	7,520.00	13,502.12	7,190.00	48.27	48.09	-82.54	2,496.01	2,400.64	95.37	26.172	0		
13,900.00	7,520.00	13,602.12	7,190.00	48.94	48.77	-82.54	2,496.01	2,399.30	96.71	25.808	0		
14,000.00	7,520.00	13,702.12	7,190.00	49.62	49.44	-82.54	2,496.01	2,397.95	98.06	25.453	0		
14,100.00	7,520.00	13,802.12	7,190.00	50.29	50.12	-82.54	2,496.02	2,396.61	99.41	25.108	0		
14,200.00	7,520.00	13,902.12	7,190.00	50.97	50.80	-82.54	2,496.02	2,395.26	100.76	24.772	0		
14,300.00	7,520.00	14,002.12	7,190.00	51.65	51.47	-82.54	2,496.02	2,393.91	102.11	24.444	0		
14,400.00	7,520.00	14,102.12	7,190.00	52.32	52.15	-82.54	2,496.03	2,392.56	103.46	24.124	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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision		
14,500.00	7,520.00	14,202.11	7,190.00	53.00	52.83	-82.54	2,496.03	2,391.21	104.82	23.813	0			
14,600.00	7,520.00	14,302.11	7,190.00	53.68	53.51	-82.54	2,496.03	2,389.86	106.17	23.509	0			
14,700.00	7,520.00	14,402.11	7,190.00	54.36	54.19	-82.54	2,496.04	2,388.51	107.53	23.213	0			
14,800.00	7,520.00	14,502.11	7,190.00	55.04	54.87	-82.54	2,496.04	2,387.15	108.89	22.923	0			
14,900.00	7,520.00	14,602.11	7,190.00	55.72	55.55	-82.54	2,496.04	2,385.80	110.24	22.641	0			
15,000.00	7,520.00	14,702.11	7,190.00	56.40	56.23	-82.54	2,496.05	2,384.44	111.60	22.365	0			
15,100.00	7,520.00	14,802.11	7,190.00	57.09	56.91	-82.54	2,496.05	2,383.09	112.96	22.096	0			
15,200.00	7,520.00	14,902.11	7,190.00	57.77	57.60	-82.54	2,496.05	2,381.73	114.32	21.833	0			
15,300.00	7,520.00	15,002.10	7,190.00	58.45	58.28	-82.54	2,496.06	2,380.37	115.69	21.576	0			
15,400.00	7,520.00	15,102.10	7,190.00	59.14	58.96	-82.54	2,496.06	2,379.01	117.05	21.325	0			
15,500.00	7,520.00	15,202.10	7,190.00	59.82	59.65	-82.54	2,496.06	2,377.65	118.41	21.080	0			
15,600.00	7,520.00	15,302.10	7,190.00	60.51	60.33	-82.54	2,496.07	2,376.29	119.78	20.839	0			
15,700.00	7,520.00	15,402.10	7,190.00	61.19	61.02	-82.54	2,496.07	2,374.93	121.14	20.605	0			
15,800.00	7,520.00	15,502.10	7,190.00	61.88	61.70	-82.54	2,496.08	2,373.57	122.51	20.375	0			
15,900.00	7,520.00	15,602.10	7,190.00	62.56	62.39	-82.54	2,496.08	2,372.21	123.87	20.150	0			
16,000.00	7,520.00	15,702.10	7,190.00	63.25	63.08	-82.54	2,496.08	2,370.84	125.24	19.930	0			
16,100.00	7,520.00	15,802.09	7,190.00	63.93	63.76	-82.54	2,496.09	2,369.48	126.61	19.715	0			
16,200.00	7,520.00	15,902.09	7,190.00	64.62	64.45	-82.54	2,496.09	2,368.12	127.98	19.504	0			
16,300.00	7,520.00	16,002.09	7,190.00	65.31	65.14	-82.54	2,496.10	2,366.75	129.35	19.298	0			
16,400.00	7,520.00	16,102.09	7,190.00	66.00	65.82	-82.54	2,496.10	2,365.39	130.72	19.096	0			
16,500.00	7,520.00	16,202.09	7,190.00	66.68	66.51	-82.54	2,496.10	2,364.02	132.09	18.898	0			
16,600.00	7,520.00	16,302.09	7,190.00	67.37	67.20	-82.54	2,496.11	2,362.65	133.46	18.704	0			
16,700.00	7,520.00	16,402.09	7,190.00	68.06	67.89	-82.54	2,496.11	2,361.29	134.83	18.513	0			
16,800.00	7,520.00	16,502.09	7,190.00	68.75	68.58	-82.54	2,496.12	2,359.92	136.20	18.327	0			
16,900.00	7,520.00	16,602.08	7,190.00	69.44	69.27	-82.54	2,496.12	2,358.55	137.57	18.144	0			
17,000.00	7,520.00	16,702.08	7,190.00	70.13	69.96	-82.54	2,496.13	2,357.18	138.94	17.965	0			
17,100.00	7,520.00	16,802.08	7,190.00	70.82	70.65	-82.54	2,496.13	2,355.81	140.32	17.789	0			
17,200.00	7,520.00	16,902.08	7,190.00	71.51	71.34	-82.54	2,496.14	2,354.44	141.69	17.617	0			
17,300.00	7,520.00	17,002.08	7,190.00	72.20	72.03	-82.54	2,496.14	2,353.07	143.07	17.447	0			
17,400.00	7,520.00	17,102.08	7,190.00	72.89	72.72	-82.54	2,496.15	2,351.70	144.44	17.281	0			
17,500.00	7,520.00	17,202.08	7,190.00	73.58	73.41	-82.54	2,496.15	2,350.33	145.82	17.118	0			
17,600.00	7,520.00	17,302.08	7,190.00	74.27	74.10	-82.54	2,496.16	2,348.96	147.19	16.959	0			
17,607.95	7,520.00	17,310.03	7,190.00	74.33	74.15	-82.54	2,496.16	2,348.85	147.30	16.946	0			
17,645.24	7,520.00	17,324.42	7,190.00	74.58	74.25	-82.54	2,496.26	2,348.61	147.66	16.906	0		SF	



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision	
0.00	0.00	0.00	0.00	0.00	0.00	0.12	56.14				0		
100.00	100.00	98.00	98.00	0.15	0.14	0.12	56.11	55.82	0.29	193.284	0		
200.00	200.00	198.00	198.00	0.32	0.32	0.12	56.11	55.47	0.64	87.833	0		
300.00	300.00	298.00	298.00	0.50	0.49	0.12	56.11	55.12	0.99	56.797	0		
400.00	400.00	398.00	398.00	0.67	0.67	0.12	56.11	54.77	1.34	41.967	0		
500.00	500.00	498.00	498.00	0.84	0.84	0.12	56.11	54.42	1.69	33.278	0		
600.00	600.00	598.00	598.00	1.02	1.02	0.12	56.11	54.07	2.04	27.570	0		CC, ES
700.00	699.98	697.98	697.98	1.19	1.19	152.82	57.65	55.27	2.38	24.190	0		
800.00	799.84	797.84	797.84	1.37	1.36	154.98	62.36	59.63	2.73	22.841	0		
900.00	899.45	899.33	899.31	1.55	1.54	157.10	69.03	65.95	3.08	22.429	0		
1,000.00	998.70	1,001.09	1,000.92	1.73	1.72	158.16	76.22	72.79	3.43	22.253	0		
1,100.00	1,097.47	1,103.05	1,102.48	1.91	1.90	158.41	83.85	80.08	3.77	22.225	0		
1,149.61	1,146.24	1,153.70	1,152.81	2.00	1.99	158.29	87.80	83.85	3.95	22.250	0		
1,200.00	1,195.71	1,205.04	1,203.69	2.10	2.08	157.97	91.51	87.38	4.13	22.166	0		
1,300.00	1,293.88	1,304.79	1,302.49	2.29	2.26	157.17	98.37	93.88	4.49	21.918	0		
1,400.00	1,392.04	1,404.55	1,401.28	2.48	2.45	156.48	105.25	100.40	4.85	21.704	0		
1,500.00	1,490.21	1,504.30	1,500.08	2.68	2.63	155.87	112.14	106.93	5.21	21.516	0		
1,600.00	1,588.37	1,604.06	1,598.88	2.87	2.81	155.33	119.05	113.47	5.58	21.351	0		
1,700.00	1,686.54	1,703.81	1,697.67	3.07	3.00	154.86	125.96	120.02	5.94	21.205	0		
1,800.00	1,784.70	1,803.57	1,796.47	3.26	3.18	154.43	132.88	126.58	6.31	21.075	0		
1,900.00	1,882.87	1,903.32	1,895.27	3.46	3.37	154.04	139.81	133.14	6.67	20.958	0		
2,000.00	1,981.03	2,003.08	1,994.06	3.66	3.55	153.69	146.74	139.71	7.04	20.852	0		
2,100.00	2,079.20	2,102.83	2,092.86	3.85	3.74	153.38	153.68	146.28	7.40	20.757	0		
2,200.00	2,177.36	2,202.59	2,191.66	4.05	3.92	153.09	160.63	152.86	7.77	20.669	0		
2,300.00	2,275.53	2,302.35	2,290.45	4.25	4.11	152.82	167.57	159.44	8.14	20.590	0		
2,400.00	2,373.69	2,402.10	2,389.25	4.45	4.30	152.58	174.52	166.02	8.51	20.516	0		
2,500.00	2,471.86	2,501.86	2,488.05	4.65	4.48	152.35	181.48	172.60	8.87	20.449	0		
2,600.00	2,570.02	2,601.61	2,586.84	4.85	4.67	152.14	188.43	179.19	9.24	20.387	0		
2,700.00	2,668.19	2,701.37	2,685.64	5.05	4.86	151.95	195.39	185.78	9.61	20.329	0		
2,800.00	2,766.36	2,801.12	2,784.44	5.25	5.04	151.76	202.35	192.37	9.98	20.275	0		
2,900.00	2,864.52	2,900.88	2,883.23	5.44	5.23	151.60	209.31	198.96	10.35	20.225	0		
3,000.00	2,962.69	3,000.63	2,982.03	5.64	5.42	151.44	216.28	205.56	10.72	20.178	0		
3,100.00	3,060.85	3,100.39	3,080.83	5.84	5.61	151.29	223.24	212.16	11.09	20.134	0		
3,200.00	3,159.02	3,200.15	3,179.62	6.04	5.79	151.15	230.21	218.75	11.46	20.093	0		
3,300.00	3,257.18	3,299.90	3,278.42	6.24	5.98	151.02	237.18	225.35	11.83	20.054	0		
3,400.00	3,355.35	3,399.66	3,377.22	6.44	6.17	150.89	244.15	231.95	12.20	20.018	0		
3,500.00	3,453.51	3,499.41	3,476.02	6.64	6.36	150.78	251.12	238.55	12.57	19.983	0		
3,600.00	3,551.68	3,599.17	3,574.81	6.84	6.54	150.67	258.09	245.15	12.94	19.951	0		
3,700.00	3,649.84	3,698.92	3,673.61	7.04	6.73	150.56	265.06	251.75	13.31	19.920	0		
3,800.00	3,748.01	3,798.68	3,772.41	7.24	6.92	150.46	272.03	258.36	13.68	19.891	0		
3,900.00	3,846.17	3,898.43	3,871.20	7.44	7.11	150.37	279.01	264.96	14.05	19.863	0		
4,000.00	3,944.34	3,998.19	3,970.00	7.64	7.29	150.28	285.98	271.57	14.42	19.837	0		
4,100.00	4,042.50	4,097.95	4,068.80	7.85	7.48	150.19	292.96	278.17	14.79	19.812	0		
4,200.00	4,140.67	4,197.70	4,167.59	8.05	7.67	150.11	299.93	284.78	15.16	19.788	0		
4,300.00	4,238.84	4,297.46	4,266.39	8.25	7.86	150.03	306.91	291.38	15.53	19.765	0		
4,400.00	4,337.00	4,397.21	4,365.19	8.45	8.05	149.96	313.89	297.99	15.90	19.744	0		
4,500.00	4,435.17	4,496.97	4,463.98	8.65	8.23	149.89	320.86	304.59	16.27	19.723	0		
4,600.00	4,533.33	4,596.72	4,562.78	8.85	8.42	149.82	327.84	311.20	16.64	19.703	0		
4,700.00	4,631.50	4,696.48	4,661.58	9.05	8.61	149.76	334.82	317.81	17.01	19.684	0		
4,800.00	4,729.66	4,796.23	4,760.37	9.25	8.80	149.69	341.80	324.42	17.38	19.666	0		
4,900.00	4,827.83	4,895.99	4,859.17	9.45	8.99	149.63	348.78	331.03	17.75	19.648	0		
5,000.00	4,925.99	4,995.74	4,957.97	9.65	9.18	149.58	355.76	337.63	18.12	19.631	0		
5,100.00	5,024.16	5,095.50	5,056.76	9.85	9.36	149.52	362.74	344.24	18.49	19.615	0		
5,200.00	5,122.32	5,195.26	5,155.56	10.05	9.55	149.47	369.72	350.85	18.86	19.600	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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<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	5,220.49	5,295.01	5,254.36	10.25	9.74	149.41	376.70	357.46	19.23	19.585	0			
5,400.00	5,318.65	5,394.77	5,353.15	10.45	9.93	149.37	383.68	364.07	19.61	19.570	0			
5,500.00	5,416.82	5,494.52	5,451.95	10.65	10.12	149.32	390.66	370.68	19.98	19.556	0			
5,600.00	5,514.98	5,594.28	5,550.75	10.85	10.30	149.27	397.64	377.29	20.35	19.543	0			
5,700.00	5,613.15	5,694.03	5,649.55	11.06	10.49	149.23	404.62	383.90	20.72	19.530	0			
5,800.00	5,711.32	5,793.79	5,748.34	11.26	10.68	149.18	411.60	390.51	21.09	19.517	0			
5,900.00	5,809.48	5,893.54	5,847.14	11.46	10.87	149.14	418.59	397.13	21.46	19.505	0			
6,000.00	5,907.65	5,993.30	5,945.94	11.66	11.06	149.10	425.57	403.74	21.83	19.494	0			
6,100.00	6,005.81	6,093.06	6,044.73	11.86	11.25	149.06	432.55	410.35	22.20	19.482	0			
6,200.00	6,103.98	6,184.51	6,135.45	12.06	11.41	149.13	440.35	417.80	22.55	19.527	0			
6,300.00	6,202.14	6,274.38	6,224.91	12.26	11.57	149.46	450.30	427.41	22.89	19.675	0			
6,335.65	6,237.14	6,306.28	6,256.72	12.33	11.63	149.64	454.37	431.36	23.00	19.752	0			
6,400.00	6,300.44	6,363.75	6,314.09	12.46	11.73	150.06	461.79	438.57	23.22	19.884	0			
6,500.00	6,399.28	6,452.84	6,403.13	12.65	11.88	150.73	472.68	449.13	23.55	20.072	0			
6,600.00	6,498.59	6,546.31	6,496.59	12.82	12.03	151.42	482.57	458.71	23.86	20.222	0			
6,700.00	6,598.25	6,645.85	6,596.10	13.00	12.19	152.12	489.80	465.63	24.17	20.267	0			
6,800.00	6,698.13	6,742.88	6,692.04	13.16	12.33	154.01	494.32	469.89	24.42	20.240	0			
6,885.26	6,783.38	6,820.88	6,766.94	13.29	12.44	4.68	496.94	471.54	25.40	19.564	0			
6,900.00	6,798.12	6,833.80	6,779.06	13.32	12.45	5.19	497.41	471.95	25.46	19.540	0			
6,985.26	6,883.38	6,904.49	6,843.64	13.45	12.54	8.46	501.95	476.18	25.77	19.481	0			
7,000.00	6,898.12	6,916.06	6,853.89	13.47	12.55	-80.84	503.10	478.17	24.93	20.184	0			
7,050.00	6,948.01	6,954.76	6,887.43	13.55	12.60	-78.53	507.51	482.48	25.03	20.275	0			
7,100.00	6,997.50	6,992.68	6,919.10	13.62	12.64	-76.29	512.63	487.51	25.12	20.404	0			
7,150.00	7,046.29	7,029.92	6,948.93	13.68	12.69	-74.14	518.32	493.12	25.20	20.568	0			
7,200.00	7,094.07	7,066.55	6,976.97	13.75	12.73	-72.09	524.43	499.18	25.25	20.771	0			
7,250.00	7,140.56	7,100.00	7,001.34	13.81	12.77	-70.25	530.84	505.59	25.26	21.017	0			
7,300.00	7,185.46	7,138.27	7,027.71	13.87	12.82	-68.34	537.40	512.15	25.25	21.282	0			
7,350.00	7,228.49	7,173.48	7,050.45	13.92	12.86	-66.64	544.00	518.80	25.20	21.587	0			
7,400.00	7,269.40	7,208.31	7,071.46	13.98	12.91	-65.07	550.52	525.41	25.11	21.923	0			
7,450.00	7,307.93	7,242.82	7,090.75	14.04	12.95	-63.64	556.85	531.86	24.99	22.282	0			
7,500.00	7,343.84	7,277.05	7,108.32	14.10	13.00	-62.33	562.91	538.07	24.84	22.657	0			
7,550.00	7,376.91	7,311.03	7,124.17	14.16	13.05	-61.16	568.61	543.93	24.68	23.043	0			
7,600.00	7,406.94	7,350.00	7,140.35	14.22	13.11	-60.03	573.89	549.38	24.51	23.411	0			
7,650.00	7,433.74	7,378.37	7,150.74	14.28	13.16	-59.21	578.60	554.28	24.32	23.789	0			
7,700.00	7,457.15	7,411.79	7,161.47	14.35	13.21	-58.44	582.78	558.63	24.15	24.130	0			
7,750.00	7,477.02	7,450.00	7,171.68	14.43	13.28	-57.74	586.38	562.35	24.03	24.401	0			
7,800.00	7,493.23	7,478.26	7,177.80	14.51	13.34	-57.28	589.25	565.35	23.90	24.653	0			
7,850.00	7,505.69	7,511.36	7,183.40	14.60	13.41	-56.89	591.47	567.64	23.84	24.813	0			
7,900.00	7,514.30	7,550.00	7,187.79	14.69	13.50	-56.61	593.02	569.17	23.86	24.858	0			
7,950.00	7,519.02	7,577.42	7,189.48	14.80	13.57	-56.49	593.77	569.89	23.87	24.871	0			
7,985.26	7,520.00	7,603.10	7,190.00	14.88	13.63	-56.47	593.88	569.93	23.96	24.788	0			
7,991.79	7,520.00	7,605.98	7,190.00	14.89	13.64	-56.47	593.87	569.90	23.97	24.774	0			
8,000.00	7,520.00	7,614.19	7,190.00	14.91	13.66	-56.47	593.87	569.86	24.02	24.727	0			
8,100.00	7,520.00	7,714.19	7,190.00	15.16	13.95	-56.47	593.87	569.29	24.58	24.159	0			
8,200.00	7,520.00	7,814.19	7,190.00	15.45	14.27	-56.47	593.87	568.68	25.19	23.573	0			
8,280.35	7,520.00	7,894.54	7,190.00	15.70	14.54	-56.47	593.87	568.16	25.72	23.093	0			
8,300.00	7,520.00	7,914.19	7,190.00	15.76	14.61	-56.47	593.87	568.03	25.85	22.976	0			
8,400.00	7,520.00	8,014.19	7,190.00	16.11	14.98	-56.47	593.87	567.33	26.54	22.374	0			
8,500.00	7,520.00	8,114.19	7,190.00	16.48	15.37	-56.47	593.87	566.60	27.27	21.774	0			
8,600.00	7,520.00	8,214.19	7,190.00	16.87	15.79	-56.47	593.87	565.83	28.04	21.179	0			
8,700.00	7,520.00	8,314.19	7,190.00	17.28	16.22	-56.47	593.87	565.03	28.84	20.593	0			
8,800.00	7,520.00	8,414.19	7,190.00	17.71	16.67	-56.47	593.87	564.21	29.67	20.018	0			
8,900.00	7,520.00	8,514.19	7,190.00	18.16	17.14	-56.47	593.87	563.35	30.52	19.459	0			
9,000.00	7,520.00	8,614.19	7,190.00	18.62	17.62	-56.47	593.87	562.48	31.40	18.914	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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision	
9,100.00	7,520.00	8,714.19	7,190.00	19.10	18.12	-56.47	593.87	561.57	32.30	18.387	0		
9,200.00	7,520.00	8,814.19	7,190.00	19.59	18.63	-56.47	593.87	560.65	33.22	17.877	0		
9,300.00	7,520.00	8,914.19	7,190.00	20.10	19.16	-56.47	593.87	559.71	34.16	17.385	0		
9,400.00	7,520.00	9,014.19	7,190.00	20.62	19.69	-56.47	593.87	558.76	35.12	16.911	0		
9,500.00	7,520.00	9,114.19	7,190.00	21.14	20.24	-56.47	593.87	557.78	36.09	16.455	0		
9,600.00	7,520.00	9,214.19	7,190.00	21.68	20.79	-56.47	593.87	556.79	37.08	16.016	0		
9,675.40	7,520.00	9,289.59	7,190.00	22.09	21.21	-56.47	593.87	556.04	37.83	15.696	0		
9,700.00	7,520.00	9,314.19	7,190.00	22.23	21.35	-56.47	593.87	555.79	38.08	15.594	0		
9,800.00	7,520.00	9,414.19	7,190.00	22.78	21.92	-56.47	593.87	554.78	39.10	15.190	0		
9,900.00	7,520.00	9,514.19	7,190.00	23.35	22.50	-56.47	593.87	553.75	40.12	14.801	0		
10,000.00	7,520.00	9,614.19	7,190.00	23.92	23.09	-56.47	593.87	552.71	41.16	14.428	0		
10,100.00	7,520.00	9,714.19	7,190.00	24.49	23.68	-56.47	593.87	551.67	42.21	14.070	0		
10,200.00	7,520.00	9,814.19	7,190.00	25.08	24.28	-56.47	593.87	550.61	43.26	13.727	0		
10,300.00	7,520.00	9,914.19	7,190.00	25.67	24.88	-56.47	593.87	549.54	44.33	13.397	0		
10,400.00	7,520.00	10,014.19	7,190.00	26.26	25.49	-56.47	593.87	548.47	45.40	13.080	0		
10,500.00	7,520.00	10,114.19	7,190.00	26.86	26.10	-56.47	593.87	547.39	46.48	12.776	0		
10,600.00	7,520.00	10,214.19	7,190.00	27.47	26.72	-56.47	593.87	546.30	47.57	12.484	0		
10,700.00	7,520.00	10,314.19	7,190.00	28.08	27.34	-56.47	593.87	545.21	48.66	12.204	0		
10,800.00	7,520.00	10,414.19	7,190.00	28.69	27.97	-56.47	593.87	544.11	49.76	11.934	0		
10,900.00	7,520.00	10,514.19	7,190.00	29.31	28.60	-56.47	593.87	543.00	50.87	11.675	0		
11,000.00	7,520.00	10,614.19	7,190.00	29.93	29.23	-56.47	593.87	541.89	51.98	11.425	0		
11,100.00	7,520.00	10,714.19	7,190.00	30.56	29.86	-56.47	593.87	540.78	53.10	11.185	0		
11,200.00	7,520.00	10,814.19	7,190.00	31.19	30.50	-56.47	593.87	539.66	54.22	10.954	0		
11,300.00	7,520.00	10,914.19	7,190.00	31.82	31.14	-56.47	593.87	538.53	55.34	10.731	0		
11,400.00	7,520.00	11,014.19	7,190.00	32.45	31.79	-56.47	593.87	537.40	56.47	10.517	0		
11,500.00	7,520.00	11,114.19	7,190.00	33.09	32.43	-56.47	593.87	536.27	57.60	10.310	0		
11,600.00	7,520.00	11,214.19	7,190.00	33.73	33.08	-56.47	593.87	535.13	58.74	10.110	0		
11,700.00	7,520.00	11,314.19	7,190.00	34.38	33.73	-56.47	593.87	533.99	59.88	9.918	0		
11,800.00	7,520.00	11,414.19	7,190.00	35.02	34.39	-56.47	593.87	532.85	61.02	9.732	0		
11,900.00	7,520.00	11,514.19	7,190.00	35.67	35.04	-56.47	593.87	531.71	62.17	9.553	0		
12,000.00	7,520.00	11,614.19	7,190.00	36.32	35.70	-56.47	593.87	530.56	63.32	9.379	0		
12,100.00	7,520.00	11,714.19	7,190.00	36.97	36.36	-56.47	593.87	529.40	64.47	9.212	0		
12,200.00	7,520.00	11,814.19	7,190.00	37.62	37.02	-56.47	593.87	528.25	65.62	9.050	0		
12,300.00	7,520.00	11,914.19	7,190.00	38.28	37.68	-56.47	593.87	527.09	66.78	8.893	0		
12,400.00	7,520.00	12,014.19	7,190.00	38.93	38.34	-56.47	593.87	525.93	67.94	8.741	0		
12,500.00	7,520.00	12,114.19	7,190.00	39.59	39.01	-56.47	593.87	524.77	69.10	8.594	0		
12,565.78	7,520.00	12,179.97	7,190.00	40.03	39.45	-56.47	593.87	524.01	69.87	8.500	0		
12,600.00	7,520.00	12,214.19	7,190.00	40.25	39.68	-56.47	593.87	523.61	70.26	8.452	0		
12,700.00	7,520.00	12,314.19	7,190.00	40.91	40.34	-56.47	593.87	522.44	71.43	8.314	0		
12,800.00	7,520.00	12,414.19	7,190.00	41.58	41.01	-56.47	593.87	521.28	72.60	8.181	0		
12,900.00	7,520.00	12,514.19	7,190.00	42.24	41.68	-56.47	593.87	520.11	73.77	8.051	0		
13,000.00	7,520.00	12,614.19	7,190.00	42.90	42.35	-56.47	593.87	518.94	74.94	7.925	0		
13,100.00	7,520.00	12,714.19	7,190.00	43.57	43.02	-56.47	593.87	517.76	76.11	7.803	0		
13,200.00	7,520.00	12,814.19	7,190.00	44.24	43.70	-56.47	593.87	516.59	77.28	7.684	0		
13,300.00	7,520.00	12,914.19	7,190.00	44.91	44.37	-56.47	593.87	515.41	78.46	7.569	0		
13,400.00	7,520.00	13,014.19	7,190.00	45.58	45.05	-56.47	593.87	514.24	79.64	7.457	0		
13,500.00	7,520.00	13,114.19	7,190.00	46.25	45.72	-56.47	593.87	513.06	80.81	7.349	0		
13,600.00	7,520.00	13,214.19	7,190.00	46.92	46.40	-56.47	593.87	511.88	81.99	7.243	0		
13,700.00	7,520.00	13,314.19	7,190.00	47.59	47.07	-56.47	593.87	510.70	83.17	7.140	0		
13,800.00	7,520.00	13,414.19	7,190.00	48.27	47.75	-56.47	593.87	509.52	84.36	7.040	0		
13,900.00	7,520.00	13,514.19	7,190.00	48.94	48.43	-56.47	593.87	508.33	85.54	6.943	0		
13,965.78	7,520.00	13,579.97	7,190.00	49.38	48.88	-56.47	593.87	507.55	86.32	6.880	0		
14,000.00	7,520.00	13,614.19	7,190.00	49.62	49.11	-56.47	593.87	507.15	86.73	6.848	0		
14,100.00	7,520.00	13,714.19	7,190.00	50.29	49.79	-56.47	593.87	505.96	87.91	6.755	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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<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		
14,200.00	7,520.00	13,814.19	7,190.00	50.97	50.47	-56.47	593.87	504.78	89.10	6.665	0			
14,300.00	7,520.00	13,914.19	7,190.00	51.65	51.15	-56.47	593.87	503.59	90.28	6.578	0			
14,400.00	7,520.00	14,014.19	7,190.00	52.32	51.84	-56.47	593.87	502.40	91.47	6.492	0			
14,500.00	7,520.00	14,114.19	7,190.00	53.00	52.52	-56.47	593.87	501.21	92.66	6.409	0			
14,600.00	7,520.00	14,214.19	7,190.00	53.68	53.20	-56.47	593.87	500.02	93.85	6.328	0			
14,700.00	7,520.00	14,314.19	7,190.00	54.36	53.88	-56.47	593.87	498.83	95.04	6.248	0			
14,790.28	7,520.00	14,404.47	7,190.00	54.98	54.50	-56.47	593.87	497.75	96.12	6.178	0			
14,800.00	7,520.00	14,414.19	7,190.00	55.04	54.57	-56.47	593.87	497.64	96.24	6.171	0			
14,900.00	7,520.00	14,514.19	7,190.00	55.72	55.25	-56.47	593.87	496.44	97.43	6.095	0			
15,000.00	7,520.00	14,614.19	7,190.00	56.40	55.94	-56.47	593.87	495.25	98.62	6.022	0			
15,100.00	7,520.00	14,714.19	7,190.00	57.09	56.62	-56.47	593.87	494.06	99.82	5.950	0			
15,200.00	7,520.00	14,814.19	7,190.00	57.77	57.31	-56.47	593.87	492.86	101.01	5.879	0			
15,300.00	7,520.00	14,914.19	7,190.00	58.45	58.00	-56.47	593.87	491.67	102.21	5.810	0			
15,400.00	7,520.00	15,014.19	7,190.00	59.14	58.68	-56.47	593.87	490.47	103.40	5.743	0			
15,474.48	7,520.00	15,088.67	7,190.00	59.65	59.19	-56.47	593.87	489.58	104.30	5.694	0			
15,500.00	7,520.00	15,114.19	7,190.00	59.82	59.37	-56.47	593.87	489.27	104.60	5.678	0			
15,600.00	7,520.00	15,214.19	7,190.00	60.51	60.06	-56.47	593.87	488.08	105.80	5.613	0			
15,700.00	7,520.00	15,314.19	7,190.00	61.19	60.75	-56.47	593.87	486.88	107.00	5.550	0			
15,800.00	7,520.00	15,414.19	7,190.00	61.88	61.43	-56.47	593.87	485.68	108.19	5.489	0			
15,900.00	7,520.00	15,514.19	7,190.00	62.56	62.12	-56.47	593.87	484.48	109.39	5.429	0			
16,000.00	7,520.00	15,614.19	7,190.00	63.25	62.81	-56.47	593.87	483.28	110.59	5.370	0			
16,100.00	7,520.00	15,714.19	7,190.00	63.93	63.50	-56.47	593.87	482.08	111.79	5.312	0			
16,175.71	7,520.00	15,789.90	7,190.00	64.45	64.02	-56.47	593.87	481.17	112.70	5.269	0			
16,200.00	7,520.00	15,814.19	7,190.00	64.62	64.19	-56.47	593.87	480.88	112.99	5.256	0			
16,300.00	7,520.00	15,914.19	7,190.00	65.31	64.88	-56.47	593.87	479.68	114.20	5.200	0			
16,400.00	7,520.00	16,014.19	7,190.00	66.00	65.57	-56.47	593.87	478.48	115.40	5.146	0			
16,500.00	7,520.00	16,114.19	7,190.00	66.68	66.26	-56.47	593.87	477.27	116.60	5.093	0			
16,600.00	7,520.00	16,214.19	7,190.00	67.37	66.95	-56.47	593.87	476.07	117.80	5.041	0			
16,700.00	7,520.00	16,314.19	7,190.00	68.06	67.64	-56.47	593.87	474.87	119.01	4.990	0			
16,800.00	7,520.00	16,414.19	7,190.00	68.75	68.33	-56.47	593.87	473.66	120.21	4.940	0			
16,900.00	7,520.00	16,514.19	7,190.00	69.44	69.03	-56.47	593.87	472.46	121.41	4.891	0			
17,000.00	7,520.00	16,614.19	7,190.00	70.13	69.72	-56.47	593.87	471.26	122.62	4.843	0			
17,100.00	7,520.00	16,714.19	7,190.00	70.82	70.41	-56.47	593.87	470.05	123.82	4.796	0			
17,200.00	7,520.00	16,814.19	7,190.00	71.51	71.10	-56.47	593.87	468.85	125.03	4.750	0			
17,300.00	7,520.00	16,914.19	7,190.00	72.20	71.79	-56.47	593.87	467.64	126.23	4.705	0			
17,400.00	7,520.00	17,014.19	7,190.00	72.89	72.49	-56.47	593.87	466.44	127.44	4.660	0			
17,500.00	7,520.00	17,114.19	7,190.00	73.58	73.18	-56.47	593.87	465.23	128.64	4.616	0			
17,553.47	7,520.00	17,167.66	7,190.00	73.95	73.55	-56.47	593.87	464.58	129.29	4.593	0			
17,600.00	7,520.00	17,214.18	7,190.00	74.27	73.87	-56.47	593.87	464.02	129.85	4.574	0			
17,622.61	7,520.00	17,236.79	7,190.00	74.43	74.03	-56.47	593.87	463.75	130.12	4.564	0			
17,645.24	7,520.00	17,254.82	7,190.00	74.58	74.15	-56.47	593.89	463.53	130.37	4.556	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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Sec.08-T07N-R66W - Thornton 11 - Original Hole - Rev 0		Offset Site Error: 0.00 usft	
Survey Program: 0-Pathfinder													Offset Well Error: 0.00 usft			
Reference		Offset		Semi Major Axis		Distance							Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision				
0.00	0.00	0.00	0.00	0.00	0.00	0.12	28.07									
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		CC, ES			
700.00	699.98	698.98	698.98	1.19	1.19	153.59	29.61	27.22	2.39	12.413	0					
800.00	799.84	799.87	799.85	1.37	1.37	156.14	32.84	30.10	2.73	12.012	0					
900.00	899.45	900.90	900.73	1.55	1.55	157.88	36.18	33.10	3.08	11.743	0					
1,000.00	998.70	1,002.05	1,001.49	1.73	1.72	158.99	39.61	36.18	3.43	11.552	0					
1,100.00	1,097.47	1,103.32	1,101.99	1.91	1.91	159.61	43.09	39.31	3.78	11.410	0					
1,149.61	1,146.24	1,153.60	1,151.71	2.00	2.00	159.77	44.84	40.89	3.95	11.352	0					
1,200.00	1,195.71	1,204.72	1,202.11	2.10	2.09	159.68	46.20	42.07	4.13	11.182	0					
1,300.00	1,293.88	1,305.06	1,300.77	2.29	2.28	158.69	47.44	42.94	4.49	10.554	0					
1,400.00	1,392.04	1,405.05	1,399.06	2.48	2.47	157.71	48.60	43.74	4.86	10.003	0					
1,500.00	1,490.21	1,505.04	1,497.35	2.68	2.66	156.78	49.77	44.55	5.22	9.527	0					
1,600.00	1,588.37	1,605.03	1,595.64	2.87	2.85	155.89	50.96	45.37	5.59	9.114	0					
1,700.00	1,686.54	1,705.02	1,693.94	3.07	3.04	155.04	52.16	46.20	5.96	8.752	0					
1,800.00	1,784.70	1,805.01	1,792.23	3.26	3.24	154.23	53.37	47.04	6.33	8.432	0					
1,900.00	1,882.87	1,905.00	1,890.52	3.46	3.43	153.45	54.59	47.89	6.70	8.147	0					
2,000.00	1,981.03	2,004.99	1,988.81	3.66	3.63	152.71	55.82	48.75	7.07	7.893	0					
2,100.00	2,079.20	2,104.98	2,087.11	3.85	3.82	152.00	57.06	49.61	7.44	7.664	0					
2,200.00	2,177.36	2,204.97	2,185.40	4.05	4.02	151.32	58.30	50.48	7.82	7.458	0					
2,300.00	2,275.53	2,304.96	2,283.69	4.25	4.21	150.67	59.56	51.36	8.19	7.270	0					
2,400.00	2,373.69	2,404.95	2,381.99	4.45	4.41	150.05	60.82	52.25	8.57	7.099	0					
2,500.00	2,471.86	2,504.94	2,480.28	4.65	4.61	149.45	62.09	53.14	8.94	6.943	0					
2,600.00	2,570.02	2,604.93	2,578.57	4.85	4.80	148.88	63.36	54.04	9.32	6.799	0					
2,700.00	2,668.19	2,704.92	2,676.86	5.05	5.00	148.33	64.64	54.95	9.70	6.667	0					
2,800.00	2,766.36	2,804.91	2,775.16	5.25	5.20	147.80	65.93	55.86	10.07	6.545	0					
2,900.00	2,864.52	2,904.90	2,873.45	5.44	5.39	147.29	67.22	56.77	10.45	6.431	0					
3,000.00	2,962.69	3,004.89	2,971.74	5.64	5.59	146.80	68.52	57.69	10.83	6.326	0					
3,100.00	3,060.85	3,104.88	3,070.04	5.84	5.79	146.32	69.82	58.61	11.21	6.228	0					
3,200.00	3,159.02	3,204.87	3,168.33	6.04	5.99	145.87	71.13	59.54	11.59	6.137	0					
3,300.00	3,257.18	3,304.85	3,266.62	6.24	6.18	145.43	72.44	60.47	11.97	6.051	0					
3,400.00	3,355.35	3,404.84	3,364.91	6.44	6.38	145.01	73.76	61.40	12.35	5.971	0					
3,500.00	3,453.51	3,504.83	3,463.21	6.64	6.58	144.60	75.08	62.34	12.73	5.896	0					
3,600.00	3,551.68	3,604.82	3,561.50	6.84	6.78	144.21	76.40	63.28	13.11	5.825	0					
3,700.00	3,649.84	3,704.81	3,659.79	7.04	6.98	143.83	77.73	64.23	13.50	5.759	0					
3,800.00	3,748.01	3,804.80	3,758.09	7.24	7.17	143.46	79.05	65.18	13.88	5.696	0					
3,900.00	3,846.17	3,904.79	3,856.38	7.44	7.37	143.10	80.39	66.13	14.26	5.637	0					
4,000.00	3,944.34	4,004.78	3,954.67	7.64	7.57	142.76	81.72	67.08	14.64	5.580	0					
4,100.00	4,042.50	4,104.77	4,052.96	7.85	7.77	142.43	83.06	68.03	15.03	5.527	0					
4,200.00	4,140.67	4,204.76	4,151.26	8.05	7.97	142.11	84.40	68.99	15.41	5.477	0					
4,300.00	4,238.84	4,304.75	4,249.55	8.25	8.17	141.79	85.75	69.95	15.80	5.429	0					
4,400.00	4,337.00	4,404.74	4,347.84	8.45	8.37	141.49	87.09	70.91	16.18	5.383	0					
4,500.00	4,435.17	4,504.73	4,446.13	8.65	8.56	141.20	88.44	71.88	16.56	5.339	0					
4,600.00	4,533.33	4,604.72	4,544.43	8.85	8.76	140.91	89.79	72.85	16.95	5.298	0					
4,700.00	4,631.50	4,704.71	4,642.72	9.05	8.96	140.64	91.15	73.81	17.33	5.258	0					
4,800.00	4,729.66	4,804.70	4,741.01	9.25	9.16	140.37	92.50	74.78	17.72	5.221	0					
4,900.00	4,827.83	4,904.69	4,839.31	9.45	9.36	140.11	93.86	75.76	18.10	5.184	0					
5,000.00	4,925.99	5,004.68	4,937.60	9.65	9.56	139.86	95.22	76.73	18.49	5.150	0					
5,100.00	5,024.16	5,104.67	5,035.89	9.85	9.76	139.61	96.58	77.70	18.88	5.117	0					
5,200.00	5,122.32	5,204.66	5,134.18	10.05	9.95	139.37	97.94	78.68	19.26	5.085	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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Sec.08-T07N-R66W - Thornton 11 - Original Hole - Rev 0		Offset Site Error: 0.00 usft	
Survey Program: 0-Pathfinder														Offset Well Error: 0.00 usft		
Reference		Offset		Semi Major Axis		Distance							Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision				
5,300.00	5,220.49	5,304.65	5,232.48	10.25	10.15	139.14	99.31	79.66	19.65	5.055	0					
5,400.00	5,318.65	5,404.64	5,330.77	10.45	10.35	138.91	100.67	80.64	20.03	5.025	0					
5,500.00	5,416.82	5,504.63	5,429.06	10.65	10.55	138.69	102.04	81.62	20.42	4.997	0					
5,600.00	5,514.98	5,604.62	5,527.36	10.85	10.75	138.48	103.41	82.60	20.81	4.970	0					
5,700.00	5,613.15	5,704.61	5,625.65	11.06	10.95	138.27	104.78	83.59	21.19	4.944	0					
5,800.00	5,711.32	5,804.60	5,723.94	11.26	11.15	138.07	106.15	84.57	21.58	4.919	0					
5,900.00	5,809.48	5,904.59	5,822.23	11.46	11.35	137.87	107.52	85.56	21.97	4.895	0					
6,000.00	5,907.65	6,004.58	5,920.53	11.66	11.55	137.68	108.90	86.54	22.35	4.872	0					
6,100.00	6,005.81	6,102.14	6,016.67	11.86	11.73	138.02	111.29	88.57	22.71	4.899	0					
6,200.00	6,103.98	6,200.00	6,113.63	12.06	11.91	139.52	116.09	93.05	23.03	5.040	0					
6,300.00	6,202.14	6,295.89	6,209.01	12.26	12.08	141.90	123.46	100.14	23.31	5.295	0					
6,335.65	6,237.14	6,330.18	6,243.20	12.33	12.14	142.92	126.75	103.34	23.41	5.415	0					
6,400.00	6,300.44	6,391.93	6,304.82	12.46	12.25	144.80	133.04	109.46	23.58	5.643	0					
6,500.00	6,399.28	6,487.59	6,400.42	12.65	12.40	147.43	142.87	119.03	23.84	5.993	0					
6,600.00	6,498.59	6,584.77	6,497.59	12.82	12.56	149.72	152.43	128.34	24.09	6.327	0					
6,700.00	6,598.25	6,684.47	6,597.26	13.00	12.71	151.82	159.57	135.23	24.34	6.556	0					
6,800.00	6,698.13	6,781.80	6,693.47	13.16	12.85	157.54	164.58	140.10	24.47	6.725	0					
6,885.26	6,783.38	6,859.99	6,768.50	13.29	12.95	13.20	169.90	143.79	26.11	6.507	0					
6,900.00	6,798.12	6,872.93	6,780.63	13.32	12.96	14.67	171.21	145.03	26.17	6.541	0					
6,985.26	6,883.38	6,943.72	6,845.22	13.45	13.05	23.61	183.71	157.19	26.52	6.928	0					
7,000.00	6,898.12	6,955.30	6,855.46	13.47	13.06	-64.61	186.78	161.97	24.81	7.528	0					
7,050.00	6,948.01	6,994.03	6,888.97	13.55	13.11	-59.02	198.24	173.37	24.87	7.971	0					
7,100.00	6,997.50	7,031.97	6,920.60	13.62	13.15	-54.09	210.93	186.04	24.89	8.474	0					
7,150.00	7,046.29	7,069.22	6,950.38	13.68	13.19	-49.80	224.36	199.52	24.85	9.030	0					
7,200.00	7,094.07	7,105.87	6,978.35	13.75	13.23	-46.09	238.14	213.42	24.72	9.635	0					
7,250.00	7,140.56	7,141.97	7,004.54	13.81	13.27	-42.88	251.95	227.45	24.50	10.284	0					
7,300.00	7,185.46	7,177.59	7,028.95	13.87	13.31	-40.12	265.54	241.34	24.19	10.976	0					
7,350.00	7,228.49	7,212.80	7,051.62	13.92	13.36	-37.75	278.71	254.91	23.80	11.711	0					
7,400.00	7,269.40	7,250.00	7,073.91	13.98	13.40	-35.63	291.32	267.98	23.34	12.484	0					
7,450.00	7,307.93	7,282.13	7,091.74	14.04	13.45	-33.97	303.20	280.40	22.80	13.297	0					
7,500.00	7,343.84	7,316.34	7,109.21	14.10	13.49	-32.47	314.29	292.06	22.23	14.140	0					
7,550.00	7,376.91	7,350.00	7,124.84	14.16	13.54	-31.20	324.48	302.86	21.62	15.006	0					
7,600.00	7,406.94	7,384.05	7,139.02	14.22	13.59	-30.11	333.72	312.70	21.02	15.875	0					
7,650.00	7,433.74	7,417.61	7,151.36	14.28	13.64	-29.20	341.93	321.50	20.44	16.731	0					
7,700.00	7,457.15	7,450.00	7,161.69	14.35	13.70	-28.46	349.08	329.20	19.88	17.557	0					
7,750.00	7,477.02	7,484.27	7,170.91	14.43	13.76	-27.84	355.12	335.71	19.41	18.297	0					
7,800.00	7,493.23	7,517.43	7,178.13	14.51	13.82	-27.36	360.03	341.01	19.02	18.928	0					
7,850.00	7,505.69	7,550.00	7,183.57	14.60	13.88	-27.01	363.78	345.04	18.74	19.411	0					
7,900.00	7,514.30	7,583.52	7,187.45	14.69	13.95	-26.77	366.35	347.76	18.60	19.701	0					
7,950.00	7,519.02	7,616.50	7,189.55	14.80	14.03	-26.64	367.73	349.15	18.58	19.787	0					
7,985.26	7,520.00	7,640.55	7,190.00	14.88	14.08	-26.61	367.99	349.33	18.67	19.713	0					
7,990.62	7,520.00	7,644.69	7,190.00	14.89	14.09	-26.61	367.99	349.30	18.69	19.690	0					
8,000.00	7,520.00	7,654.08	7,190.00	14.91	14.12	-26.61	367.99	349.24	18.75	19.626	0					
8,100.00	7,520.00	7,754.08	7,190.00	15.16	14.38	-26.61	367.99	348.63	19.36	19.008	0					
8,200.00	7,520.00	7,854.08	7,190.00	15.45	14.68	-26.61	367.99	348.01	19.99	18.412	0					
8,300.00	7,520.00	7,954.08	7,190.00	15.76	15.01	-26.61	367.99	347.36	20.63	17.839	0					
8,400.00	7,520.00	8,054.08	7,190.00	16.11	15.36	-26.61	367.99	346.71	21.28	17.289	0					
8,500.00	7,520.00	8,154.08	7,190.00	16.48	15.75	-26.61	367.99	346.04	21.95	16.763	0					
8,600.00	7,520.00	8,254.08	7,190.00	16.87	16.15	-26.61	367.99	345.36	22.63	16.258	0					
8,700.00	7,520.00	8,354.08	7,190.00	17.28	16.58	-26.61	367.99	344.67	23.33	15.776	0					
8,800.00	7,520.00	8,454.08	7,190.00	17.71	17.02	-26.61	367.99	343.97	24.03	15.316	0					
8,900.00	7,520.00	8,554.08	7,190.00	18.16	17.48	-26.61	367.99	343.25	24.74	14.876	0					
9,000.00	7,520.00	8,654.08	7,190.00	18.62	17.95	-26.61	367.99	342.54	25.46	14.456	0					
9,100.00	7,520.00	8,754.08	7,190.00	19.10	18.44	-26.61	367.99	341.81	26.18	14.055	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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error: 0.00 usft	
Survey Program: 0-Pathfinder												Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor		
9,200.00	7,520.00	8,854.08	7,190.00	19.59	18.95	-26.61	367.99	341.08	26.91	13.673	0		
9,300.00	7,520.00	8,954.08	7,190.00	20.10	19.46	-26.61	367.99	340.34	27.65	13.307	0		
9,400.00	7,520.00	9,054.08	7,190.00	20.62	19.99	-26.61	367.99	339.59	28.40	12.958	0		
9,500.00	7,520.00	9,154.08	7,190.00	21.14	20.53	-26.61	367.99	338.84	29.15	12.624	0		
9,600.00	7,520.00	9,254.08	7,190.00	21.68	21.08	-26.61	367.99	338.09	29.91	12.305	0		
9,700.00	7,520.00	9,354.08	7,190.00	22.23	21.63	-26.62	367.99	337.33	30.67	12.000	0		
9,800.00	7,520.00	9,454.08	7,190.00	22.78	22.20	-26.62	367.99	336.56	31.43	11.708	0		
9,900.00	7,520.00	9,554.08	7,190.00	23.35	22.77	-26.62	367.99	335.79	32.20	11.428	0		
10,000.00	7,520.00	9,654.08	7,190.00	23.92	23.35	-26.62	367.99	335.02	32.97	11.161	0		
10,100.00	7,520.00	9,754.08	7,190.00	24.49	23.94	-26.62	368.00	334.25	33.75	10.904	0		
10,200.00	7,520.00	9,854.08	7,190.00	25.08	24.53	-26.62	368.00	333.47	34.53	10.658	0		
10,300.00	7,520.00	9,954.08	7,190.00	25.67	25.13	-26.62	368.00	332.69	35.31	10.422	0		
10,400.00	7,520.00	10,054.08	7,190.00	26.26	25.73	-26.62	368.00	331.90	36.10	10.195	0		
10,500.00	7,520.00	10,154.08	7,190.00	26.86	26.34	-26.62	368.00	331.11	36.88	9.977	0		
10,600.00	7,520.00	10,254.08	7,190.00	27.47	26.95	-26.62	368.00	330.32	37.67	9.768	0		
10,700.00	7,520.00	10,354.08	7,190.00	28.08	27.57	-26.62	368.00	329.53	38.47	9.567	0		
10,800.00	7,520.00	10,454.08	7,190.00	28.69	28.19	-26.62	368.00	328.74	39.26	9.373	0		
10,900.00	7,520.00	10,554.08	7,190.00	29.31	28.81	-26.62	368.00	327.94	40.06	9.187	0		
11,000.00	7,520.00	10,654.08	7,190.00	29.93	29.44	-26.62	368.00	327.14	40.86	9.007	0		
11,100.00	7,520.00	10,754.08	7,190.00	30.56	30.08	-26.62	368.00	326.34	41.66	8.834	0		
11,200.00	7,520.00	10,854.08	7,190.00	31.19	30.71	-26.62	368.00	325.54	42.46	8.667	0		
11,300.00	7,520.00	10,954.08	7,190.00	31.82	31.35	-26.62	368.00	324.74	43.26	8.506	0		
11,400.00	7,520.00	11,054.08	7,190.00	32.45	31.99	-26.62	368.00	323.93	44.07	8.351	0		
11,500.00	7,520.00	11,154.08	7,190.00	33.09	32.63	-26.62	368.00	323.13	44.87	8.201	0		
11,600.00	7,520.00	11,254.08	7,190.00	33.73	33.28	-26.62	368.00	322.32	45.68	8.056	0		
11,700.00	7,520.00	11,354.08	7,190.00	34.38	33.93	-26.62	368.00	321.51	46.49	7.915	0		
11,800.00	7,520.00	11,454.08	7,190.00	35.02	34.58	-26.62	368.00	320.70	47.30	7.780	0		
11,900.00	7,520.00	11,554.08	7,190.00	35.67	35.23	-26.62	368.00	319.89	48.12	7.648	0		
12,000.00	7,520.00	11,654.08	7,190.00	36.32	35.88	-26.62	368.00	319.08	48.93	7.521	0		
12,100.00	7,520.00	11,754.08	7,190.00	36.97	36.54	-26.62	368.01	318.26	49.74	7.398	0		
12,200.00	7,520.00	11,854.08	7,190.00	37.62	37.20	-26.62	368.01	317.45	50.56	7.279	0		
12,300.00	7,520.00	11,954.08	7,190.00	38.28	37.86	-26.62	368.01	316.63	51.37	7.163	0		
12,400.00	7,520.00	12,054.08	7,190.00	38.93	38.52	-26.62	368.01	315.82	52.19	7.051	0		
12,500.00	7,520.00	12,154.07	7,190.00	39.59	39.18	-26.62	368.01	315.00	53.01	6.942	0		
12,600.00	7,520.00	12,254.07	7,190.00	40.25	39.84	-26.62	368.01	314.18	53.83	6.837	0		
12,700.00	7,520.00	12,354.07	7,190.00	40.91	40.51	-26.62	368.01	313.36	54.65	6.734	0		
12,800.00	7,520.00	12,454.07	7,190.00	41.58	41.17	-26.62	368.01	312.54	55.47	6.635	0		
12,900.00	7,520.00	12,554.07	7,190.00	42.24	41.84	-26.62	368.01	311.72	56.29	6.538	0		
13,000.00	7,520.00	12,654.07	7,190.00	42.90	42.51	-26.62	368.01	310.90	57.11	6.444	0		
13,100.00	7,520.00	12,754.07	7,190.00	43.57	43.18	-26.62	368.01	310.08	57.93	6.352	0		
13,200.00	7,520.00	12,854.07	7,190.00	44.24	43.85	-26.62	368.01	309.26	58.76	6.263	0		
13,300.00	7,520.00	12,954.07	7,190.00	44.91	44.52	-26.62	368.01	308.43	59.58	6.177	0		
13,400.00	7,520.00	13,054.07	7,190.00	45.58	45.20	-26.62	368.02	307.61	60.41	6.092	0		
13,500.00	7,520.00	13,154.07	7,190.00	46.25	45.87	-26.62	368.02	306.78	61.23	6.010	0		
13,600.00	7,520.00	13,254.07	7,190.00	46.92	46.54	-26.62	368.02	305.96	62.06	5.930	0		
13,700.00	7,520.00	13,354.07	7,190.00	47.59	47.22	-26.62	368.02	305.13	62.88	5.852	0		
13,800.00	7,520.00	13,454.07	7,190.00	48.27	47.90	-26.62	368.02	304.31	63.71	5.776	0		
13,900.00	7,520.00	13,554.07	7,190.00	48.94	48.57	-26.62	368.02	303.48	64.54	5.702	0		
14,000.00	7,520.00	13,654.07	7,190.00	49.62	49.25	-26.62	368.02	302.66	65.36	5.630	0		
14,100.00	7,520.00	13,754.07	7,190.00	50.29	49.93	-26.62	368.02	301.83	66.19	5.560	0		
14,200.00	7,520.00	13,854.07	7,190.00	50.97	50.61	-26.62	368.02	301.00	67.02	5.491	0		
14,300.00	7,520.00	13,954.07	7,190.00	51.65	51.29	-26.62	368.02	300.17	67.85	5.424	0		
14,400.00	7,520.00	14,054.07	7,190.00	52.32	51.97	-26.62	368.03	299.35	68.68	5.359	0		
14,500.00	7,520.00	14,154.07	7,190.00	53.00	52.65	-26.63	368.03	298.52	69.51	5.295	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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Sec.08-T07N-R66W - Thornton 11 - Original Hole - Rev 0		Offset Site Error:		0.00 usft
Survey Program: 0-Pathfinder													Offset Well Error:		0.00 usft		
Reference		Offset		Semi Major Axis			Distance						Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision					
14,600.00	7,520.00	14,254.07	7,190.00	53.68	53.33	-26.63	368.03	297.69	70.34	5.232	0						
14,700.00	7,520.00	14,354.07	7,190.00	54.36	54.01	-26.63	368.03	296.86	71.17	5.171	0						
14,800.00	7,520.00	14,454.07	7,190.00	55.04	54.70	-26.63	368.03	296.03	72.00	5.111	0						
14,900.00	7,520.00	14,554.07	7,190.00	55.72	55.38	-26.63	368.03	295.20	72.83	5.053	0						
15,000.00	7,520.00	14,654.07	7,190.00	56.40	56.06	-26.63	368.03	294.37	73.66	4.996	0						
15,100.00	7,520.00	14,754.07	7,190.00	57.09	56.75	-26.63	368.03	293.54	74.49	4.940	0						
15,200.00	7,520.00	14,854.07	7,190.00	57.77	57.43	-26.63	368.03	292.71	75.33	4.886	0						
15,300.00	7,520.00	14,954.07	7,190.00	58.45	58.12	-26.63	368.04	291.88	76.16	4.832	0						
15,400.00	7,520.00	15,054.07	7,190.00	59.14	58.80	-26.63	368.04	291.04	76.99	4.780	0						
15,500.00	7,520.00	15,154.07	7,190.00	59.82	59.49	-26.63	368.04	290.21	77.83	4.729	0						
15,600.00	7,520.00	15,254.07	7,190.00	60.51	60.18	-26.63	368.04	289.38	78.66	4.679	0						
15,700.00	7,520.00	15,354.07	7,190.00	61.19	60.86	-26.63	368.04	288.55	79.49	4.630	0						
15,800.00	7,520.00	15,454.07	7,190.00	61.88	61.55	-26.63	368.04	287.72	80.33	4.582	0						
15,900.00	7,520.00	15,554.07	7,190.00	62.56	62.24	-26.63	368.04	286.88	81.16	4.535	0						
16,000.00	7,520.00	15,654.07	7,190.00	63.25	62.93	-26.63	368.04	286.05	81.99	4.489	0						
16,100.00	7,520.00	15,754.07	7,190.00	63.93	63.61	-26.63	368.05	285.22	82.83	4.443	0						
16,200.00	7,520.00	15,854.07	7,190.00	64.62	64.30	-26.63	368.05	284.38	83.66	4.399	0						
16,300.00	7,520.00	15,954.07	7,190.00	65.31	64.99	-26.63	368.05	283.55	84.50	4.356	0						
16,400.00	7,520.00	16,054.07	7,190.00	66.00	65.68	-26.63	368.05	282.71	85.33	4.313	0						
16,500.00	7,520.00	16,154.07	7,190.00	66.68	66.37	-26.63	368.05	281.88	86.17	4.271	0						
16,600.00	7,520.00	16,254.07	7,190.00	67.37	67.06	-26.63	368.05	281.05	87.01	4.230	0						
16,700.00	7,520.00	16,354.07	7,190.00	68.06	67.75	-26.63	368.05	280.21	87.84	4.190	0						
16,800.00	7,520.00	16,454.07	7,190.00	68.75	68.44	-26.63	368.05	279.38	88.68	4.150	0						
16,900.00	7,520.00	16,554.07	7,190.00	69.44	69.13	-26.63	368.06	278.54	89.51	4.112	0						
17,000.00	7,520.00	16,654.07	7,190.00	70.13	69.82	-26.63	368.06	277.71	90.35	4.074	0						
17,100.00	7,520.00	16,754.07	7,190.00	70.82	70.51	-26.64	368.06	276.87	91.19	4.036	0						
17,200.00	7,520.00	16,854.07	7,190.00	71.51	71.21	-26.64	368.06	276.04	92.02	4.000	0						
17,300.00	7,520.00	16,954.07	7,190.00	72.20	71.90	-26.64	368.06	275.20	92.86	3.964	0						
17,400.00	7,520.00	17,054.07	7,190.00	72.89	72.59	-26.64	368.06	274.37	93.70	3.928	0						
17,500.00	7,520.00	17,154.07	7,190.00	73.58	73.28	-26.64	368.07	273.53	94.54	3.893	0						
17,600.00	7,520.00	17,254.07	7,190.00	74.27	73.97	-26.64	368.07	272.69	95.37	3.859	0						
17,623.76	7,520.00	17,277.84	7,190.00	74.44	74.14	-26.64	368.07	272.50	95.57	3.851	0						
17,645.24	7,520.00	17,297.69	7,190.00	74.58	74.28	-26.64	368.07	272.33	95.74	3.844	0	SF					



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<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	279.86						0	
100.00	100.00	94.00	94.00	0.15	0.14	0.01	279.80	279.51	0.28	983.751	0		0	
200.00	200.00	194.00	194.00	0.32	0.31	0.01	279.80	279.17	0.63	442.851	0		0	
300.00	300.00	294.00	294.00	0.50	0.49	0.01	279.80	278.82	0.98	285.253	0		0	
400.00	400.00	394.00	394.00	0.67	0.66	0.01	279.80	278.47	1.33	210.383	0		0	
500.00	500.00	494.00	494.00	0.84	0.83	0.01	279.80	278.12	1.68	166.645	0		0	
600.00	600.00	594.00	594.00	1.02	1.01	0.01	279.80	277.77	2.03	137.962	0		0	CC, ES
700.00	699.98	686.53	686.52	1.19	1.17	151.91	282.58	280.21	2.36	119.561	0		0	
800.00	799.84	778.14	778.03	1.37	1.33	151.87	291.22	288.53	2.70	108.022	0		0	
900.00	899.45	868.84	868.44	1.55	1.49	151.79	305.69	302.66	3.03	101.030	0		0	
1,000.00	998.70	958.18	957.25	1.73	1.65	151.66	325.89	322.53	3.35	97.218	0		0	
1,100.00	1,097.47	1,045.76	1,043.96	1.91	1.81	151.50	351.69	348.02	3.67	95.709	0		0	
1,149.61	1,146.24	1,088.43	1,086.07	2.00	1.89	151.41	366.53	362.70	3.83	95.631	0		0	
1,200.00	1,195.71	1,131.31	1,128.27	2.10	1.97	151.44	382.60	378.60	4.00	95.671	0		0	
1,300.00	1,293.88	1,223.60	1,218.88	2.29	2.14	151.41	415.55	411.21	4.34	95.691	0		0	
1,400.00	1,392.04	1,317.99	1,311.54	2.48	2.33	151.38	448.57	443.88	4.69	95.624	0		0	
1,500.00	1,490.21	1,412.38	1,404.20	2.68	2.51	151.35	481.58	476.54	5.04	95.547	0		0	
1,600.00	1,588.37	1,506.78	1,496.86	2.87	2.69	151.33	514.59	509.20	5.39	95.466	0		0	
1,700.00	1,686.54	1,601.17	1,589.52	3.07	2.87	151.31	547.61	541.87	5.74	95.384	0		0	
1,800.00	1,784.70	1,695.56	1,682.19	3.26	3.06	151.29	580.62	574.53	6.09	95.303	0		0	
1,900.00	1,882.87	1,789.96	1,774.85	3.46	3.24	151.27	613.64	607.19	6.44	95.225	0		0	
2,000.00	1,981.03	1,884.35	1,867.51	3.66	3.43	151.26	646.65	639.85	6.80	95.149	0		0	
2,100.00	2,079.20	1,978.74	1,960.17	3.85	3.61	151.24	679.66	672.52	7.15	95.077	0		0	
2,200.00	2,177.36	2,073.14	2,052.84	4.05	3.80	151.23	712.68	705.18	7.50	95.008	0		0	
2,300.00	2,275.53	2,167.53	2,145.50	4.25	3.99	151.22	745.69	737.84	7.85	94.943	0		0	
2,400.00	2,373.69	2,261.92	2,238.16	4.45	4.17	151.21	778.71	770.50	8.21	94.881	0		0	
2,500.00	2,471.86	2,356.31	2,330.82	4.65	4.36	151.20	811.72	803.16	8.56	94.821	0		0	
2,600.00	2,570.02	2,450.71	2,423.49	4.85	4.55	151.19	844.73	835.82	8.91	94.765	0		0	
2,700.00	2,668.19	2,545.10	2,516.15	5.05	4.74	151.19	877.75	868.48	9.27	94.712	0		0	
2,800.00	2,766.36	2,639.49	2,608.81	5.25	4.93	151.18	910.76	901.14	9.62	94.662	0		0	
2,900.00	2,864.52	2,733.89	2,701.47	5.44	5.11	151.17	943.78	933.80	9.98	94.613	0		0	
3,000.00	2,962.69	2,828.28	2,794.14	5.64	5.30	151.17	976.79	966.46	10.33	94.568	0		0	
3,100.00	3,060.85	2,922.67	2,886.80	5.84	5.49	151.16	1,009.80	999.12	10.68	94.524	0		0	
3,200.00	3,159.02	3,017.07	2,979.46	6.04	5.68	151.16	1,042.82	1,031.78	11.04	94.483	0		0	
3,300.00	3,257.18	3,111.46	3,072.12	6.24	5.87	151.15	1,075.83	1,064.44	11.39	94.444	0		0	
3,400.00	3,355.35	3,205.85	3,164.79	6.44	6.06	151.15	1,108.85	1,097.10	11.75	94.406	0		0	
3,500.00	3,453.51	3,300.25	3,257.45	6.64	6.24	151.14	1,141.86	1,129.76	12.10	94.370	0		0	
3,600.00	3,551.68	3,394.64	3,350.11	6.84	6.43	151.14	1,174.87	1,162.42	12.45	94.336	0		0	
3,700.00	3,649.84	3,489.03	3,442.77	7.04	6.62	151.13	1,207.89	1,195.08	12.81	94.303	0		0	
3,800.00	3,748.01	3,583.43	3,535.44	7.24	6.81	151.13	1,240.90	1,227.74	13.16	94.272	0		0	
3,900.00	3,846.17	3,677.82	3,628.10	7.44	7.00	151.13	1,273.92	1,260.40	13.52	94.242	0		0	
4,000.00	3,944.34	3,772.21	3,720.76	7.64	7.19	151.12	1,306.93	1,293.06	13.87	94.213	0		0	
4,100.00	4,042.50	3,866.60	3,813.42	7.85	7.38	151.12	1,339.94	1,325.72	14.23	94.186	0		0	
4,200.00	4,140.67	3,961.00	3,906.08	8.05	7.57	151.12	1,372.96	1,358.38	14.58	94.160	0		0	
4,300.00	4,238.84	4,055.39	3,998.75	8.25	7.76	151.11	1,405.97	1,391.04	14.94	94.134	0		0	
4,400.00	4,337.00	4,149.78	4,091.41	8.45	7.94	151.11	1,438.99	1,423.70	15.29	94.110	0		0	
4,500.00	4,435.17	4,244.18	4,184.07	8.65	8.13	151.11	1,472.00	1,456.36	15.65	94.086	0		0	
4,600.00	4,533.33	4,338.57	4,276.73	8.85	8.32	151.10	1,505.02	1,489.02	16.00	94.064	0		0	
4,700.00	4,631.50	4,432.96	4,369.40	9.05	8.51	151.10	1,538.03	1,521.67	16.35	94.042	0		0	
4,800.00	4,729.66	4,527.36	4,462.06	9.25	8.70	151.10	1,571.04	1,554.33	16.71	94.021	0		0	
4,900.00	4,827.83	4,621.75	4,554.72	9.45	8.89	151.10	1,604.06	1,586.99	17.06	94.001	0		0	
5,000.00	4,925.99	4,716.14	4,647.38	9.65	9.08	151.10	1,637.07	1,619.65	17.42	93.982	0		0	
5,100.00	5,024.16	4,810.54	4,740.05	9.85	9.27	151.09	1,670.09	1,652.31	17.77	93.963	0		0	
5,200.00	5,122.32	4,904.93	4,832.71	10.05	9.46	151.09	1,703.10	1,684.97	18.13	93.945	0		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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Sec.08-T07N-R66W - Thornton 2 - Original Hole - Rev 0		Offset Site Error: 0.00 usft	
Survey Program: 0-Pathfinder													Offset Well Error: 0.00 usft			
Reference		Offset		Semi Major Axis		Distance							Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision				
5,300.00	5,220.49	4,999.32	4,925.37	10.25	9.65	151.09	1,736.11	1,717.63	18.48	93.927	0					
5,400.00	5,318.65	5,093.72	5,018.03	10.45	9.84	151.09	1,769.13	1,750.29	18.84	93.910	0					
5,500.00	5,416.82	5,188.11	5,110.70	10.65	10.03	151.09	1,802.14	1,782.95	19.19	93.894	0					
5,600.00	5,514.98	5,282.50	5,203.36	10.85	10.22	151.08	1,835.16	1,815.61	19.55	93.878	0					
5,700.00	5,613.15	5,376.90	5,296.02	11.06	10.41	151.08	1,868.17	1,848.27	19.90	93.863	0					
5,800.00	5,711.32	5,471.29	5,388.68	11.26	10.60	151.08	1,901.18	1,880.93	20.26	93.848	0					
5,900.00	5,809.48	5,565.68	5,481.35	11.46	10.79	151.08	1,934.20	1,913.59	20.61	93.834	0					
6,000.00	5,907.65	5,660.07	5,574.01	11.66	10.97	151.08	1,967.21	1,946.25	20.97	93.820	0					
6,100.00	6,005.81	5,754.47	5,666.67	11.86	11.16	151.08	2,000.23	1,978.90	21.32	93.806	0					
6,200.00	6,103.98	5,848.86	5,759.33	12.06	11.35	151.07	2,033.24	2,011.56	21.68	93.793	0					
6,300.00	6,202.14	5,943.25	5,852.00	12.26	11.54	151.07	2,066.26	2,044.22	22.03	93.780	0					
6,335.65	6,237.14	5,976.90	5,885.03	12.33	11.61	151.07	2,078.02	2,055.87	22.16	93.776	0					
6,400.00	6,300.44	6,105.86	6,011.97	12.46	11.86	151.28	2,098.05	2,075.50	22.55	93.031	0					
6,500.00	6,399.28	6,378.94	6,283.39	12.65	12.34	151.65	2,120.61	2,097.35	23.27	91.148	0					
6,600.00	6,498.59	6,588.25	6,492.59	12.82	12.68	152.02	2,132.49	2,108.65	23.84	89.439	0					
6,700.00	6,598.25	6,687.10	6,591.42	13.00	12.83	152.22	2,139.75	2,115.53	24.22	88.358	0					
6,800.00	6,698.13	6,782.61	6,685.98	13.16	12.97	152.66	2,144.07	2,119.51	24.57	87.275	0					
6,885.26	6,783.38	6,859.66	6,760.19	13.29	13.07	1.34	2,145.64	2,119.69	25.95	82.693	0					
6,900.00	6,798.12	6,872.45	6,772.23	13.32	13.08	1.45	2,145.77	2,119.78	25.99	82.558	0					
6,985.26	6,883.38	6,942.58	6,836.63	13.45	13.17	2.19	2,146.94	2,120.70	26.24	81.820	0					
7,000.00	6,898.12	6,954.09	6,846.89	13.47	13.18	-87.65	2,147.23	2,121.98	25.25	85.029	0					
7,050.00	6,948.01	6,992.58	6,880.50	13.55	13.22	-87.11	2,148.33	2,122.90	25.43	84.494	0					
7,100.00	6,997.50	7,030.34	6,912.30	13.62	13.27	-86.58	2,149.58	2,123.99	25.60	83.979	0					
7,150.00	7,046.29	7,067.45	6,942.32	13.68	13.31	-86.06	2,150.97	2,125.21	25.76	83.497	0					
7,200.00	7,094.07	7,100.00	6,967.57	13.75	13.35	-85.60	2,152.47	2,126.57	25.90	83.094	0					
7,250.00	7,140.56	7,140.01	6,997.11	13.81	13.39	-85.07	2,154.03	2,127.96	26.07	82.633	0					
7,300.00	7,185.46	7,175.59	7,021.92	13.87	13.44	-84.61	2,155.64	2,129.43	26.21	82.251	0					
7,350.00	7,228.49	7,210.76	7,045.00	13.92	13.48	-84.17	2,157.27	2,130.93	26.34	81.911	0					
7,400.00	7,269.40	7,250.00	7,068.98	13.98	13.53	-83.73	2,158.88	2,132.41	26.47	81.550	0					
7,450.00	7,307.93	7,280.10	7,086.06	14.04	13.57	-83.37	2,160.45	2,133.88	26.57	81.326	0					
7,500.00	7,343.84	7,314.34	7,104.03	14.10	13.61	-83.02	2,161.95	2,135.29	26.66	81.079	0					
7,550.00	7,376.91	7,350.00	7,121.05	14.16	13.66	-82.68	2,163.37	2,136.61	26.76	80.832	0					
7,600.00	7,406.94	7,382.16	7,134.88	14.22	13.71	-82.40	2,164.68	2,137.83	26.84	80.639	0					
7,650.00	7,433.74	7,415.79	7,147.75	14.28	13.76	-82.14	2,165.85	2,138.92	26.93	80.433	0					
7,700.00	7,457.15	7,450.00	7,159.14	14.35	13.82	-81.92	2,166.88	2,139.87	27.01	80.214	0					
7,750.00	7,477.02	7,482.64	7,168.38	14.43	13.88	-81.74	2,167.75	2,140.65	27.10	79.998	0					
7,800.00	7,493.23	7,515.91	7,176.13	14.51	13.94	-81.59	2,168.44	2,141.25	27.19	79.757	0					
7,850.00	7,505.69	7,550.00	7,182.31	14.60	14.00	-81.49	2,168.94	2,141.65	27.29	79.475	0					
7,900.00	7,514.30	7,582.26	7,186.50	14.69	14.07	-81.43	2,169.26	2,141.86	27.40	79.182	0					
7,950.00	7,519.02	7,615.39	7,189.11	14.80	14.14	-81.40	2,169.37	2,141.86	27.52	78.837	0					
7,985.26	7,520.00	7,638.75	7,189.92	14.88	14.20	-81.41	2,169.34	2,141.68	27.66	78.439	0					
8,000.00	7,520.00	7,649.03	7,190.00	14.91	14.22	-81.41	2,169.32	2,141.60	27.72	78.252	0					
8,033.60	7,520.00	7,681.85	7,190.00	14.99	14.30	-81.41	2,169.32	2,141.41	27.91	77.730	0					
8,100.00	7,520.00	7,748.25	7,190.00	15.16	14.48	-81.41	2,169.32	2,141.03	28.29	76.680	0					
8,200.00	7,520.00	7,848.25	7,190.00	15.45	14.77	-81.41	2,169.32	2,140.41	28.91	75.029	0					
8,300.00	7,520.00	7,948.25	7,190.00	15.76	15.09	-81.41	2,169.32	2,139.73	29.59	73.317	0					
8,400.00	7,520.00	8,048.25	7,190.00	16.11	15.44	-81.41	2,169.32	2,139.01	30.31	71.564	0					
8,500.00	7,520.00	8,148.25	7,190.00	16.48	15.82	-81.41	2,169.32	2,138.24	31.08	69.791	0					
8,600.00	7,520.00	8,248.25	7,190.00	16.87	16.22	-81.41	2,169.32	2,137.42	31.90	68.013	0					
8,700.00	7,520.00	8,348.25	7,190.00	17.28	16.64	-81.41	2,169.32	2,136.57	32.75	66.244	0					
8,800.00	7,520.00	8,448.25	7,190.00	17.71	17.08	-81.41	2,169.32	2,135.68	33.64	64.495	0					
8,900.00	7,520.00	8,548.25	7,190.00	18.16	17.54	-81.41	2,169.32	2,134.76	34.56	62.775	0					
9,000.00	7,520.00	8,648.25	7,190.00	18.62	18.01	-81.41	2,169.32	2,133.81	35.51	61.091	0					
9,100.00	7,520.00	8,748.25	7,190.00	19.10	18.50	-81.41	2,169.32	2,132.83	36.49	59.449	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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision		
9,200.00	7,520.00	8,848.25	7,190.00	19.59	19.00	-81.41	2,169.32	2,131.82	37.50	57.852	0			
9,300.00	7,520.00	8,948.25	7,190.00	20.10	19.51	-81.41	2,169.32	2,130.79	38.53	56.304	0			
9,400.00	7,520.00	9,048.25	7,190.00	20.62	20.04	-81.41	2,169.32	2,129.74	39.58	54.805	0			
9,500.00	7,520.00	9,148.25	7,190.00	21.14	20.57	-81.41	2,169.32	2,128.66	40.66	53.358	0			
9,600.00	7,520.00	9,248.25	7,190.00	21.68	21.12	-81.41	2,169.32	2,127.57	41.75	51.961	0			
9,700.00	7,520.00	9,348.25	7,190.00	22.23	21.67	-81.41	2,169.32	2,126.46	42.86	50.614	0			
9,800.00	7,520.00	9,448.25	7,190.00	22.78	22.23	-81.41	2,169.32	2,125.33	43.99	49.318	0			
9,900.00	7,520.00	9,548.25	7,190.00	23.35	22.81	-81.41	2,169.32	2,124.19	45.13	48.070	0			
10,000.00	7,520.00	9,648.25	7,190.00	23.92	23.38	-81.41	2,169.32	2,123.04	46.28	46.870	0			
10,100.00	7,520.00	9,748.25	7,190.00	24.49	23.97	-81.41	2,169.32	2,121.87	47.45	45.716	0			
10,200.00	7,520.00	9,848.25	7,190.00	25.08	24.56	-81.41	2,169.32	2,120.69	48.63	44.607	0			
10,300.00	7,520.00	9,948.25	7,190.00	25.67	25.16	-81.41	2,169.32	2,119.50	49.82	43.540	0			
10,400.00	7,520.00	10,048.25	7,190.00	26.26	25.76	-81.41	2,169.32	2,118.29	51.03	42.515	0			
10,500.00	7,520.00	10,148.25	7,190.00	26.86	26.36	-81.41	2,169.32	2,117.08	52.24	41.529	0			
10,600.00	7,520.00	10,248.25	7,190.00	27.47	26.98	-81.41	2,169.32	2,115.86	53.46	40.581	0			
10,700.00	7,520.00	10,348.25	7,190.00	28.08	27.59	-81.41	2,169.32	2,114.63	54.69	39.669	0			
10,800.00	7,520.00	10,448.25	7,190.00	28.69	28.21	-81.41	2,169.32	2,113.40	55.92	38.792	0			
10,900.00	7,520.00	10,548.25	7,190.00	29.31	28.84	-81.41	2,169.32	2,112.15	57.17	37.948	0			
11,000.00	7,520.00	10,648.25	7,190.00	29.93	29.46	-81.41	2,169.32	2,110.90	58.42	37.136	0			
11,100.00	7,520.00	10,748.25	7,190.00	30.56	30.09	-81.41	2,169.32	2,109.65	59.67	36.354	0			
11,200.00	7,520.00	10,848.25	7,190.00	31.19	30.73	-81.41	2,169.32	2,108.38	60.94	35.600	0			
11,300.00	7,520.00	10,948.25	7,190.00	31.82	31.36	-81.41	2,169.32	2,107.12	62.20	34.874	0			
11,400.00	7,520.00	11,048.25	7,190.00	32.45	32.00	-81.41	2,169.32	2,105.84	63.48	34.175	0			
11,500.00	7,520.00	11,148.25	7,190.00	33.09	32.65	-81.41	2,169.32	2,104.56	64.76	33.500	0			
11,600.00	7,520.00	11,248.25	7,190.00	33.73	33.29	-81.41	2,169.32	2,103.28	66.04	32.849	0			
11,700.00	7,520.00	11,348.25	7,190.00	34.38	33.94	-81.41	2,169.32	2,101.99	67.33	32.221	0			
11,800.00	7,520.00	11,448.25	7,190.00	35.02	34.59	-81.41	2,169.32	2,100.70	68.62	31.614	0			
11,900.00	7,520.00	11,548.25	7,190.00	35.67	35.24	-81.41	2,169.32	2,099.40	69.92	31.028	0			
12,000.00	7,520.00	11,648.25	7,190.00	36.32	35.89	-81.41	2,169.32	2,098.11	71.21	30.462	0			
12,100.00	7,520.00	11,748.25	7,190.00	36.97	36.55	-81.41	2,169.32	2,096.80	72.52	29.914	0			
12,200.00	7,520.00	11,848.25	7,190.00	37.62	37.20	-81.41	2,169.32	2,095.50	73.82	29.385	0			
12,300.00	7,520.00	11,948.25	7,190.00	38.28	37.86	-81.41	2,169.32	2,094.19	75.13	28.873	0			
12,400.00	7,520.00	12,048.25	7,190.00	38.93	38.52	-81.41	2,169.32	2,092.87	76.45	28.377	0			
12,500.00	7,520.00	12,148.25	7,190.00	39.59	39.19	-81.41	2,169.32	2,091.56	77.76	27.897	0			
12,600.00	7,520.00	12,248.25	7,190.00	40.25	39.85	-81.41	2,169.32	2,090.24	79.08	27.432	0			
12,700.00	7,520.00	12,348.25	7,190.00	40.91	40.51	-81.41	2,169.32	2,088.92	80.40	26.981	0			
12,800.00	7,520.00	12,448.25	7,190.00	41.58	41.18	-81.41	2,169.32	2,087.60	81.72	26.544	0			
12,900.00	7,520.00	12,548.25	7,190.00	42.24	41.85	-81.41	2,169.32	2,086.27	83.05	26.121	0			
13,000.00	7,520.00	12,648.25	7,190.00	42.90	42.51	-81.41	2,169.32	2,084.94	84.38	25.710	0			
13,100.00	7,520.00	12,748.25	7,190.00	43.57	43.18	-81.41	2,169.32	2,083.61	85.71	25.311	0			
13,200.00	7,520.00	12,848.25	7,190.00	44.24	43.85	-81.41	2,169.32	2,082.28	87.04	24.923	0			
13,300.00	7,520.00	12,948.25	7,190.00	44.91	44.53	-81.41	2,169.32	2,080.95	88.37	24.547	0			
13,400.00	7,520.00	13,048.25	7,190.00	45.58	45.20	-81.41	2,169.32	2,079.61	89.71	24.182	0			
13,500.00	7,520.00	13,148.25	7,190.00	46.25	45.87	-81.41	2,169.32	2,078.27	91.05	23.826	0			
13,600.00	7,520.00	13,248.25	7,190.00	46.92	46.55	-81.41	2,169.32	2,076.93	92.39	23.481	0			
13,700.00	7,520.00	13,348.25	7,190.00	47.59	47.22	-81.41	2,169.32	2,075.59	93.73	23.145	0			
13,800.00	7,520.00	13,448.25	7,190.00	48.27	47.90	-81.41	2,169.32	2,074.25	95.07	22.818	0			
13,900.00	7,520.00	13,548.25	7,190.00	48.94	48.57	-81.41	2,169.32	2,072.91	96.41	22.500	0			
14,000.00	7,520.00	13,648.25	7,190.00	49.62	49.25	-81.41	2,169.32	2,071.56	97.76	22.191	0			
14,100.00	7,520.00	13,748.25	7,190.00	50.29	49.93	-81.41	2,169.32	2,070.21	99.10	21.889	0			
14,200.00	7,520.00	13,848.25	7,190.00	50.97	50.61	-81.41	2,169.32	2,068.87	100.45	21.595	0			
14,300.00	7,520.00	13,948.25	7,190.00	51.65	51.29	-81.41	2,169.32	2,067.52	101.80	21.309	0			
14,400.00	7,520.00	14,048.25	7,190.00	52.32	51.97	-81.41	2,169.32	2,066.17	103.15	21.030	0			
14,500.00	7,520.00	14,148.25	7,190.00	53.00	52.65	-81.41	2,169.32	2,064.82	104.50	20.758	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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision		
14,600.00	7,520.00	14,248.25	7,190.00	53.68	53.33	-81.41	2,169.32	2,063.46	105.86	20.493	0			
14,700.00	7,520.00	14,348.25	7,190.00	54.36	54.01	-81.41	2,169.32	2,062.11	107.21	20.234	0			
14,800.00	7,520.00	14,448.25	7,190.00	55.04	54.69	-81.41	2,169.32	2,060.75	108.56	19.982	0			
14,900.00	7,520.00	14,548.25	7,190.00	55.72	55.38	-81.41	2,169.32	2,059.40	109.92	19.735	0			
15,000.00	7,520.00	14,648.25	7,190.00	56.40	56.06	-81.41	2,169.32	2,058.04	111.28	19.495	0			
15,100.00	7,520.00	14,748.25	7,190.00	57.09	56.74	-81.41	2,169.32	2,056.68	112.63	19.260	0			
15,200.00	7,520.00	14,848.25	7,190.00	57.77	57.43	-81.41	2,169.32	2,055.33	113.99	19.030	0			
15,300.00	7,520.00	14,948.25	7,190.00	58.45	58.11	-81.41	2,169.32	2,053.97	115.35	18.806	0			
15,400.00	7,520.00	15,048.25	7,190.00	59.14	58.80	-81.41	2,169.32	2,052.61	116.71	18.587	0			
15,500.00	7,520.00	15,148.25	7,190.00	59.82	59.48	-81.41	2,169.32	2,051.25	118.07	18.373	0			
15,600.00	7,520.00	15,248.25	7,190.00	60.51	60.17	-81.41	2,169.32	2,049.88	119.44	18.163	0			
15,700.00	7,520.00	15,348.25	7,190.00	61.19	60.86	-81.41	2,169.32	2,048.52	120.80	17.958	0			
15,800.00	7,520.00	15,448.25	7,190.00	61.88	61.54	-81.41	2,169.32	2,047.16	122.16	17.758	0			
15,900.00	7,520.00	15,548.25	7,190.00	62.56	62.23	-81.41	2,169.32	2,045.79	123.53	17.562	0			
16,000.00	7,520.00	15,648.25	7,190.00	63.25	62.92	-81.41	2,169.32	2,044.43	124.89	17.370	0			
16,100.00	7,520.00	15,748.25	7,190.00	63.93	63.61	-81.41	2,169.32	2,043.06	126.26	17.182	0			
16,200.00	7,520.00	15,848.25	7,190.00	64.62	64.30	-81.41	2,169.32	2,041.70	127.62	16.998	0			
16,300.00	7,520.00	15,948.25	7,190.00	65.31	64.98	-81.41	2,169.32	2,040.33	128.99	16.818	0			
16,400.00	7,520.00	16,048.25	7,190.00	66.00	65.67	-81.41	2,169.32	2,038.96	130.35	16.642	0			
16,500.00	7,520.00	16,148.25	7,190.00	66.68	66.36	-81.41	2,169.32	2,037.60	131.72	16.469	0			
16,600.00	7,520.00	16,248.25	7,190.00	67.37	67.05	-81.41	2,169.32	2,036.23	133.09	16.300	0			
16,700.00	7,520.00	16,348.25	7,190.00	68.06	67.74	-81.41	2,169.32	2,034.86	134.46	16.134	0			
16,800.00	7,520.00	16,448.25	7,190.00	68.75	68.43	-81.41	2,169.32	2,033.49	135.83	15.971	0			
16,900.00	7,520.00	16,548.25	7,190.00	69.44	69.12	-81.41	2,169.32	2,032.12	137.20	15.812	0			
17,000.00	7,520.00	16,648.25	7,190.00	70.13	69.81	-81.41	2,169.32	2,030.75	138.57	15.655	0			
17,100.00	7,520.00	16,748.25	7,190.00	70.82	70.50	-81.41	2,169.32	2,029.38	139.94	15.502	0			
17,200.00	7,520.00	16,848.25	7,190.00	71.51	71.20	-81.41	2,169.32	2,028.01	141.31	15.351	0			
17,300.00	7,520.00	16,948.25	7,190.00	72.20	71.89	-81.41	2,169.32	2,026.64	142.68	15.204	0			
17,400.00	7,520.00	17,048.25	7,190.00	72.89	72.58	-81.41	2,169.32	2,025.26	144.05	15.059	0			
17,500.00	7,520.00	17,148.25	7,190.00	73.58	73.27	-81.41	2,169.32	2,023.89	145.43	14.917	0			
17,600.00	7,520.00	17,248.35	7,190.00	74.27	73.96	-81.41	2,169.32	2,022.52	146.80	14.777	0			
17,622.96	7,520.00	17,271.31	7,190.00	74.43	74.12	-81.41	2,169.32	2,022.20	147.12	14.746	0			
17,645.24	7,520.00	17,273.45	7,190.00	74.58	74.14	-81.41	2,169.41	2,022.13	147.28	14.729	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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<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 3 - 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	0.00	252.18					0	CC, ES			
100.00	100.00	94.00	94.00	0.15	0.14	0.00	252.11	251.83	0.28	886.412	0					
200.00	200.00	194.00	194.00	0.32	0.31	0.00	252.11	251.48	0.63	399.032	0					
300.00	300.00	294.00	294.00	0.50	0.49	0.00	252.11	251.13	0.98	257.028	0					
400.00	400.00	394.00	394.00	0.67	0.66	0.00	252.11	250.78	1.33	189.567	0					
500.00	500.00	494.00	494.00	0.84	0.83	0.00	252.11	250.43	1.68	150.156	0					
600.00	600.00	594.00	594.00	1.02	1.01	0.00	252.11	250.08	2.03	124.311	0					
700.00	699.98	693.98	693.98	1.19	1.18	152.07	253.65	251.28	2.38	106.737	0					
800.00	799.84	787.29	787.27	1.37	1.35	152.36	259.48	256.76	2.71	95.684	0					
900.00	899.45	879.52	879.40	1.55	1.51	152.54	271.06	268.01	3.04	89.047	0					
1,000.00	998.70	970.66	970.26	1.73	1.67	152.60	288.33	284.95	3.37	85.479	0					
1,100.00	1,097.47	1,060.27	1,059.33	1.91	1.83	152.56	311.19	307.49	3.70	84.136	0					
1,149.61	1,146.24	1,104.05	1,102.71	2.00	1.91	152.50	324.56	320.70	3.86	84.119	0					
1,200.00	1,195.71	1,148.09	1,146.27	2.10	1.99	152.53	339.13	335.11	4.03	84.227	0					
1,300.00	1,293.88	1,242.26	1,239.22	2.29	2.16	152.49	368.98	364.60	4.37	84.386	0					
1,400.00	1,392.04	1,337.70	1,333.43	2.48	2.34	152.44	398.85	394.13	4.72	84.468	0					
1,500.00	1,490.21	1,433.13	1,427.63	2.68	2.52	152.40	428.72	423.65	5.07	84.524	0					
1,600.00	1,588.37	1,528.56	1,521.83	2.87	2.70	152.37	458.59	453.17	5.42	84.560	0					
1,700.00	1,686.54	1,624.00	1,616.03	3.07	2.87	152.34	488.47	482.69	5.78	84.583	0					
1,800.00	1,784.70	1,719.43	1,710.23	3.26	3.06	152.32	518.34	512.21	6.13	84.596	0					
1,900.00	1,882.87	1,814.86	1,804.43	3.46	3.24	152.30	548.21	541.73	6.48	84.602	0					
2,000.00	1,981.03	1,910.30	1,898.63	3.66	3.42	152.28	578.08	571.25	6.83	84.603	0					
2,100.00	2,079.20	2,005.73	1,992.83	3.85	3.60	152.26	607.96	600.77	7.19	84.601	0					
2,200.00	2,177.36	2,101.17	2,087.03	4.05	3.78	152.24	637.83	630.29	7.54	84.595	0					
2,300.00	2,275.53	2,196.60	2,181.23	4.25	3.96	152.23	667.70	659.81	7.89	84.588	0					
2,400.00	2,373.69	2,292.03	2,275.43	4.45	4.15	152.21	697.58	689.33	8.25	84.579	0					
2,500.00	2,471.86	2,387.47	2,369.63	4.65	4.33	152.20	727.45	718.85	8.60	84.569	0					
2,600.00	2,570.02	2,482.90	2,463.83	4.85	4.51	152.19	757.32	748.37	8.96	84.559	0					
2,700.00	2,668.19	2,578.33	2,558.03	5.05	4.69	152.18	787.19	777.88	9.31	84.548	0					
2,800.00	2,766.36	2,673.77	2,652.23	5.25	4.88	152.17	817.07	807.40	9.67	84.536	0					
2,900.00	2,864.52	2,769.20	2,746.43	5.44	5.06	152.16	846.94	836.92	10.02	84.525	0					
3,000.00	2,962.69	2,864.63	2,840.63	5.64	5.24	152.15	876.81	866.44	10.37	84.514	0					
3,100.00	3,060.85	2,960.07	2,934.83	5.84	5.43	152.14	906.69	895.96	10.73	84.502	0					
3,200.00	3,159.02	3,055.50	3,029.03	6.04	5.61	152.13	936.56	925.48	11.08	84.491	0					
3,300.00	3,257.18	3,150.94	3,123.23	6.24	5.79	152.13	966.43	954.99	11.44	84.480	0					
3,400.00	3,355.35	3,246.37	3,217.43	6.44	5.98	152.12	996.31	984.51	11.79	84.469	0					
3,500.00	3,453.51	3,341.80	3,311.63	6.64	6.16	152.11	1,026.18	1,014.03	12.15	84.459	0					
3,600.00	3,551.68	3,437.24	3,405.84	6.84	6.35	152.11	1,056.05	1,043.55	12.51	84.448	0					
3,700.00	3,649.84	3,532.67	3,500.04	7.04	6.53	152.10	1,085.93	1,073.07	12.86	84.438	0					
3,800.00	3,748.01	3,628.10	3,594.24	7.24	6.71	152.10	1,115.80	1,102.58	13.22	84.428	0					
3,900.00	3,846.17	3,723.54	3,688.44	7.44	6.90	152.09	1,145.67	1,132.10	13.57	84.419	0					
4,000.00	3,944.34	3,818.97	3,782.64	7.64	7.08	152.09	1,175.55	1,161.62	13.93	84.409	0					
4,100.00	4,042.50	3,914.40	3,876.84	7.85	7.27	152.08	1,205.42	1,191.14	14.28	84.400	0					
4,200.00	4,140.67	4,009.84	3,971.04	8.05	7.45	152.08	1,235.29	1,220.65	14.64	84.391	0					
4,300.00	4,238.84	4,105.27	4,065.24	8.25	7.63	152.08	1,265.17	1,250.17	14.99	84.383	0					
4,400.00	4,337.00	4,200.71	4,159.44	8.45	7.82	152.07	1,295.04	1,279.69	15.35	84.374	0					
4,500.00	4,435.17	4,296.14	4,253.64	8.65	8.00	152.07	1,324.91	1,309.21	15.70	84.366	0					
4,600.00	4,533.33	4,391.57	4,347.84	8.85	8.19	152.06	1,354.79	1,338.73	16.06	84.358	0					
4,700.00	4,631.50	4,487.01	4,442.04	9.05	8.37	152.06	1,384.66	1,368.24	16.42	84.351	0					
4,800.00	4,729.66	4,582.44	4,536.24	9.25	8.56	152.06	1,414.53	1,397.76	16.77	84.343	0					
4,900.00	4,827.83	4,677.87	4,630.44	9.45	8.74	152.05	1,444.40	1,427.28	17.13	84.336	0					
5,000.00	4,925.99	4,773.31	4,724.64	9.65	8.92	152.05	1,474.28	1,456.80	17.48	84.329	0					
5,100.00	5,024.16	4,868.74	4,818.84	9.85	9.11	152.05	1,504.15	1,486.31	17.84	84.322	0					
5,200.00	5,122.32	4,964.17	4,913.04	10.05	9.29	152.05	1,534.02	1,515.83	18.19	84.315	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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<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 3 - 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	5,220.49	5,059.61	5,007.24	10.25	9.48	152.04	1,563.90	1,545.35	18.55	84.309	0					
5,400.00	5,318.65	5,155.04	5,101.44	10.45	9.66	152.04	1,593.77	1,574.87	18.91	84.302	0					
5,500.00	5,416.82	5,250.48	5,195.64	10.65	9.85	152.04	1,623.64	1,604.38	19.26	84.296	0					
5,600.00	5,514.98	5,345.91	5,289.84	10.85	10.03	152.04	1,653.52	1,633.90	19.62	84.290	0					
5,700.00	5,613.15	5,441.34	5,384.04	11.06	10.22	152.03	1,683.39	1,663.42	19.97	84.284	0					
5,800.00	5,711.32	5,536.78	5,478.24	11.26	10.40	152.03	1,713.26	1,692.94	20.33	84.279	0					
5,900.00	5,809.48	5,632.21	5,572.45	11.46	10.59	152.03	1,743.14	1,722.45	20.68	84.273	0					
6,000.00	5,907.65	5,727.64	5,666.65	11.66	10.77	152.03	1,773.01	1,751.97	21.04	84.268	0					
6,100.00	6,005.81	5,823.08	5,760.85	11.86	10.95	152.03	1,802.88	1,781.49	21.40	84.262	0					
6,200.00	6,103.98	5,918.51	5,855.05	12.06	11.14	152.02	1,832.76	1,811.01	21.75	84.257	0					
6,300.00	6,202.14	6,013.95	5,949.25	12.26	11.32	152.02	1,862.63	1,840.52	22.11	84.252	0					
6,335.65	6,237.14	6,047.97	5,982.83	12.33	11.39	152.02	1,873.28	1,851.05	22.23	84.250	0					
6,400.00	6,300.44	6,109.56	6,043.63	12.46	11.51	152.19	1,891.89	1,869.39	22.50	84.067	0					
6,500.00	6,399.28	6,205.97	6,138.79	12.65	11.69	152.39	1,918.38	1,895.47	22.91	83.729	0					
6,600.00	6,498.59	6,303.10	6,234.67	12.82	11.88	152.50	1,941.88	1,918.57	23.30	83.327	0					
6,700.00	6,598.25	6,409.96	6,340.15	13.00	12.09	152.53	1,962.34	1,938.65	23.70	82.808	0					
6,800.00	6,698.13	6,640.80	6,569.40	13.16	12.51	152.37	1,976.05	1,951.77	24.29	81.363	0					
6,885.26	6,783.38	6,840.86	6,769.26	13.29	12.84	0.41	1,980.00	1,954.33	25.68	77.113	0					
6,900.00	6,798.12	6,863.72	6,792.12	13.32	12.88	0.41	1,980.01	1,954.28	25.74	76.929	0					
6,985.26	6,883.38	6,948.98	6,877.38	13.45	13.01	0.41	1,980.01	1,954.00	26.02	76.109	0					
7,000.00	6,898.12	6,963.53	6,891.93	13.47	13.04	-89.59	1,980.01	1,954.84	25.17	78.669	0					
7,050.00	6,948.01	7,012.45	6,940.78	13.55	13.11	-89.60	1,980.01	1,954.68	25.33	78.184	0					
7,100.00	6,997.50	7,061.42	6,989.33	13.62	13.18	-89.62	1,980.01	1,954.53	25.47	77.728	0					
7,150.00	7,046.29	7,110.44	7,037.30	13.68	13.25	-89.64	1,980.00	1,954.39	25.61	77.299	0					
7,200.00	7,094.07	7,159.51	7,084.41	13.75	13.32	-89.66	1,980.00	1,954.25	25.75	76.894	0					
7,250.00	7,140.56	7,208.63	7,130.38	13.81	13.38	-89.69	1,979.99	1,954.11	25.88	76.509	0					
7,300.00	7,185.46	7,257.83	7,174.94	13.87	13.44	-89.71	1,979.99	1,953.98	26.00	76.140	0					
7,350.00	7,228.49	7,307.09	7,217.82	13.92	13.50	-89.74	1,979.98	1,953.85	26.13	75.780	0					
7,400.00	7,269.40	7,356.43	7,258.75	13.98	13.56	-89.77	1,979.98	1,953.73	26.25	75.426	0					
7,450.00	7,307.93	7,405.85	7,297.50	14.04	13.61	-89.80	1,979.97	1,953.60	26.37	75.071	0					
7,500.00	7,343.84	7,455.35	7,333.80	14.10	13.67	-89.83	1,979.97	1,953.47	26.50	74.709	0					
7,550.00	7,376.91	7,504.94	7,367.44	14.16	13.74	-89.87	1,979.97	1,953.33	26.64	74.334	0					
7,600.00	7,406.94	7,554.61	7,398.20	14.22	13.80	-89.90	1,979.97	1,953.19	26.78	73.940	0					
7,650.00	7,433.74	7,604.38	7,425.88	14.28	13.87	-89.94	1,979.96	1,953.03	26.93	73.522	0					
7,700.00	7,457.15	7,654.24	7,450.28	14.35	13.94	-89.97	1,979.96	1,952.87	27.09	73.075	0					
7,740.32	7,473.46	7,694.52	7,467.46	14.41	14.00	-90.00	1,979.96	1,952.72	27.24	72.689	0					
7,750.00	7,477.02	7,704.20	7,471.24	14.43	14.01	-90.01	1,979.96	1,952.69	27.27	72.595	0					
7,800.00	7,493.23	7,754.25	7,488.62	14.51	14.10	-90.04	1,979.96	1,952.49	27.47	72.081	0					
7,850.00	7,505.69	7,804.40	7,502.27	14.60	14.19	-90.08	1,979.96	1,952.28	27.68	71.530	0					
7,900.00	7,514.30	7,854.64	7,512.11	14.69	14.29	-90.11	1,979.97	1,952.06	27.91	70.946	0					
7,950.00	7,519.02	7,904.98	7,518.04	14.80	14.39	-90.15	1,979.97	1,951.82	28.15	70.328	0					
7,985.26	7,520.00	7,940.53	7,519.84	14.88	14.48	-90.17	1,979.97	1,951.64	28.34	69.875	0					
8,000.00	7,520.00	7,955.40	7,520.00	14.91	14.51	-90.17	1,979.97	1,951.56	28.41	69.684	0					
8,100.00	7,520.00	8,055.40	7,520.00	15.16	14.78	-90.17	1,979.97	1,950.99	28.98	68.320	0					
8,200.00	7,520.00	8,155.40	7,520.00	15.45	15.07	-90.17	1,979.97	1,950.37	29.60	66.890	0					
8,300.00	7,520.00	8,255.40	7,520.00	15.76	15.40	-90.17	1,979.97	1,949.70	30.27	65.404	0					
8,400.00	7,520.00	8,355.40	7,520.00	16.11	15.76	-90.17	1,979.97	1,948.98	30.99	63.881	0					
8,500.00	7,520.00	8,455.40	7,520.00	16.48	16.13	-90.17	1,979.97	1,948.21	31.76	62.337	0					
8,600.00	7,520.00	8,555.40	7,520.00	16.87	16.53	-90.17	1,979.97	1,947.40	32.57	60.786	0					
8,700.00	7,520.00	8,655.40	7,520.00	17.28	16.95	-90.17	1,979.97	1,946.55	33.42	59.240	0					
8,800.00	7,520.00	8,755.40	7,520.00	17.71	17.39	-90.17	1,979.97	1,945.66	34.31	57.709	0					
8,900.00	7,520.00	8,855.40	7,520.00	18.16	17.85	-90.17	1,979.97	1,944.74	35.23	56.201	0					
9,000.00	7,520.00	8,955.40	7,520.00	18.62	18.32	-90.17	1,979.97	1,943.79	36.18	54.723	0					
9,100.00	7,520.00	9,055.40	7,520.00	19.10	18.80	-90.17	1,979.97	1,942.81	37.16	53.278	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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<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 3 - Original Hole - Rev 0		Offset Site Error:		0.00 usft
Survey Program: 0-Pathfinder													Offset Well Error:		0.00 usft		
Reference		Offset		Semi Major Axis		Distance							Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision					
9,200.00	7,520.00	9,155.40	7,520.00	19.59	19.30	-90.17	1,979.97	1,941.80	38.17	51.872	0						
9,300.00	7,520.00	9,255.40	7,520.00	20.10	19.81	-90.17	1,979.97	1,940.77	39.20	50.506	0						
9,400.00	7,520.00	9,355.40	7,520.00	20.62	20.33	-90.17	1,979.97	1,939.71	40.26	49.183	0						
9,500.00	7,520.00	9,455.40	7,520.00	21.14	20.87	-90.17	1,979.97	1,938.64	41.33	47.903	0						
9,600.00	7,520.00	9,555.40	7,520.00	21.68	21.41	-90.17	1,979.97	1,937.54	42.43	46.666	0						
9,700.00	7,520.00	9,655.40	7,520.00	22.23	21.96	-90.17	1,979.97	1,936.43	43.54	45.473	0						
9,800.00	7,520.00	9,755.40	7,520.00	22.78	22.52	-90.17	1,979.97	1,935.30	44.67	44.323	0						
9,900.00	7,520.00	9,855.40	7,520.00	23.35	23.09	-90.17	1,979.97	1,934.16	45.82	43.215	0						
10,000.00	7,520.00	9,955.40	7,520.00	23.92	23.66	-90.17	1,979.97	1,933.00	46.98	42.149	0						
10,100.00	7,520.00	10,055.40	7,520.00	24.49	24.24	-90.17	1,979.97	1,931.82	48.15	41.122	0						
10,200.00	7,520.00	10,155.40	7,520.00	25.08	24.83	-90.17	1,979.97	1,930.64	49.33	40.134	0						
10,300.00	7,520.00	10,255.40	7,520.00	25.67	25.43	-90.17	1,979.97	1,929.44	50.53	39.184	0						
10,400.00	7,520.00	10,355.40	7,520.00	26.26	26.03	-90.17	1,979.97	1,928.24	51.74	38.270	0						
10,500.00	7,520.00	10,455.41	7,520.00	26.86	26.63	-90.17	1,979.97	1,927.02	52.95	37.391	0						
10,600.00	7,520.00	10,555.41	7,520.00	27.47	27.24	-90.17	1,979.97	1,925.79	54.18	36.545	0						
10,700.00	7,520.00	10,655.41	7,520.00	28.08	27.85	-90.17	1,979.97	1,924.56	55.41	35.731	0						
10,800.00	7,520.00	10,755.41	7,520.00	28.69	28.47	-90.17	1,979.97	1,923.32	56.66	34.947	0						
10,900.00	7,520.00	10,855.41	7,520.00	29.31	29.09	-90.17	1,979.97	1,922.06	57.91	34.192	0						
11,000.00	7,520.00	10,955.41	7,520.00	29.93	29.72	-90.17	1,979.97	1,920.81	59.16	33.466	0						
11,100.00	7,520.00	11,055.41	7,520.00	30.56	30.35	-90.17	1,979.97	1,919.54	60.43	32.766	0						
11,200.00	7,520.00	11,155.41	7,520.00	31.19	30.98	-90.17	1,979.97	1,918.27	61.70	32.091	0						
11,300.00	7,520.00	11,255.41	7,520.00	31.82	31.61	-90.17	1,979.97	1,917.00	62.97	31.441	0						
11,400.00	7,520.00	11,355.41	7,520.00	32.45	32.25	-90.17	1,979.97	1,915.72	64.26	30.814	0						
11,500.00	7,520.00	11,455.41	7,520.00	33.09	32.89	-90.17	1,979.97	1,914.43	65.54	30.209	0						
11,600.00	7,520.00	11,555.41	7,520.00	33.73	33.53	-90.17	1,979.97	1,913.14	66.83	29.626	0						
11,700.00	7,520.00	11,655.41	7,520.00	34.38	34.18	-90.17	1,979.97	1,911.84	68.13	29.062	0						
11,800.00	7,520.00	11,755.41	7,520.00	35.02	34.83	-90.17	1,979.97	1,910.54	69.43	28.518	0						
11,900.00	7,520.00	11,855.41	7,520.00	35.67	35.48	-90.17	1,979.97	1,909.24	70.73	27.992	0						
12,000.00	7,520.00	11,955.41	7,520.00	36.32	36.13	-90.17	1,979.97	1,907.93	72.04	27.484	0						
12,100.00	7,520.00	12,055.41	7,520.00	36.97	36.78	-90.17	1,979.97	1,906.62	73.35	26.992	0						
12,200.00	7,520.00	12,155.41	7,520.00	37.62	37.44	-90.17	1,979.97	1,905.30	74.67	26.517	0						
12,300.00	7,520.00	12,255.41	7,520.00	38.28	38.10	-90.17	1,979.97	1,903.98	75.99	26.056	0						
12,400.00	7,520.00	12,355.41	7,520.00	38.93	38.75	-90.17	1,979.97	1,902.66	77.31	25.611	0						
12,500.00	7,520.00	12,455.41	7,520.00	39.59	39.41	-90.17	1,979.97	1,901.34	78.63	25.179	0						
12,600.00	7,520.00	12,555.41	7,520.00	40.25	40.08	-90.17	1,979.97	1,900.01	79.96	24.761	0						
12,700.00	7,520.00	12,655.41	7,520.00	40.91	40.74	-90.17	1,979.97	1,898.68	81.29	24.356	0						
12,800.00	7,520.00	12,755.41	7,520.00	41.58	41.40	-90.17	1,979.97	1,897.35	82.62	23.963	0						
12,900.00	7,520.00	12,855.41	7,520.00	42.24	42.07	-90.17	1,979.97	1,896.01	83.96	23.582	0						
13,000.00	7,520.00	12,955.41	7,520.00	42.90	42.74	-90.17	1,979.97	1,894.67	85.30	23.213	0						
13,100.00	7,520.00	13,055.41	7,520.00	43.57	43.40	-90.17	1,979.97	1,893.33	86.64	22.854	0						
13,200.00	7,520.00	13,155.41	7,520.00	44.24	44.07	-90.17	1,979.97	1,891.99	87.98	22.505	0						
13,300.00	7,520.00	13,255.41	7,520.00	44.91	44.74	-90.17	1,979.97	1,890.65	89.32	22.166	0						
13,400.00	7,520.00	13,355.41	7,520.00	45.58	45.42	-90.17	1,979.97	1,889.30	90.67	21.837	0						
13,500.00	7,520.00	13,455.41	7,520.00	46.25	46.09	-90.17	1,979.97	1,887.96	92.02	21.518	0						
13,600.00	7,520.00	13,555.41	7,520.00	46.92	46.76	-90.17	1,979.97	1,886.61	93.37	21.207	0						
13,700.00	7,520.00	13,655.41	7,520.00	47.59	47.44	-90.17	1,979.97	1,885.25	94.72	20.904	0						
13,800.00	7,520.00	13,755.41	7,520.00	48.27	48.11	-90.17	1,979.97	1,883.90	96.07	20.610	0						
13,900.00	7,520.00	13,855.41	7,520.00	48.94	48.79	-90.17	1,979.97	1,882.55	97.42	20.323	0						
14,000.00	7,520.00	13,955.41	7,520.00	49.62	49.46	-90.17	1,979.97	1,881.19	98.78	20.044	0						
14,100.00	7,520.00	14,055.41	7,520.00	50.29	50.14	-90.17	1,979.97	1,879.84	100.14	19.773	0						
14,200.00	7,520.00	14,155.41	7,520.00	50.97	50.82	-90.17	1,979.97	1,878.48	101.49	19.508	0						
14,300.00	7,520.00	14,255.41	7,520.00	51.65	51.50	-90.17	1,979.97	1,877.12	102.85	19.250	0						
14,400.00	7,520.00	14,355.41	7,520.00	52.32	52.18	-90.17	1,979.97	1,875.76	104.22	18.999	0						
14,500.00	7,520.00	14,455.41	7,520.00	53.00	52.86	-90.17	1,979.97	1,874.39	105.58	18.754	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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<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 3 - Original Hole - Rev 0		Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													Offset Well Error:	0.00 usft		
Reference		Offset		Semi Major Axis		Distance							Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision				
14,600.00	7,520.00	14,555.41	7,520.00	53.68	53.54	-90.17	1,979.97	1,873.03	106.94	18.515	0					
14,700.00	7,520.00	14,655.41	7,520.00	54.36	54.22	-90.17	1,979.97	1,871.67	108.31	18.281	0					
14,800.00	7,520.00	14,755.41	7,520.00	55.04	54.90	-90.17	1,979.97	1,870.30	109.67	18.054	0					
14,900.00	7,520.00	14,855.41	7,520.00	55.72	55.58	-90.17	1,979.97	1,868.93	111.04	17.832	0					
15,000.00	7,520.00	14,955.41	7,520.00	56.40	56.26	-90.17	1,979.97	1,867.57	112.41	17.615	0					
15,100.00	7,520.00	15,055.41	7,520.00	57.09	56.95	-90.17	1,979.97	1,866.20	113.77	17.403	0					
15,200.00	7,520.00	15,155.41	7,520.00	57.77	57.63	-90.17	1,979.97	1,864.83	115.14	17.196	0					
15,300.00	7,520.00	15,255.41	7,520.00	58.45	58.31	-90.17	1,979.97	1,863.46	116.51	16.993	0					
15,400.00	7,520.00	15,355.41	7,520.00	59.14	59.00	-90.17	1,979.97	1,862.09	117.89	16.796	0					
15,500.00	7,520.00	15,455.41	7,520.00	59.82	59.68	-90.17	1,979.97	1,860.71	119.26	16.603	0					
15,600.00	7,520.00	15,555.41	7,520.00	60.51	60.37	-90.17	1,979.97	1,859.34	120.63	16.414	0					
15,700.00	7,520.00	15,655.41	7,520.00	61.19	61.06	-90.17	1,979.97	1,857.97	122.00	16.229	0					
15,800.00	7,520.00	15,755.41	7,520.00	61.88	61.74	-90.17	1,979.97	1,856.59	123.38	16.048	0					
15,900.00	7,520.00	15,855.41	7,520.00	62.56	62.43	-90.17	1,979.97	1,855.22	124.75	15.871	0					
16,000.00	7,520.00	15,955.41	7,520.00	63.25	63.12	-90.17	1,979.97	1,853.84	126.13	15.698	0					
16,100.00	7,520.00	16,055.41	7,520.00	63.93	63.80	-90.17	1,979.97	1,852.47	127.51	15.528	0					
16,200.00	7,520.00	16,155.41	7,520.00	64.62	64.49	-90.17	1,979.97	1,851.09	128.88	15.363	0					
16,300.00	7,520.00	16,255.41	7,520.00	65.31	65.18	-90.17	1,979.97	1,849.71	130.26	15.200	0					
16,400.00	7,520.00	16,355.41	7,520.00	66.00	65.87	-90.17	1,979.97	1,848.33	131.64	15.041	0					
16,500.00	7,520.00	16,455.41	7,520.00	66.68	66.56	-90.17	1,979.97	1,846.95	133.02	14.885	0					
16,600.00	7,520.00	16,555.41	7,520.00	67.37	67.25	-90.17	1,979.97	1,845.57	134.40	14.732	0					
16,700.00	7,520.00	16,655.41	7,520.00	68.06	67.94	-90.17	1,979.97	1,844.19	135.78	14.582	0					
16,800.00	7,520.00	16,755.41	7,520.00	68.75	68.63	-90.17	1,979.97	1,842.81	137.16	14.436	0					
16,900.00	7,520.00	16,855.41	7,520.00	69.44	69.32	-90.17	1,979.97	1,841.43	138.54	14.292	0					
17,000.00	7,520.00	16,955.41	7,520.00	70.13	70.01	-90.17	1,979.97	1,840.05	139.92	14.150	0					
17,100.00	7,520.00	17,055.41	7,520.00	70.82	70.70	-90.17	1,979.97	1,838.67	141.30	14.012	0					
17,200.00	7,520.00	17,155.41	7,520.00	71.51	71.39	-90.17	1,979.97	1,837.28	142.69	13.876	0					
17,300.00	7,520.00	17,255.41	7,520.00	72.20	72.08	-90.17	1,979.97	1,835.90	144.07	13.743	0					
17,400.00	7,520.00	17,355.41	7,520.00	72.89	72.77	-90.17	1,979.97	1,834.52	145.45	13.612	0					
17,500.00	7,520.00	17,455.41	7,520.00	73.58	73.46	-90.17	1,979.97	1,833.13	146.84	13.484	0					
17,600.00	7,520.00	17,555.52	7,520.00	74.27	74.15	-90.17	1,979.97	1,831.74	148.22	13.358	0					
17,624.68	7,520.00	17,580.20	7,520.00	74.44	74.32	-90.17	1,979.97	1,831.40	148.57	13.327	0					
17,645.24	7,520.00	17,582.23	7,520.00	74.58	74.34	-90.17	1,980.05	1,831.33	148.72	13.314	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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<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				
0.00	0.00	0.00	0.00	0.00	0.00	-0.02	224.14					0	CC, ES			
100.00	100.00	94.00	94.00	0.15	0.14	-0.02	224.06	223.77	0.28	787.778	0					
200.00	200.00	194.00	194.00	0.32	0.31	-0.02	224.06	223.43	0.63	354.631	0					
300.00	300.00	294.00	294.00	0.50	0.49	-0.02	224.06	223.08	0.98	228.428	0					
400.00	400.00	394.00	394.00	0.67	0.66	-0.02	224.06	222.73	1.33	168.473	0					
500.00	500.00	494.00	494.00	0.84	0.83	-0.02	224.06	222.38	1.68	133.447	0					
600.00	600.00	594.00	594.00	1.02	1.01	-0.02	224.06	222.03	2.03	110.479	0					
700.00	699.98	693.98	693.98	1.19	1.18	152.08	225.60	223.22	2.38	94.932	0					
800.00	799.84	793.84	793.84	1.37	1.36	152.64	230.24	227.51	2.72	84.547	0					
900.00	899.45	887.87	887.86	1.55	1.52	153.26	239.11	236.05	3.06	78.182	0					
1,000.00	998.70	980.73	980.61	1.73	1.68	153.66	253.56	250.17	3.39	74.796	0					
1,100.00	1,097.47	1,072.34	1,071.93	1.91	1.85	153.83	273.52	269.80	3.72	73.556	0					
1,149.61	1,146.24	1,117.21	1,116.56	2.00	1.93	153.84	285.42	281.54	3.88	73.563	0					
1,200.00	1,195.71	1,162.42	1,161.45	2.10	2.01	153.90	298.47	294.42	4.05	73.700	0					
1,300.00	1,293.88	1,252.46	1,250.59	2.29	2.17	153.74	326.03	321.64	4.39	74.294	0					
1,400.00	1,392.04	1,348.34	1,345.35	2.48	2.34	153.48	354.39	349.65	4.74	74.788	0					
1,500.00	1,490.21	1,444.22	1,440.12	2.68	2.52	153.26	382.75	377.67	5.09	75.201	0					
1,600.00	1,588.37	1,540.11	1,534.89	2.87	2.70	153.07	411.12	405.68	5.44	75.550	0					
1,700.00	1,686.54	1,635.99	1,629.66	3.07	2.88	152.90	439.50	433.70	5.79	75.847	0					
1,800.00	1,784.70	1,731.87	1,724.43	3.26	3.06	152.76	467.87	461.72	6.15	76.103	0					
1,900.00	1,882.87	1,827.76	1,819.20	3.46	3.24	152.63	496.25	489.75	6.50	76.326	0					
2,000.00	1,981.03	1,923.64	1,913.96	3.66	3.42	152.52	524.63	517.77	6.86	76.522	0					
2,100.00	2,079.20	2,019.52	2,008.73	3.85	3.60	152.41	553.01	545.80	7.21	76.694	0					
2,200.00	2,177.36	2,115.41	2,103.50	4.05	3.78	152.32	581.39	573.83	7.57	76.848	0					
2,300.00	2,275.53	2,211.29	2,198.27	4.25	3.96	152.24	609.78	601.86	7.92	76.985	0					
2,400.00	2,373.69	2,307.17	2,293.04	4.45	4.14	152.16	638.16	629.89	8.28	77.109	0					
2,500.00	2,471.86	2,403.06	2,387.81	4.65	4.32	152.09	666.55	657.92	8.63	77.221	0					
2,600.00	2,570.02	2,498.94	2,482.58	4.85	4.50	152.02	694.94	685.95	8.99	77.322	0					
2,700.00	2,668.19	2,594.83	2,577.34	5.05	4.68	151.96	723.33	713.98	9.34	77.415	0					
2,800.00	2,766.36	2,690.71	2,672.11	5.25	4.87	151.91	751.72	742.02	9.70	77.499	0					
2,900.00	2,864.52	2,786.59	2,766.88	5.44	5.05	151.86	780.10	770.05	10.06	77.577	0					
3,000.00	2,962.69	2,882.48	2,861.65	5.64	5.23	151.81	808.49	798.08	10.41	77.649	0					
3,100.00	3,060.85	2,978.36	2,956.42	5.84	5.41	151.77	836.88	826.12	10.77	77.715	0					
3,200.00	3,159.02	3,074.24	3,051.19	6.04	5.60	151.73	865.28	854.15	11.13	77.776	0					
3,300.00	3,257.18	3,170.13	3,145.95	6.24	5.78	151.69	893.67	882.18	11.48	77.833	0					
3,400.00	3,355.35	3,266.01	3,240.72	6.44	5.96	151.65	922.06	910.22	11.84	77.886	0					
3,500.00	3,453.51	3,361.89	3,335.49	6.64	6.14	151.62	950.45	938.25	12.20	77.936	0					
3,600.00	3,551.68	3,457.78	3,430.26	6.84	6.33	151.58	978.84	966.29	12.55	77.982	0					
3,700.00	3,649.84	3,553.66	3,525.03	7.04	6.51	151.55	1,007.23	994.33	12.91	78.026	0					
3,800.00	3,748.01	3,649.54	3,619.80	7.24	6.69	151.53	1,035.63	1,022.36	13.27	78.067	0					
3,900.00	3,846.17	3,745.43	3,714.57	7.44	6.88	151.50	1,064.02	1,050.40	13.62	78.105	0					
4,000.00	3,944.34	3,841.31	3,809.33	7.64	7.06	151.47	1,092.41	1,078.43	13.98	78.142	0					
4,100.00	4,042.50	3,937.19	3,904.10	7.85	7.24	151.45	1,120.81	1,106.47	14.34	78.176	0					
4,200.00	4,140.67	4,033.08	3,998.87	8.05	7.43	151.42	1,149.20	1,134.51	14.69	78.208	0					
4,300.00	4,238.84	4,128.96	4,093.64	8.25	7.61	151.40	1,177.59	1,162.54	15.05	78.239	0					
4,400.00	4,337.00	4,224.84	4,188.41	8.45	7.79	151.38	1,205.99	1,190.58	15.41	78.268	0					
4,500.00	4,435.17	4,320.73	4,283.18	8.65	7.98	151.36	1,234.38	1,218.62	15.77	78.296	0					
4,600.00	4,533.33	4,416.61	4,377.94	8.85	8.16	151.34	1,262.77	1,246.65	16.12	78.322	0					
4,700.00	4,631.50	4,512.49	4,472.71	9.05	8.34	151.32	1,291.17	1,274.69	16.48	78.347	0					
4,800.00	4,729.66	4,608.38	4,567.48	9.25	8.53	151.31	1,319.56	1,302.73	16.84	78.371	0					
4,900.00	4,827.83	4,704.26	4,662.25	9.45	8.71	151.29	1,347.96	1,330.76	17.19	78.393	0					
5,000.00	4,925.99	4,800.14	4,757.02	9.65	8.89	151.27	1,376.35	1,358.80	17.55	78.415	0					
5,100.00	5,024.16	4,896.03	4,851.79	9.85	9.08	151.26	1,404.75	1,386.84	17.91	78.436	0					
5,200.00	5,122.32	4,991.91	4,946.55	10.05	9.26	151.24	1,433.14	1,414.87	18.27	78.456	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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<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	5,220.49	5,087.79	5,041.32	10.25	9.44	151.23	1,461.54	1,442.91	18.62	78.475	0					
5,400.00	5,318.65	5,183.68	5,136.09	10.45	9.63	151.22	1,489.93	1,470.95	18.98	78.493	0					
5,500.00	5,416.82	5,279.56	5,230.86	10.65	9.81	151.20	1,518.33	1,498.99	19.34	78.511	0					
5,600.00	5,514.98	5,375.44	5,325.63	10.85	9.99	151.19	1,546.72	1,527.02	19.70	78.527	0					
5,700.00	5,613.15	5,471.33	5,420.40	11.06	10.18	151.18	1,575.12	1,555.06	20.05	78.544	0					
5,800.00	5,711.32	5,567.21	5,515.17	11.26	10.36	151.17	1,603.51	1,583.10	20.41	78.559	0					
5,900.00	5,809.48	5,663.09	5,609.93	11.46	10.54	151.15	1,631.91	1,611.14	20.77	78.574	0					
6,000.00	5,907.65	5,758.98	5,704.70	11.66	10.73	151.14	1,660.30	1,639.17	21.13	78.588	0					
6,100.00	6,005.81	5,854.86	5,799.47	11.86	10.91	151.13	1,688.70	1,667.21	21.48	78.602	0					
6,200.00	6,103.98	5,950.74	5,894.24	12.06	11.10	151.12	1,717.09	1,695.25	21.84	78.616	0					
6,300.00	6,202.14	6,046.63	5,989.01	12.26	11.28	151.11	1,745.49	1,723.29	22.20	78.629	0					
6,335.65	6,237.14	6,085.46	6,027.39	12.33	11.35	151.11	1,755.60	1,733.27	22.33	78.604	0					
6,400.00	6,300.44	6,205.20	6,146.13	12.46	11.57	151.30	1,772.09	1,749.39	22.70	78.057	0					
6,500.00	6,399.28	6,395.78	6,336.16	12.65	11.90	151.65	1,791.15	1,767.89	23.26	76.992	0					
6,600.00	6,498.59	6,552.25	6,492.59	12.82	12.16	151.99	1,802.42	1,778.68	23.74	75.909	0					
6,700.00	6,598.25	6,651.24	6,591.57	13.00	12.32	152.21	1,809.68	1,785.58	24.11	75.066	0					
6,800.00	6,698.13	6,747.10	6,686.46	13.16	12.46	152.73	1,814.01	1,789.57	24.45	74.207	0					
6,885.26	6,783.38	6,824.39	6,760.88	13.29	12.56	1.51	1,815.63	1,790.20	25.44	71.372	0					
6,900.00	6,798.12	6,837.21	6,772.96	13.32	12.58	1.65	1,815.78	1,790.30	25.48	71.251	0					
6,985.26	6,883.38	6,907.53	6,837.48	13.45	12.67	2.52	1,817.13	1,791.39	25.74	70.595	0					
7,000.00	6,898.12	6,919.06	6,847.76	13.47	12.68	-87.28	1,817.46	1,792.35	25.12	72.358	0					
7,050.00	6,948.01	6,957.64	6,881.40	13.55	12.73	-86.64	1,818.74	1,793.45	25.29	71.926	0					
7,100.00	6,997.50	6,995.47	6,913.23	13.62	12.77	-86.02	1,820.20	1,794.75	25.45	71.517	0					
7,150.00	7,046.29	7,032.64	6,943.26	13.68	12.81	-85.40	1,821.83	1,796.22	25.61	71.130	0					
7,200.00	7,094.07	7,069.23	6,971.53	13.75	12.86	-84.81	1,823.58	1,797.82	25.77	70.776	0					
7,250.00	7,140.56	7,100.00	6,994.23	13.81	12.89	-84.30	1,825.43	1,799.54	25.89	70.510	0					
7,300.00	7,185.46	7,140.93	7,022.82	13.87	12.94	-83.69	1,827.32	1,801.27	26.04	70.168	0					
7,350.00	7,228.49	7,176.14	7,045.88	13.92	12.99	-83.17	1,829.23	1,803.07	26.17	69.910	0					
7,400.00	7,269.40	7,211.00	7,067.22	13.98	13.03	-82.68	1,831.13	1,804.86	26.28	69.687	0					
7,450.00	7,307.93	7,250.00	7,089.26	14.04	13.08	-82.19	1,833.00	1,806.60	26.40	69.443	0					
7,500.00	7,343.84	7,279.82	7,104.77	14.10	13.12	-81.80	1,834.77	1,808.30	26.47	69.316	0					
7,550.00	7,376.91	7,313.85	7,120.99	14.16	13.17	-81.42	1,836.45	1,809.90	26.55	69.162	0					
7,600.00	7,406.94	7,350.00	7,136.43	14.22	13.23	-81.06	1,838.00	1,811.36	26.64	68.990	0					
7,650.00	7,433.74	7,381.33	7,148.30	14.28	13.28	-80.77	1,839.40	1,812.69	26.71	68.877	0					
7,700.00	7,457.15	7,414.83	7,159.40	14.35	13.34	-80.50	1,840.63	1,813.84	26.78	68.727	0					
7,750.00	7,477.02	7,450.00	7,169.24	14.43	13.40	-80.28	1,841.66	1,814.80	26.87	68.544	0					
7,800.00	7,493.23	7,481.49	7,176.46	14.51	13.46	-80.11	1,842.50	1,815.55	26.94	68.383	0					
7,850.00	7,505.69	7,514.70	7,182.42	14.60	13.53	-79.98	1,843.11	1,816.08	27.04	68.171	0					
7,900.00	7,514.30	7,550.00	7,186.88	14.69	13.61	-79.90	1,843.51	1,816.35	27.15	67.890	0					
7,950.00	7,519.02	7,581.00	7,189.19	14.80	13.68	-79.87	1,843.66	1,816.40	27.26	67.633	0					
7,985.26	7,520.00	7,604.36	7,189.94	14.88	13.74	-79.88	1,843.64	1,816.26	27.38	67.329	0					
8,000.00	7,520.00	7,614.68	7,190.00	14.91	13.77	-79.88	1,843.62	1,816.17	27.45	67.164	0					
8,100.00	7,520.00	7,714.68	7,190.00	15.16	14.04	-79.88	1,843.62	1,815.60	28.02	65.800	0					
8,200.00	7,520.00	7,814.68	7,190.00	15.45	14.36	-79.88	1,843.62	1,814.98	28.64	64.366	0					
8,300.00	7,520.00	7,914.68	7,190.00	15.76	14.70	-79.88	1,843.62	1,814.30	29.32	62.881	0					
8,400.00	7,520.00	8,014.68	7,190.00	16.11	15.06	-79.88	1,843.62	1,813.58	30.04	61.363	0					
8,500.00	7,520.00	8,114.68	7,190.00	16.48	15.45	-79.88	1,843.62	1,812.81	30.82	59.827	0					
8,600.00	7,520.00	8,214.68	7,190.00	16.87	15.86	-79.88	1,843.62	1,811.99	31.63	58.288	0					
8,700.00	7,520.00	8,314.68	7,190.00	17.28	16.29	-79.88	1,843.62	1,811.14	32.48	56.758	0					
8,800.00	7,520.00	8,414.68	7,190.00	17.71	16.74	-79.88	1,843.62	1,810.25	33.37	55.247	0					
8,900.00	7,520.00	8,514.68	7,190.00	18.16	17.21	-79.88	1,843.62	1,809.33	34.29	53.762	0					
9,000.00	7,520.00	8,614.68	7,190.00	18.62	17.69	-79.88	1,843.62	1,808.38	35.25	52.309	0					
9,100.00	7,520.00	8,714.68	7,190.00	19.10	18.18	-79.88	1,843.62	1,807.40	36.23	50.892	0					
9,200.00	7,520.00	8,814.68	7,190.00	19.59	18.69	-79.88	1,843.62	1,806.39	37.23	49.516	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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<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	7,520.00	8,914.68	7,190.00	20.10	19.21	-79.88	1,843.62	1,805.36	38.26	48.182	0			
9,400.00	7,520.00	9,014.68	7,190.00	20.62	19.74	-79.88	1,843.62	1,804.31	39.32	46.891	0			
9,500.00	7,520.00	9,114.68	7,190.00	21.14	20.29	-79.88	1,843.62	1,803.23	40.39	45.645	0			
9,600.00	7,520.00	9,214.68	7,190.00	21.68	20.84	-79.88	1,843.62	1,802.14	41.48	44.443	0			
9,700.00	7,520.00	9,314.68	7,190.00	22.23	21.40	-79.88	1,843.62	1,801.03	42.59	43.286	0			
9,800.00	7,520.00	9,414.68	7,190.00	22.78	21.97	-79.88	1,843.62	1,799.90	43.72	42.171	0			
9,900.00	7,520.00	9,514.68	7,190.00	23.35	22.55	-79.88	1,843.62	1,798.76	44.86	41.099	0			
10,000.00	7,520.00	9,614.68	7,190.00	23.92	23.13	-79.88	1,843.62	1,797.61	46.01	40.069	0			
10,100.00	7,520.00	9,714.68	7,190.00	24.49	23.72	-79.88	1,843.62	1,796.44	47.18	39.078	0			
10,200.00	7,520.00	9,814.68	7,190.00	25.08	24.32	-79.88	1,843.62	1,795.27	48.36	38.125	0			
10,300.00	7,520.00	9,914.68	7,190.00	25.67	24.92	-79.88	1,843.62	1,794.08	49.55	37.210	0			
10,400.00	7,520.00	10,014.68	7,190.00	26.26	25.52	-79.88	1,843.62	1,792.88	50.75	36.330	0			
10,500.00	7,520.00	10,114.68	7,190.00	26.86	26.14	-79.88	1,843.62	1,791.67	51.96	35.485	0			
10,600.00	7,520.00	10,214.68	7,190.00	27.47	26.75	-79.88	1,843.62	1,790.45	53.17	34.672	0			
10,700.00	7,520.00	10,314.68	7,190.00	28.08	27.37	-79.88	1,843.62	1,789.22	54.40	33.891	0			
10,800.00	7,520.00	10,414.68	7,190.00	28.69	28.00	-79.88	1,843.62	1,787.99	55.63	33.139	0			
10,900.00	7,520.00	10,514.68	7,190.00	29.31	28.63	-79.88	1,843.62	1,786.75	56.87	32.416	0			
11,000.00	7,520.00	10,614.68	7,190.00	29.93	29.26	-79.88	1,843.62	1,785.50	58.12	31.720	0			
11,100.00	7,520.00	10,714.68	7,190.00	30.56	29.89	-79.88	1,843.62	1,784.25	59.38	31.050	0			
11,200.00	7,520.00	10,814.68	7,190.00	31.19	30.53	-79.88	1,843.62	1,782.99	60.64	30.405	0			
11,300.00	7,520.00	10,914.68	7,190.00	31.82	31.17	-79.88	1,843.62	1,781.72	61.90	29.783	0			
11,400.00	7,520.00	11,014.68	7,190.00	32.45	31.81	-79.88	1,843.62	1,780.45	63.17	29.184	0			
11,500.00	7,520.00	11,114.68	7,190.00	33.09	32.46	-79.88	1,843.62	1,779.17	64.45	28.606	0			
11,600.00	7,520.00	11,214.68	7,190.00	33.73	33.11	-79.88	1,843.62	1,777.89	65.73	28.049	0			
11,700.00	7,520.00	11,314.68	7,190.00	34.38	33.76	-79.88	1,843.62	1,776.61	67.01	27.512	0			
11,800.00	7,520.00	11,414.68	7,190.00	35.02	34.41	-79.88	1,843.62	1,775.32	68.30	26.992	0			
11,900.00	7,520.00	11,514.68	7,190.00	35.67	35.06	-79.88	1,843.62	1,774.03	69.59	26.491	0			
12,000.00	7,520.00	11,614.68	7,190.00	36.32	35.72	-79.88	1,843.62	1,772.73	70.89	26.007	0			
12,100.00	7,520.00	11,714.68	7,190.00	36.97	36.38	-79.88	1,843.62	1,771.43	72.19	25.538	0			
12,200.00	7,520.00	11,814.68	7,190.00	37.62	37.04	-79.88	1,843.62	1,770.13	73.49	25.086	0			
12,300.00	7,520.00	11,914.68	7,190.00	38.28	37.70	-79.88	1,843.62	1,768.82	74.80	24.648	0			
12,400.00	7,520.00	12,014.68	7,190.00	38.93	38.36	-79.88	1,843.62	1,767.51	76.11	24.224	0			
12,500.00	7,520.00	12,114.68	7,190.00	39.59	39.03	-79.88	1,843.62	1,766.20	77.42	23.813	0			
12,600.00	7,520.00	12,214.68	7,190.00	40.25	39.69	-79.88	1,843.62	1,764.89	78.74	23.416	0			
12,700.00	7,520.00	12,314.68	7,190.00	40.91	40.36	-79.88	1,843.62	1,763.57	80.05	23.030	0			
12,800.00	7,520.00	12,414.68	7,190.00	41.58	41.03	-79.88	1,843.62	1,762.25	81.37	22.657	0			
12,900.00	7,520.00	12,514.68	7,190.00	42.24	41.70	-79.88	1,843.62	1,760.93	82.69	22.295	0			
13,000.00	7,520.00	12,614.68	7,190.00	42.90	42.37	-79.88	1,843.62	1,759.60	84.02	21.943	0			
13,100.00	7,520.00	12,714.68	7,190.00	43.57	43.04	-79.88	1,843.62	1,758.28	85.34	21.602	0			
13,200.00	7,520.00	12,814.68	7,190.00	44.24	43.71	-79.88	1,843.62	1,756.95	86.67	21.271	0			
13,300.00	7,520.00	12,914.68	7,190.00	44.91	44.38	-79.88	1,843.62	1,755.62	88.00	20.950	0			
13,400.00	7,520.00	13,014.68	7,190.00	45.58	45.06	-79.88	1,843.62	1,754.29	89.33	20.637	0			
13,500.00	7,520.00	13,114.68	7,190.00	46.25	45.73	-79.88	1,843.62	1,752.96	90.67	20.334	0			
13,600.00	7,520.00	13,214.68	7,190.00	46.92	46.41	-79.88	1,843.62	1,751.62	92.00	20.039	0			
13,700.00	7,520.00	13,314.68	7,190.00	47.59	47.08	-79.88	1,843.62	1,750.28	93.34	19.752	0			
13,800.00	7,520.00	13,414.68	7,190.00	48.27	47.76	-79.88	1,843.62	1,748.94	94.68	19.473	0			
13,900.00	7,520.00	13,514.68	7,190.00	48.94	48.44	-79.88	1,843.62	1,747.61	96.02	19.201	0			
14,000.00	7,520.00	13,614.68	7,190.00	49.62	49.12	-79.88	1,843.62	1,746.26	97.36	18.936	0			
14,100.00	7,520.00	13,714.68	7,190.00	50.29	49.80	-79.88	1,843.62	1,744.92	98.70	18.679	0			
14,200.00	7,520.00	13,814.68	7,190.00	50.97	50.48	-79.88	1,843.62	1,743.58	100.04	18.428	0			
14,300.00	7,520.00	13,914.68	7,190.00	51.65	51.16	-79.88	1,843.62	1,742.23	101.39	18.183	0			
14,400.00	7,520.00	14,014.68	7,190.00	52.32	51.84	-79.88	1,843.62	1,740.89	102.74	17.945	0			
14,500.00	7,520.00	14,114.68	7,190.00	53.00	52.52	-79.88	1,843.62	1,739.54	104.08	17.713	0			
14,600.00	7,520.00	14,214.68	7,190.00	53.68	53.21	-79.88	1,843.62	1,738.19	105.43	17.486	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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<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	7,520.00	14,314.68	7,190.00	54.36	53.89	-79.88	1,843.62	1,736.84	106.78	17.265	0			
14,800.00	7,520.00	14,414.68	7,190.00	55.04	54.57	-79.88	1,843.62	1,735.49	108.13	17.050	0			
14,900.00	7,520.00	14,514.68	7,190.00	55.72	55.26	-79.88	1,843.62	1,734.14	109.48	16.839	0			
15,000.00	7,520.00	14,614.68	7,190.00	56.40	55.94	-79.88	1,843.62	1,732.79	110.84	16.634	0			
15,100.00	7,520.00	14,714.68	7,190.00	57.09	56.63	-79.88	1,843.62	1,731.43	112.19	16.433	0			
15,200.00	7,520.00	14,814.68	7,190.00	57.77	57.31	-79.88	1,843.62	1,730.08	113.54	16.237	0			
15,300.00	7,520.00	14,914.68	7,190.00	58.45	58.00	-79.88	1,843.62	1,728.72	114.90	16.046	0			
15,400.00	7,520.00	15,014.68	7,190.00	59.14	58.69	-79.88	1,843.62	1,727.37	116.25	15.858	0			
15,500.00	7,520.00	15,114.68	7,190.00	59.82	59.37	-79.88	1,843.62	1,726.01	117.61	15.676	0			
15,600.00	7,520.00	15,214.68	7,190.00	60.51	60.06	-79.88	1,843.62	1,724.65	118.97	15.497	0			
15,700.00	7,520.00	15,314.68	7,190.00	61.19	60.75	-79.88	1,843.62	1,723.30	120.33	15.322	0			
15,800.00	7,520.00	15,414.68	7,190.00	61.88	61.44	-79.88	1,843.62	1,721.94	121.69	15.151	0			
15,900.00	7,520.00	15,514.68	7,190.00	62.56	62.12	-79.88	1,843.62	1,720.58	123.05	14.983	0			
16,000.00	7,520.00	15,614.68	7,190.00	63.25	62.81	-79.88	1,843.62	1,719.22	124.41	14.819	0			
16,100.00	7,520.00	15,714.68	7,190.00	63.93	63.50	-79.88	1,843.62	1,717.86	125.77	14.659	0			
16,200.00	7,520.00	15,814.68	7,190.00	64.62	64.19	-79.88	1,843.62	1,716.49	127.13	14.502	0			
16,300.00	7,520.00	15,914.68	7,190.00	65.31	64.88	-79.88	1,843.62	1,715.13	128.49	14.348	0			
16,400.00	7,520.00	16,014.68	7,190.00	66.00	65.57	-79.88	1,843.62	1,713.77	129.85	14.198	0			
16,500.00	7,520.00	16,114.68	7,190.00	66.68	66.26	-79.88	1,843.62	1,712.41	131.22	14.050	0			
16,600.00	7,520.00	16,214.68	7,190.00	67.37	66.95	-79.88	1,843.62	1,711.04	132.58	13.906	0			
16,700.00	7,520.00	16,314.68	7,190.00	68.06	67.64	-79.88	1,843.62	1,709.68	133.94	13.764	0			
16,800.00	7,520.00	16,414.68	7,190.00	68.75	68.33	-79.88	1,843.62	1,708.31	135.31	13.625	0			
16,900.00	7,520.00	16,514.68	7,190.00	69.44	69.03	-79.88	1,843.62	1,706.95	136.67	13.489	0			
17,000.00	7,520.00	16,614.68	7,190.00	70.13	69.72	-79.88	1,843.62	1,705.58	138.04	13.356	0			
17,100.00	7,520.00	16,714.68	7,190.00	70.82	70.41	-79.88	1,843.62	1,704.22	139.41	13.225	0			
17,200.00	7,520.00	16,814.68	7,190.00	71.51	71.10	-79.88	1,843.62	1,702.85	140.77	13.096	0			
17,300.00	7,520.00	16,914.68	7,190.00	72.20	71.79	-79.88	1,843.62	1,701.48	142.14	12.970	0			
17,400.00	7,520.00	17,014.68	7,190.00	72.89	72.49	-79.88	1,843.62	1,700.11	143.51	12.847	0			
17,500.00	7,520.00	17,114.68	7,190.00	73.58	73.18	-79.88	1,843.62	1,698.75	144.88	12.725	0			
17,552.81	7,520.00	17,167.49	7,190.00	73.95	73.54	-79.88	1,843.62	1,698.02	145.60	12.662	0			
17,600.00	7,520.00	17,214.68	7,190.00	74.27	73.87	-79.88	1,843.62	1,697.38	146.24	12.606	0			
17,615.07	7,520.00	17,229.75	7,190.00	74.38	73.98	-79.88	1,843.62	1,697.17	146.45	12.589	0			
17,645.24	7,520.00	17,242.86	7,190.00	74.58	74.07	-79.88	1,843.70	1,696.96	146.75	12.564	0	SF		



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<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	0.04	196.08					0	
100.00	100.00	95.00	95.00	0.15	0.14	0.04	196.01	195.73	0.29	685.631	0		
200.00	200.00	195.00	195.00	0.32	0.31	0.04	196.01	195.38	0.63	309.384	0		
300.00	300.00	295.00	295.00	0.50	0.49	0.04	196.01	195.03	0.98	199.479	0		
400.00	400.00	395.00	395.00	0.67	0.66	0.04	196.01	194.68	1.33	147.191	0		
500.00	500.00	495.00	495.00	0.84	0.84	0.04	196.01	194.33	1.68	116.621	0		
600.00	600.00	595.00	595.00	1.02	1.01	0.04	196.01	193.98	2.03	96.566	0		CC, ES
700.00	699.98	694.98	694.98	1.19	1.19	152.17	197.55	195.18	2.38	83.069	0		
800.00	799.84	794.84	794.84	1.37	1.36	152.82	202.20	199.47	2.72	74.203	0		
900.00	899.45	894.45	894.45	1.55	1.53	153.83	209.99	206.92	3.07	68.407	0		
1,000.00	998.70	990.27	990.25	1.73	1.70	154.76	221.73	218.32	3.41	65.093	0		
1,100.00	1,097.47	1,085.14	1,085.01	1.91	1.87	155.20	238.26	234.52	3.74	63.705	0		
1,149.61	1,146.24	1,131.82	1,131.57	2.00	1.95	155.25	248.21	244.31	3.90	63.568	0		
1,200.00	1,195.71	1,179.01	1,178.57	2.10	2.03	155.27	259.10	255.02	4.08	63.537	0		
1,300.00	1,293.88	1,274.26	1,273.24	2.29	2.20	154.95	281.67	277.25	4.43	63.645	0		
1,400.00	1,392.04	1,371.61	1,369.96	2.48	2.38	154.59	304.47	299.69	4.78	63.715	0		
1,500.00	1,490.21	1,468.96	1,466.67	2.68	2.55	154.28	327.27	322.14	5.13	63.764	0		
1,600.00	1,588.37	1,566.31	1,563.39	2.87	2.73	154.02	350.08	344.59	5.49	63.798	0		
1,700.00	1,686.54	1,663.66	1,660.11	3.07	2.90	153.78	372.90	367.05	5.84	63.822	0		
1,800.00	1,784.70	1,761.02	1,756.82	3.26	3.08	153.57	395.72	389.52	6.20	63.837	0		
1,900.00	1,882.87	1,858.37	1,853.54	3.46	3.25	153.39	418.55	411.99	6.56	63.847	0		
2,000.00	1,981.03	1,955.72	1,950.26	3.66	3.43	153.22	441.38	434.46	6.91	63.852	0		
2,100.00	2,079.20	2,053.07	2,046.97	3.85	3.61	153.08	464.21	456.94	7.27	63.854	0		
2,200.00	2,177.36	2,150.42	2,143.69	4.05	3.79	152.94	487.05	479.42	7.63	63.854	0		
2,300.00	2,275.53	2,247.77	2,240.41	4.25	3.96	152.82	509.88	501.90	7.99	63.851	0		
2,400.00	2,373.69	2,345.12	2,337.12	4.45	4.14	152.70	532.72	524.38	8.34	63.848	0		
2,500.00	2,471.86	2,442.48	2,433.84	4.65	4.32	152.60	555.57	546.87	8.70	63.842	0		
2,600.00	2,570.02	2,539.83	2,530.56	4.85	4.50	152.51	578.41	569.35	9.06	63.836	0		
2,700.00	2,668.19	2,637.18	2,627.28	5.05	4.68	152.42	601.26	591.84	9.42	63.829	0		
2,800.00	2,766.36	2,734.53	2,723.99	5.25	4.85	152.34	624.10	614.32	9.78	63.821	0		
2,900.00	2,864.52	2,831.88	2,820.71	5.44	5.03	152.26	646.95	636.81	10.14	63.814	0		
3,000.00	2,962.69	2,929.23	2,917.43	5.64	5.21	152.19	669.80	659.30	10.50	63.806	0		
3,100.00	3,060.85	3,026.58	3,014.14	5.84	5.39	152.13	692.65	681.79	10.86	63.799	0		
3,200.00	3,159.02	3,123.94	3,110.86	6.04	5.57	152.06	715.50	704.28	11.22	63.792	0		
3,300.00	3,257.18	3,221.29	3,207.58	6.24	5.75	152.01	738.35	726.78	11.58	63.784	0		
3,400.00	3,355.35	3,318.64	3,304.29	6.44	5.93	151.95	761.20	749.27	11.94	63.777	0		
3,500.00	3,453.51	3,415.99	3,401.01	6.64	6.11	151.90	784.06	771.76	12.30	63.770	0		
3,600.00	3,551.68	3,513.34	3,497.73	6.84	6.28	151.85	806.91	794.25	12.65	63.763	0		
3,700.00	3,649.84	3,610.69	3,594.44	7.04	6.46	151.81	829.76	816.75	13.01	63.756	0		
3,800.00	3,748.01	3,708.05	3,691.16	7.24	6.64	151.76	852.62	839.24	13.37	63.749	0		
3,900.00	3,846.17	3,805.40	3,787.88	7.44	6.82	151.72	875.47	861.74	13.73	63.743	0		
4,000.00	3,944.34	3,902.75	3,884.59	7.64	7.00	151.68	898.32	884.23	14.09	63.736	0		
4,100.00	4,042.50	4,000.10	3,981.31	7.85	7.18	151.65	921.18	906.73	14.45	63.730	0		
4,200.00	4,140.67	4,097.45	4,078.03	8.05	7.36	151.61	944.04	929.22	14.81	63.724	0		
4,300.00	4,238.84	4,194.80	4,174.74	8.25	7.54	151.58	966.89	951.72	15.17	63.718	0		
4,400.00	4,337.00	4,292.15	4,271.46	8.45	7.72	151.55	989.75	974.21	15.53	63.713	0		
4,500.00	4,435.17	4,389.51	4,368.18	8.65	7.90	151.51	1,012.60	996.71	15.89	63.707	0		
4,600.00	4,533.33	4,486.86	4,464.89	8.85	8.08	151.49	1,035.46	1,019.21	16.25	63.702	0		
4,700.00	4,631.50	4,584.21	4,561.61	9.05	8.25	151.46	1,058.32	1,041.70	16.62	63.696	0		
4,800.00	4,729.66	4,681.56	4,658.33	9.25	8.43	151.43	1,081.18	1,064.20	16.98	63.691	0		
4,900.00	4,827.83	4,778.91	4,755.04	9.45	8.61	151.41	1,104.03	1,086.70	17.34	63.686	0		
5,000.00	4,925.99	4,876.26	4,851.76	9.65	8.79	151.38	1,126.89	1,109.19	17.70	63.681	0		
5,100.00	5,024.16	4,973.61	4,948.48	9.85	8.97	151.36	1,149.75	1,131.69	18.06	63.677	0		
5,200.00	5,122.32	5,070.97	5,045.20	10.05	9.15	151.33	1,172.61	1,154.19	18.42	63.672	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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<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						Risked Separation Factor	Probability of Collision	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					
5,300.00	5,220.49	5,168.32	5,141.91	10.25	9.33	151.31	1,195.46	1,176.69	18.78	63.668	0				
5,400.00	5,318.65	5,265.67	5,238.63	10.45	9.51	151.29	1,218.32	1,199.19	19.14	63.663	0				
5,500.00	5,416.82	5,363.02	5,335.35	10.65	9.69	151.27	1,241.18	1,221.68	19.50	63.659	0				
5,600.00	5,514.98	5,460.37	5,432.06	10.85	9.87	151.25	1,264.04	1,244.18	19.86	63.655	0				
5,700.00	5,613.15	5,557.72	5,528.78	11.06	10.05	151.23	1,286.90	1,266.68	20.22	63.651	0				
5,800.00	5,711.32	5,655.08	5,625.50	11.26	10.23	151.22	1,309.76	1,289.18	20.58	63.647	0				
5,900.00	5,809.48	5,752.43	5,722.21	11.46	10.41	151.20	1,332.62	1,311.68	20.94	63.643	0				
6,000.00	5,907.65	5,849.78	5,818.93	11.66	10.59	151.18	1,355.47	1,334.18	21.30	63.639	0				
6,100.00	6,005.81	5,947.13	5,915.65	11.86	10.76	151.16	1,378.33	1,356.67	21.66	63.636	0				
6,200.00	6,103.98	6,044.48	6,012.36	12.06	10.94	151.15	1,401.19	1,379.17	22.02	63.632	0				
6,300.00	6,202.14	6,141.83	6,109.08	12.26	11.12	151.13	1,424.05	1,401.67	22.38	63.629	0				
6,335.65	6,237.14	6,182.82	6,149.81	12.33	11.20	151.13	1,432.16	1,409.64	22.52	63.595	0				
6,400.00	6,300.44	6,269.35	6,235.97	12.46	11.35	151.30	1,445.47	1,422.64	22.82	63.334	0				
6,500.00	6,399.28	6,405.35	6,371.78	12.65	11.59	151.61	1,461.60	1,438.32	23.28	62.790	0				
6,600.00	6,498.59	6,527.17	6,493.59	12.82	11.79	151.94	1,472.36	1,448.67	23.69	62.162	0				
6,700.00	6,598.25	6,626.30	6,592.69	13.00	11.96	152.20	1,479.62	1,455.58	24.04	61.557	0				
6,800.00	6,698.13	6,722.46	6,687.85	13.16	12.10	152.83	1,483.96	1,459.60	24.36	60.917	0				
6,885.26	6,783.38	6,800.00	6,762.47	13.29	12.20	1.77	1,485.67	1,460.59	25.08	59.229	0				
6,900.00	6,798.12	6,812.78	6,774.49	13.32	12.22	1.94	1,485.84	1,460.71	25.13	59.126	0				
6,985.26	6,883.38	6,883.19	6,839.04	13.45	12.31	3.02	1,487.46	1,462.06	25.39	58.575	0				
7,000.00	6,898.12	6,894.74	6,849.31	13.47	12.32	-86.75	1,487.86	1,462.85	25.01	59.490	0				
7,050.00	6,948.01	6,933.35	6,882.93	13.55	12.37	-85.96	1,489.40	1,464.23	25.17	59.163	0				
7,100.00	6,997.50	6,971.20	6,914.72	13.62	12.42	-85.19	1,491.18	1,465.85	25.33	58.861	0				
7,150.00	7,046.29	7,008.40	6,944.70	13.68	12.46	-84.44	1,493.16	1,467.68	25.49	58.588	0				
7,200.00	7,094.07	7,050.00	6,976.66	13.75	12.51	-83.64	1,495.31	1,469.66	25.64	58.308	0				
7,250.00	7,140.56	7,081.08	6,999.36	13.81	12.55	-83.02	1,497.54	1,471.78	25.77	58.121	0				
7,300.00	7,185.46	7,116.71	7,024.07	13.87	12.59	-82.35	1,499.86	1,473.97	25.89	57.934	0				
7,350.00	7,228.49	7,150.00	7,045.84	13.92	12.64	-81.73	1,502.21	1,476.21	25.99	57.798	0				
7,400.00	7,269.40	7,186.78	7,068.31	13.98	12.69	-81.11	1,504.53	1,478.43	26.10	57.647	0				
7,450.00	7,307.93	7,221.32	7,087.85	14.04	12.73	-80.55	1,506.81	1,480.62	26.19	57.540	0				
7,500.00	7,343.84	7,250.00	7,102.89	14.10	12.77	-80.08	1,509.01	1,482.78	26.24	57.516	0				
7,550.00	7,376.91	7,289.60	7,121.81	14.16	12.83	-79.56	1,511.06	1,484.73	26.33	57.384	0				
7,600.00	7,406.94	7,323.41	7,136.22	14.22	12.88	-79.14	1,512.97	1,486.58	26.40	57.318	0				
7,650.00	7,433.74	7,350.00	7,146.41	14.28	12.93	-78.80	1,514.72	1,488.31	26.42	57.341	0				
7,700.00	7,457.15	7,390.53	7,159.93	14.35	12.99	-78.44	1,516.22	1,489.70	26.52	57.179	0				
7,750.00	7,477.02	7,423.88	7,169.23	14.43	13.06	-78.17	1,517.51	1,490.92	26.58	57.087	0				
7,800.00	7,493.23	7,450.00	7,175.32	14.51	13.12	-77.98	1,518.57	1,491.96	26.61	57.071	0				
7,850.00	7,505.69	7,490.33	7,182.68	14.60	13.21	-77.80	1,519.32	1,492.59	26.74	56.825	0				
7,900.00	7,514.30	7,523.46	7,186.84	14.69	13.30	-77.70	1,519.83	1,492.99	26.83	56.637	0				
7,950.00	7,519.02	7,556.56	7,189.27	14.80	13.38	-77.65	1,520.05	1,493.10	26.95	56.408	0				
7,985.26	7,520.00	7,579.90	7,189.96	14.88	13.45	-77.65	1,520.04	1,492.98	27.06	56.179	0				
7,995.94	7,520.00	7,586.97	7,190.00	14.90	13.47	-77.65	1,520.02	1,492.92	27.10	56.081	0				
8,000.00	7,520.00	7,591.04	7,190.00	14.91	13.48	-77.65	1,520.02	1,492.90	27.13	56.036	0				
8,100.00	7,520.00	7,691.04	7,190.00	15.16	13.77	-77.65	1,520.03	1,492.33	27.69	54.885	0				
8,200.00	7,520.00	7,791.04	7,190.00	15.45	14.09	-77.65	1,520.03	1,491.71	28.32	53.676	0				
8,300.00	7,520.00	7,891.04	7,190.00	15.76	14.44	-77.65	1,520.03	1,491.03	29.00	52.424	0				
8,400.00	7,520.00	7,991.04	7,190.00	16.11	14.81	-77.65	1,520.03	1,490.31	29.72	51.145	0				
8,500.00	7,520.00	8,091.04	7,190.00	16.48	15.20	-77.65	1,520.03	1,489.54	30.49	49.852	0				
8,600.00	7,520.00	8,191.04	7,190.00	16.87	15.62	-77.65	1,520.03	1,488.72	31.30	48.558	0				
8,700.00	7,520.00	8,291.04	7,190.00	17.28	16.06	-77.65	1,520.03	1,487.87	32.15	47.273	0				
8,800.00	7,520.00	8,391.04	7,190.00	17.71	16.51	-77.65	1,520.03	1,486.99	33.04	46.004	0				
8,900.00	7,520.00	8,491.04	7,190.00	18.16	16.98	-77.65	1,520.03	1,486.07	33.96	44.757	0				
9,000.00	7,520.00	8,591.04	7,190.00	18.62	17.47	-77.65	1,520.03	1,485.12	34.91	43.539	0				
9,100.00	7,520.00	8,691.04	7,190.00	19.10	17.97	-77.65	1,520.03	1,484.14	35.89	42.352	0				

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



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision		
9,200.00	7,520.00	8,791.04	7,190.00	19.59	18.48	-77.65	1,520.03	1,483.13	36.89	41.199	0			
9,300.00	7,520.00	8,891.04	7,190.00	20.10	19.01	-77.65	1,520.03	1,482.11	37.92	40.082	0			
9,400.00	7,520.00	8,991.04	7,190.00	20.62	19.54	-77.65	1,520.03	1,481.06	38.97	39.002	0			
9,500.00	7,520.00	9,091.04	7,190.00	21.14	20.09	-77.65	1,520.03	1,479.99	40.04	37.960	0			
9,600.00	7,520.00	9,191.04	7,190.00	21.68	20.65	-77.65	1,520.03	1,478.90	41.13	36.956	0			
9,700.00	7,520.00	9,291.04	7,190.00	22.23	21.21	-77.65	1,520.03	1,477.79	42.24	35.988	0			
9,800.00	7,520.00	9,391.04	7,190.00	22.78	21.79	-77.65	1,520.03	1,476.67	43.36	35.058	0			
9,900.00	7,520.00	9,491.04	7,190.00	23.35	22.37	-77.65	1,520.03	1,475.54	44.49	34.163	0			
10,000.00	7,520.00	9,591.04	7,190.00	23.92	22.95	-77.65	1,520.03	1,474.39	45.64	33.302	0			
10,100.00	7,520.00	9,691.04	7,190.00	24.49	23.55	-77.65	1,520.03	1,473.23	46.81	32.475	0			
10,200.00	7,520.00	9,791.04	7,190.00	25.08	24.15	-77.65	1,520.03	1,472.05	47.98	31.681	0			
10,300.00	7,520.00	9,891.04	7,190.00	25.67	24.75	-77.65	1,520.03	1,470.87	49.16	30.918	0			
10,400.00	7,520.00	9,991.04	7,190.00	26.26	25.36	-77.65	1,520.03	1,469.67	50.36	30.184	0			
10,500.00	7,520.00	10,091.04	7,190.00	26.86	25.98	-77.65	1,520.03	1,468.47	51.56	29.480	0			
10,600.00	7,520.00	10,191.04	7,190.00	27.47	26.60	-77.65	1,520.03	1,467.26	52.77	28.803	0			
10,700.00	7,520.00	10,291.04	7,190.00	28.08	27.22	-77.65	1,520.03	1,466.04	53.99	28.151	0			
10,800.00	7,520.00	10,391.04	7,190.00	28.69	27.85	-77.65	1,520.03	1,464.81	55.22	27.525	0			
10,900.00	7,520.00	10,491.04	7,190.00	29.31	28.48	-77.65	1,520.03	1,463.58	56.46	26.923	0			
11,000.00	7,520.00	10,591.04	7,190.00	29.93	29.12	-77.65	1,520.03	1,462.33	57.70	26.344	0			
11,100.00	7,520.00	10,691.04	7,190.00	30.56	29.75	-77.65	1,520.03	1,461.09	58.95	25.786	0			
11,200.00	7,520.00	10,791.04	7,190.00	31.19	30.39	-77.65	1,520.03	1,459.83	60.20	25.249	0			
11,300.00	7,520.00	10,891.04	7,190.00	31.82	31.04	-77.65	1,520.03	1,458.57	61.46	24.732	0			
11,400.00	7,520.00	10,991.04	7,190.00	32.45	31.68	-77.65	1,520.04	1,457.31	62.73	24.233	0			
11,500.00	7,520.00	11,091.04	7,190.00	33.09	32.33	-77.65	1,520.04	1,456.04	63.99	23.752	0			
11,600.00	7,520.00	11,191.04	7,190.00	33.73	32.98	-77.65	1,520.04	1,454.77	65.27	23.289	0			
11,700.00	7,520.00	11,291.04	7,190.00	34.38	33.63	-77.65	1,520.04	1,453.49	66.55	22.842	0			
11,800.00	7,520.00	11,391.04	7,190.00	35.02	34.29	-77.65	1,520.04	1,452.21	67.83	22.410	0			
11,900.00	7,520.00	11,491.04	7,190.00	35.67	34.94	-77.65	1,520.04	1,450.92	69.11	21.993	0			
12,000.00	7,520.00	11,591.04	7,190.00	36.32	35.60	-77.65	1,520.04	1,449.63	70.40	21.590	0			
12,100.00	7,520.00	11,691.04	7,190.00	36.97	36.26	-77.65	1,520.04	1,448.34	71.70	21.201	0			
12,200.00	7,520.00	11,791.04	7,190.00	37.62	36.92	-77.65	1,520.04	1,447.04	72.99	20.824	0			
12,300.00	7,520.00	11,891.04	7,190.00	38.28	37.59	-77.65	1,520.04	1,445.75	74.29	20.460	0			
12,400.00	7,520.00	11,991.04	7,190.00	38.93	38.25	-77.65	1,520.04	1,444.44	75.59	20.108	0			
12,500.00	7,520.00	12,091.04	7,190.00	39.59	38.92	-77.65	1,520.04	1,443.14	76.90	19.766	0			
12,600.00	7,520.00	12,191.04	7,190.00	40.25	39.58	-77.65	1,520.04	1,441.83	78.21	19.436	0			
12,700.00	7,520.00	12,291.04	7,190.00	40.91	40.25	-77.65	1,520.04	1,440.52	79.52	19.116	0			
12,800.00	7,520.00	12,391.04	7,190.00	41.58	40.92	-77.65	1,520.04	1,439.21	80.83	18.805	0			
12,900.00	7,520.00	12,491.04	7,190.00	42.24	41.59	-77.65	1,520.04	1,437.90	82.14	18.504	0			
13,000.00	7,520.00	12,591.04	7,190.00	42.90	42.26	-77.65	1,520.04	1,436.58	83.46	18.213	0			
13,100.00	7,520.00	12,691.04	7,190.00	43.57	42.94	-77.65	1,520.04	1,435.26	84.78	17.929	0			
13,200.00	7,520.00	12,791.04	7,190.00	44.24	43.61	-77.65	1,520.04	1,433.94	86.10	17.654	0			
13,300.00	7,520.00	12,891.04	7,190.00	44.91	44.29	-77.65	1,520.04	1,432.62	87.42	17.387	0			
13,400.00	7,520.00	12,991.04	7,190.00	45.58	44.96	-77.65	1,520.04	1,431.29	88.75	17.128	0			
13,500.00	7,520.00	13,091.04	7,190.00	46.25	45.64	-77.65	1,520.04	1,429.97	90.07	16.875	0			
13,600.00	7,520.00	13,191.04	7,190.00	46.92	46.31	-77.65	1,520.04	1,428.64	91.40	16.630	0			
13,700.00	7,520.00	13,291.04	7,190.00	47.59	46.99	-77.65	1,520.04	1,427.31	92.73	16.392	0			
13,800.00	7,520.00	13,391.04	7,190.00	48.27	47.67	-77.65	1,520.04	1,425.98	94.06	16.160	0			
13,900.00	7,520.00	13,491.04	7,190.00	48.94	48.35	-77.65	1,520.04	1,424.65	95.39	15.934	0			
14,000.00	7,520.00	13,591.04	7,190.00	49.62	49.03	-77.65	1,520.04	1,423.32	96.73	15.715	0			
14,100.00	7,520.00	13,691.04	7,190.00	50.29	49.71	-77.65	1,520.04	1,421.98	98.06	15.501	0			
14,200.00	7,520.00	13,791.04	7,190.00	50.97	50.39	-77.65	1,520.04	1,420.64	99.40	15.292	0			
14,300.00	7,520.00	13,891.04	7,190.00	51.65	51.08	-77.65	1,520.04	1,419.31	100.74	15.089	0			
14,400.00	7,520.00	13,991.04	7,190.00	52.32	51.76	-77.65	1,520.04	1,417.97	102.08	14.891	0			
14,500.00	7,520.00	14,091.04	7,190.00	53.00	52.44	-77.65	1,520.04	1,416.63	103.41	14.699	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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision		
14,600.00	7,520.00	14,191.04	7,190.00	53.68	53.12	-77.65	1,520.04	1,415.29	104.76	14.510	0			
14,700.00	7,520.00	14,291.04	7,190.00	54.36	53.81	-77.65	1,520.05	1,413.95	106.10	14.327	0			
14,800.00	7,520.00	14,391.04	7,190.00	55.04	54.49	-77.65	1,520.05	1,412.61	107.44	14.148	0			
14,900.00	7,520.00	14,491.04	7,190.00	55.72	55.18	-77.65	1,520.05	1,411.26	108.78	13.973	0			
15,000.00	7,520.00	14,591.04	7,190.00	56.40	55.86	-77.65	1,520.05	1,409.92	110.13	13.802	0			
15,100.00	7,520.00	14,691.04	7,190.00	57.09	56.55	-77.65	1,520.05	1,408.57	111.47	13.636	0			
15,200.00	7,520.00	14,791.04	7,190.00	57.77	57.24	-77.65	1,520.05	1,407.23	112.82	13.473	0			
15,300.00	7,520.00	14,891.04	7,190.00	58.45	57.92	-77.65	1,520.05	1,405.88	114.17	13.314	0			
15,400.00	7,520.00	14,991.04	7,190.00	59.14	58.61	-77.65	1,520.05	1,404.53	115.52	13.159	0			
15,500.00	7,520.00	15,091.04	7,190.00	59.82	59.30	-77.65	1,520.05	1,403.18	116.87	13.007	0			
15,600.00	7,520.00	15,191.04	7,190.00	60.51	59.99	-77.65	1,520.05	1,401.83	118.21	12.858	0			
15,700.00	7,520.00	15,291.04	7,190.00	61.19	60.68	-77.65	1,520.05	1,400.48	119.56	12.713	0			
15,800.00	7,520.00	15,391.04	7,190.00	61.88	61.36	-77.65	1,520.05	1,399.13	120.92	12.571	0			
15,900.00	7,520.00	15,491.04	7,190.00	62.56	62.05	-77.65	1,520.05	1,397.78	122.27	12.432	0			
16,000.00	7,520.00	15,591.04	7,190.00	63.25	62.74	-77.65	1,520.05	1,396.43	123.62	12.296	0			
16,100.00	7,520.00	15,691.04	7,190.00	63.93	63.43	-77.65	1,520.05	1,395.08	124.97	12.163	0			
16,200.00	7,520.00	15,791.04	7,190.00	64.62	64.12	-77.65	1,520.05	1,393.72	126.33	12.033	0			
16,300.00	7,520.00	15,891.04	7,190.00	65.31	64.81	-77.65	1,520.05	1,392.37	127.68	11.905	0			
16,400.00	7,520.00	15,991.04	7,190.00	66.00	65.50	-77.65	1,520.05	1,391.01	129.04	11.780	0			
16,500.00	7,520.00	16,091.04	7,190.00	66.68	66.19	-77.65	1,520.05	1,389.66	130.39	11.658	0			
16,600.00	7,520.00	16,191.04	7,190.00	67.37	66.88	-77.65	1,520.05	1,388.30	131.75	11.538	0			
16,700.00	7,520.00	16,291.04	7,190.00	68.06	67.58	-77.65	1,520.05	1,386.95	133.10	11.420	0			
16,800.00	7,520.00	16,391.04	7,190.00	68.75	68.27	-77.65	1,520.05	1,385.59	134.46	11.305	0			
16,900.00	7,520.00	16,491.04	7,190.00	69.44	68.96	-77.65	1,520.05	1,384.23	135.82	11.192	0			
17,000.00	7,520.00	16,591.04	7,190.00	70.13	69.65	-77.65	1,520.05	1,382.88	137.18	11.081	0			
17,100.00	7,520.00	16,691.04	7,190.00	70.82	70.34	-77.65	1,520.05	1,381.52	138.53	10.972	0			
17,200.00	7,520.00	16,791.04	7,190.00	71.51	71.04	-77.65	1,520.05	1,380.16	139.89	10.866	0			
17,300.00	7,520.00	16,891.04	7,190.00	72.20	71.73	-77.65	1,520.05	1,378.80	141.25	10.761	0			
17,400.00	7,520.00	16,991.04	7,190.00	72.89	72.42	-77.65	1,520.05	1,377.44	142.61	10.659	0			
17,500.00	7,520.00	17,091.04	7,190.00	73.58	73.12	-77.65	1,520.05	1,376.08	143.97	10.558	0			
17,600.00	7,520.00	17,191.04	7,190.00	74.27	73.81	-77.65	1,520.05	1,374.72	145.33	10.459	0			
17,631.67	7,520.00	17,222.47	7,190.00	74.49	74.03	-77.65	1,520.03	1,374.27	145.76	10.428	0			
17,645.24	7,520.00	17,222.47	7,190.00	74.58	74.03	-77.65	1,520.09	1,374.24	145.85	10.422	0		SF	



# Schlumberger

## Anticollision Risk Report



<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<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	0.03	168.00							
100.00	100.00	96.00	96.00	0.15	0.14	0.03	167.95	167.67	0.29	584.491	0			
200.00	200.00	196.00	196.00	0.32	0.31	0.03	167.95	167.32	0.64	264.370	0			
300.00	300.00	296.00	296.00	0.50	0.49	0.03	167.95	166.97	0.98	170.622	0			
400.00	400.00	396.00	396.00	0.67	0.66	0.03	167.95	166.62	1.33	125.956	0			
500.00	500.00	496.00	496.00	0.84	0.84	0.03	167.95	166.27	1.68	99.824	0			
600.00	600.00	596.00	596.00	1.02	1.01	0.03	167.95	165.92	2.03	82.672	0		CC, ES	
700.00	699.98	695.98	695.98	1.19	1.19	152.19	169.50	167.12	2.38	71.219	0			
800.00	799.84	795.84	795.84	1.37	1.36	152.95	174.14	171.42	2.73	63.867	0			
900.00	899.45	895.45	895.45	1.55	1.53	154.13	181.95	178.88	3.07	59.241	0			
1,000.00	998.70	994.70	994.70	1.73	1.71	155.62	193.00	189.59	3.41	56.537	0			
1,100.00	1,097.47	1,091.76	1,091.75	1.91	1.88	156.86	207.75	204.00	3.75	55.394	0			
1,149.61	1,146.24	1,139.65	1,139.59	2.00	1.96	157.21	216.60	212.68	3.92	55.304	0			
1,200.00	1,195.71	1,188.17	1,188.04	2.10	2.05	157.44	226.20	222.11	4.09	55.286	0			
1,300.00	1,293.88	1,284.35	1,283.88	2.29	2.22	157.29	245.86	241.42	4.44	55.374	0			
1,400.00	1,392.04	1,382.30	1,381.37	2.48	2.39	156.84	265.90	261.11	4.79	55.475	0			
1,500.00	1,490.21	1,480.25	1,478.85	2.68	2.56	156.45	285.96	280.82	5.15	55.554	0			
1,600.00	1,588.37	1,578.20	1,576.34	2.87	2.74	156.12	306.03	300.53	5.50	55.616	0			
1,700.00	1,686.54	1,676.15	1,673.82	3.07	2.91	155.82	326.11	320.25	5.86	55.665	0			
1,800.00	1,784.70	1,774.10	1,771.30	3.26	3.09	155.56	346.20	339.98	6.21	55.704	0			
1,900.00	1,882.87	1,872.05	1,868.79	3.46	3.26	155.33	366.29	359.72	6.57	55.736	0			
2,000.00	1,981.03	1,970.00	1,966.27	3.66	3.44	155.12	386.38	379.46	6.93	55.762	0			
2,100.00	2,079.20	2,067.96	2,063.75	3.85	3.62	154.93	406.49	399.20	7.29	55.783	0			
2,200.00	2,177.36	2,165.91	2,161.24	4.05	3.79	154.76	426.59	418.95	7.65	55.800	0			
2,300.00	2,275.53	2,263.86	2,258.72	4.25	3.97	154.61	446.70	438.70	8.00	55.814	0			
2,400.00	2,373.69	2,361.81	2,356.21	4.45	4.15	154.47	466.81	458.45	8.36	55.826	0			
2,500.00	2,471.86	2,459.76	2,453.69	4.65	4.32	154.34	486.92	478.20	8.72	55.835	0			
2,600.00	2,570.02	2,557.71	2,551.17	4.85	4.50	154.22	507.04	497.96	9.08	55.843	0			
2,700.00	2,668.19	2,655.66	2,648.66	5.05	4.68	154.11	527.16	517.72	9.44	55.850	0			
2,800.00	2,766.36	2,753.61	2,746.14	5.25	4.85	154.01	547.28	537.48	9.80	55.855	0			
2,900.00	2,864.52	2,851.56	2,843.62	5.44	5.03	153.91	567.40	557.24	10.16	55.860	0			
3,000.00	2,962.69	2,949.51	2,941.11	5.64	5.21	153.82	587.52	577.00	10.52	55.863	0			
3,100.00	3,060.85	3,047.46	3,038.59	5.84	5.38	153.74	607.64	596.77	10.88	55.866	0			
3,200.00	3,159.02	3,145.41	3,136.08	6.04	5.56	153.66	627.77	616.53	11.24	55.868	0			
3,300.00	3,257.18	3,243.36	3,233.56	6.24	5.74	153.59	647.90	636.30	11.60	55.870	0			
3,400.00	3,355.35	3,341.31	3,331.04	6.44	5.92	153.52	668.02	656.07	11.96	55.872	0			
3,500.00	3,453.51	3,439.26	3,428.53	6.64	6.09	153.46	688.15	675.83	12.32	55.873	0			
3,600.00	3,551.68	3,537.22	3,526.01	6.84	6.27	153.40	708.28	695.60	12.68	55.874	0			
3,700.00	3,649.84	3,635.17	3,623.49	7.04	6.45	153.34	728.41	715.37	13.04	55.874	0			
3,800.00	3,748.01	3,733.12	3,720.98	7.24	6.63	153.29	748.54	735.14	13.40	55.874	0			
3,900.00	3,846.17	3,831.07	3,818.46	7.44	6.80	153.24	768.67	754.91	13.76	55.874	0			
4,000.00	3,944.34	3,929.02	3,915.95	7.64	6.98	153.19	788.80	774.68	14.12	55.874	0			
4,100.00	4,042.50	4,026.97	4,013.43	7.85	7.16	153.14	808.93	794.45	14.48	55.874	0			
4,200.00	4,140.67	4,124.92	4,110.91	8.05	7.34	153.10	829.06	814.22	14.84	55.874	0			
4,300.00	4,238.84	4,222.87	4,208.40	8.25	7.52	153.06	849.19	834.00	15.20	55.873	0			
4,400.00	4,337.00	4,320.82	4,305.88	8.45	7.69	153.02	869.33	853.77	15.56	55.873	0			
4,500.00	4,435.17	4,418.77	4,403.36	8.65	7.87	152.98	889.46	873.54	15.92	55.872	0			
4,600.00	4,533.33	4,516.72	4,500.85	8.85	8.05	152.94	909.59	893.31	16.28	55.872	0			
4,700.00	4,631.50	4,614.67	4,598.33	9.05	8.23	152.91	929.73	913.09	16.64	55.871	0			
4,800.00	4,729.66	4,712.62	4,695.82	9.25	8.40	152.87	949.86	932.86	17.00	55.870	0			
4,900.00	4,827.83	4,810.57	4,793.30	9.45	8.58	152.84	970.00	952.63	17.36	55.870	0			
5,000.00	4,925.99	4,908.52	4,890.78	9.65	8.76	152.81	990.13	972.41	17.72	55.869	0			
5,100.00	5,024.16	5,006.47	4,988.27	9.85	8.94	152.78	1,010.27	992.18	18.08	55.868	0			
5,200.00	5,122.32	5,104.43	5,085.75	10.05	9.12	152.75	1,030.40	1,011.96	18.44	55.867	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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<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	5,220.49	5,202.38	5,183.23	10.25	9.29	152.73	1,050.54	1,031.73	18.80	55.866	0			
5,400.00	5,318.65	5,300.33	5,280.72	10.45	9.47	152.70	1,070.67	1,051.51	19.17	55.865	0			
5,500.00	5,416.82	5,398.28	5,378.20	10.65	9.65	152.68	1,090.81	1,071.28	19.53	55.864	0			
5,600.00	5,514.98	5,496.23	5,475.69	10.85	9.83	152.65	1,110.94	1,091.06	19.89	55.863	0			
5,700.00	5,613.15	5,594.18	5,573.17	11.06	10.00	152.63	1,131.08	1,110.83	20.25	55.863	0			
5,800.00	5,711.32	5,692.13	5,670.65	11.26	10.18	152.61	1,151.22	1,130.61	20.61	55.862	0			
5,900.00	5,809.48	5,790.08	5,768.14	11.46	10.36	152.58	1,171.35	1,150.38	20.97	55.861	0			
6,000.00	5,907.65	5,888.03	5,866.62	11.66	10.54	152.56	1,191.49	1,170.16	21.33	55.860	0			
6,100.00	6,005.81	5,985.98	5,963.10	11.86	10.72	152.54	1,211.63	1,189.94	21.69	55.859	0			
6,200.00	6,103.98	6,083.93	6,060.59	12.06	10.89	152.52	1,231.76	1,209.71	22.05	55.858	0			
6,300.00	6,202.14	6,181.88	6,158.07	12.26	11.07	152.50	1,251.90	1,229.49	22.41	55.857	0			
6,335.65	6,237.14	6,216.80	6,192.82	12.33	11.14	152.50	1,259.08	1,236.54	22.54	55.857	0			
6,400.00	6,300.44	6,279.96	6,255.68	12.46	11.25	152.59	1,271.41	1,248.61	22.80	55.760	0			
6,500.00	6,399.28	6,378.53	6,353.78	12.65	11.43	152.64	1,288.07	1,264.87	23.19	55.535	0			
6,600.00	6,498.59	6,477.52	6,452.30	12.82	11.61	152.60	1,301.67	1,278.09	23.57	55.219	0			
6,700.00	6,598.25	6,585.45	6,559.76	13.00	11.80	152.46	1,312.05	1,288.10	23.95	54.785	0			
6,800.00	6,698.13	6,703.53	6,677.64	13.16	12.01	152.35	1,318.18	1,293.86	24.32	54.206	0			
6,885.26	6,783.38	6,804.55	6,778.64	13.29	12.18	0.41	1,319.86	1,294.85	25.01	52.779	0			
6,900.00	6,798.12	6,820.03	6,794.12	13.32	12.21	0.41	1,319.86	1,294.80	25.06	52.673	0			
6,985.26	6,883.38	6,905.29	6,879.38	13.45	12.35	0.41	1,319.86	1,294.52	25.34	52.082	0			
7,000.00	6,898.12	6,919.88	6,893.97	13.47	12.38	-89.59	1,319.86	1,294.86	25.00	52.792	0			
7,050.00	6,948.01	6,969.16	6,943.16	13.55	12.46	-89.61	1,319.86	1,294.70	25.16	52.463	0			
7,100.00	6,997.50	7,018.48	6,992.03	13.62	12.53	-89.63	1,319.85	1,294.55	25.31	52.155	0			
7,150.00	7,046.29	7,067.83	7,040.28	13.68	12.60	-89.65	1,319.85	1,294.40	25.45	51.867	0			
7,200.00	7,094.07	7,117.21	7,087.62	13.75	12.67	-89.67	1,319.85	1,294.27	25.58	51.595	0			
7,250.00	7,140.56	7,166.64	7,133.78	13.81	12.73	-89.69	1,319.84	1,294.13	25.71	51.339	0			
7,300.00	7,185.46	7,216.11	7,178.46	13.87	12.80	-89.72	1,319.84	1,294.01	25.83	51.090	0			
7,350.00	7,228.49	7,265.63	7,221.40	13.92	12.86	-89.75	1,319.84	1,293.88	25.96	50.846	0			
7,400.00	7,269.40	7,315.19	7,262.33	13.98	12.92	-89.78	1,319.83	1,293.75	26.08	50.606	0			
7,450.00	7,307.93	7,364.81	7,301.01	14.04	12.98	-89.81	1,319.83	1,293.63	26.21	50.365	0			
7,500.00	7,343.84	7,414.49	7,337.20	14.10	13.05	-89.84	1,319.83	1,293.50	26.33	50.119	0			
7,550.00	7,376.91	7,464.22	7,370.66	14.16	13.11	-89.87	1,319.83	1,293.36	26.47	49.864	0			
7,600.00	7,406.94	7,514.02	7,401.18	14.22	13.18	-89.91	1,319.83	1,293.21	26.61	49.596	0			
7,650.00	7,433.74	7,563.87	7,428.57	14.28	13.25	-89.94	1,319.83	1,293.06	26.76	49.312	0			
7,700.00	7,457.15	7,613.79	7,452.64	14.35	13.33	-89.98	1,319.82	1,292.89	26.93	49.008	0			
7,735.54	7,471.65	7,649.31	7,467.65	14.41	13.38	-90.00	1,319.82	1,292.77	27.06	48.778	0			
7,750.00	7,477.02	7,663.77	7,473.24	14.43	13.40	-90.01	1,319.82	1,292.71	27.11	48.682	0			
7,800.00	7,493.23	7,713.81	7,490.22	14.51	13.50	-90.05	1,319.82	1,292.52	27.31	48.332	0			
7,850.00	7,505.69	7,763.92	7,503.47	14.60	13.61	-90.08	1,319.83	1,292.31	27.52	47.959	0			
7,900.00	7,514.30	7,814.09	7,512.89	14.69	13.73	-90.11	1,319.83	1,292.08	27.75	47.562	0			
7,950.00	7,519.02	7,864.32	7,518.41	14.80	13.86	-90.15	1,319.83	1,291.83	28.00	47.143	0			
7,985.26	7,520.00	7,899.78	7,519.93	14.88	13.95	-90.17	1,319.83	1,291.65	28.18	46.838	0			
8,000.00	7,520.00	7,914.58	7,520.00	14.91	13.99	-90.17	1,319.83	1,291.57	28.26	46.706	0			
8,100.00	7,520.00	8,014.58	7,520.00	15.16	14.28	-90.17	1,319.83	1,291.01	28.83	45.787	0			
8,200.00	7,520.00	8,114.58	7,520.00	15.45	14.59	-90.17	1,319.83	1,290.38	29.45	44.819	0			
8,300.00	7,520.00	8,214.58	7,520.00	15.76	14.93	-90.17	1,319.83	1,289.71	30.12	43.814	0			
8,400.00	7,520.00	8,314.58	7,520.00	16.11	15.30	-90.17	1,319.83	1,288.98	30.85	42.785	0			
8,500.00	7,520.00	8,414.58	7,520.00	16.48	15.69	-90.17	1,319.83	1,288.21	31.62	41.742	0			
8,600.00	7,520.00	8,514.58	7,520.00	16.87	16.10	-90.17	1,319.83	1,287.40	32.43	40.695	0			
8,700.00	7,520.00	8,614.58	7,520.00	17.28	16.52	-90.17	1,319.83	1,286.54	33.29	39.651	0			
8,800.00	7,520.00	8,714.58	7,520.00	17.71	16.97	-90.17	1,319.83	1,285.65	34.18	38.619	0			
8,900.00	7,520.00	8,814.58	7,520.00	18.16	17.43	-90.17	1,319.83	1,284.73	35.10	37.603	0			
9,000.00	7,520.00	8,914.58	7,520.00	18.62	17.91	-90.17	1,319.83	1,283.78	36.05	36.606	0			
9,100.00	7,520.00	9,014.58	7,520.00	19.10	18.41	-90.17	1,319.83	1,282.79	37.04	35.634	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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<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					
9,200.00	7,520.00	9,114.58	7,520.00	19.59	18.92	-90.17	1,319.83	1,281.78	38.05	34.688	0						
9,300.00	7,520.00	9,214.58	7,520.00	20.10	19.43	-90.17	1,319.83	1,280.75	39.08	33.769	0						
9,400.00	7,520.00	9,314.58	7,520.00	20.62	19.96	-90.17	1,319.83	1,279.69	40.14	32.879	0						
9,500.00	7,520.00	9,414.58	7,520.00	21.14	20.51	-90.17	1,319.83	1,278.61	41.22	32.019	0						
9,600.00	7,520.00	9,514.58	7,520.00	21.68	21.06	-90.17	1,319.83	1,277.51	42.32	31.188	0						
9,700.00	7,520.00	9,614.58	7,520.00	22.23	21.62	-90.17	1,319.83	1,276.40	43.43	30.387	0						
9,800.00	7,520.00	9,714.58	7,520.00	22.78	22.18	-90.17	1,319.83	1,275.26	44.57	29.615	0						
9,900.00	7,520.00	9,814.58	7,520.00	23.35	22.76	-90.17	1,319.83	1,274.12	45.71	28.872	0						
10,000.00	7,520.00	9,914.58	7,520.00	23.92	23.34	-90.17	1,319.83	1,272.96	46.88	28.156	0						
10,100.00	7,520.00	10,014.58	7,520.00	24.49	23.93	-90.17	1,319.83	1,271.78	48.05	27.468	0						
10,200.00	7,520.00	10,114.58	7,520.00	25.08	24.52	-90.17	1,319.83	1,270.59	49.24	26.806	0						
10,300.00	7,520.00	10,214.58	7,520.00	25.67	25.13	-90.17	1,319.83	1,269.40	50.44	26.169	0						
10,400.00	7,520.00	10,314.58	7,520.00	26.26	25.73	-90.17	1,319.83	1,268.19	51.64	25.556	0						
10,500.00	7,520.00	10,414.58	7,520.00	26.86	26.34	-90.17	1,319.83	1,266.97	52.86	24.967	0						
10,600.00	7,520.00	10,514.58	7,520.00	27.47	26.96	-90.17	1,319.83	1,265.74	54.09	24.400	0						
10,700.00	7,520.00	10,614.58	7,520.00	28.08	27.58	-90.17	1,319.83	1,264.50	55.33	23.855	0						
10,800.00	7,520.00	10,714.58	7,520.00	28.69	28.20	-90.17	1,319.83	1,263.26	56.57	23.330	0						
10,900.00	7,520.00	10,814.58	7,520.00	29.31	28.83	-90.17	1,319.83	1,262.01	57.82	22.825	0						
11,000.00	7,520.00	10,914.58	7,520.00	29.93	29.46	-90.17	1,319.83	1,260.75	59.08	22.339	0						
11,100.00	7,520.00	11,014.58	7,520.00	30.56	30.09	-90.17	1,319.83	1,259.48	60.35	21.871	0						
11,200.00	7,520.00	11,114.58	7,520.00	31.19	30.73	-90.17	1,319.83	1,258.21	61.62	21.419	0						
11,300.00	7,520.00	11,214.58	7,520.00	31.82	31.37	-90.17	1,319.83	1,256.93	62.90	20.984	0						
11,400.00	7,520.00	11,314.58	7,520.00	32.45	32.01	-90.17	1,319.83	1,255.65	64.18	20.565	0						
11,500.00	7,520.00	11,414.58	7,520.00	33.09	32.65	-90.17	1,319.83	1,254.36	65.47	20.160	0						
11,600.00	7,520.00	11,514.58	7,520.00	33.73	33.30	-90.17	1,319.83	1,253.07	66.76	19.770	0						
11,700.00	7,520.00	11,614.58	7,520.00	34.38	33.95	-90.17	1,319.83	1,251.77	68.06	19.393	0						
11,800.00	7,520.00	11,714.58	7,520.00	35.02	34.60	-90.17	1,319.83	1,250.47	69.36	19.029	0						
11,900.00	7,520.00	11,814.58	7,520.00	35.67	35.26	-90.17	1,319.83	1,249.17	70.66	18.678	0						
12,000.00	7,520.00	11,914.58	7,520.00	36.32	35.91	-90.17	1,319.83	1,247.86	71.97	18.338	0						
12,100.00	7,520.00	12,014.58	7,520.00	36.97	36.57	-90.17	1,319.83	1,246.55	73.29	18.009	0						
12,200.00	7,520.00	12,114.58	7,520.00	37.62	37.23	-90.17	1,319.83	1,245.23	74.60	17.692	0						
12,300.00	7,520.00	12,214.58	7,520.00	38.28	37.89	-90.17	1,319.83	1,243.91	75.92	17.384	0						
12,400.00	7,520.00	12,314.58	7,520.00	38.93	38.55	-90.17	1,319.83	1,242.59	77.24	17.086	0						
12,500.00	7,520.00	12,414.58	7,520.00	39.59	39.21	-90.17	1,319.83	1,241.26	78.57	16.798	0						
12,600.00	7,520.00	12,514.58	7,520.00	40.25	39.88	-90.17	1,319.83	1,239.93	79.90	16.519	0						
12,700.00	7,520.00	12,614.58	7,520.00	40.91	40.54	-90.17	1,319.83	1,238.60	81.23	16.248	0						
12,800.00	7,520.00	12,714.58	7,520.00	41.58	41.21	-90.17	1,319.83	1,237.27	82.56	15.986	0						
12,900.00	7,520.00	12,814.58	7,520.00	42.24	41.88	-90.17	1,319.83	1,235.93	83.90	15.731	0						
13,000.00	7,520.00	12,914.58	7,520.00	42.90	42.55	-90.17	1,319.83	1,234.59	85.24	15.484	0						
13,100.00	7,520.00	13,014.58	7,520.00	43.57	43.22	-90.17	1,319.83	1,233.25	86.58	15.244	0						
13,200.00	7,520.00	13,114.58	7,520.00	44.24	43.89	-90.17	1,319.83	1,231.91	87.92	15.012	0						
13,300.00	7,520.00	13,214.58	7,520.00	44.91	44.56	-90.17	1,319.83	1,230.57	89.26	14.786	0						
13,400.00	7,520.00	13,314.58	7,520.00	45.58	45.24	-90.17	1,319.83	1,229.22	90.61	14.566	0						
13,500.00	7,520.00	13,414.58	7,520.00	46.25	45.91	-90.17	1,319.83	1,227.87	91.96	14.352	0						
13,600.00	7,520.00	13,514.58	7,520.00	46.92	46.59	-90.17	1,319.83	1,226.52	93.31	14.145	0						
13,700.00	7,520.00	13,614.58	7,520.00	47.59	47.27	-90.17	1,319.83	1,225.17	94.66	13.943	0						
13,800.00	7,520.00	13,714.58	7,520.00	48.27	47.94	-90.17	1,319.83	1,223.82	96.01	13.746	0						
13,900.00	7,520.00	13,814.58	7,520.00	48.94	48.62	-90.17	1,319.83	1,222.46	97.37	13.555	0						
14,000.00	7,520.00	13,914.58	7,520.00	49.62	49.30	-90.17	1,319.83	1,221.10	98.73	13.369	0						
14,100.00	7,520.00	14,014.58	7,520.00	50.29	49.98	-90.17	1,319.83	1,219.75	100.08	13.187	0						
14,200.00	7,520.00	14,114.58	7,520.00	50.97	50.66	-90.17	1,319.83	1,218.39	101.44	13.011	0						
14,300.00	7,520.00	14,214.58	7,520.00	51.65	51.34	-90.17	1,319.83	1,217.03	102.80	12.838	0						
14,400.00	7,520.00	14,314.58	7,520.00	52.32	52.02	-90.17	1,319.83	1,215.67	104.16	12.671	0						
14,500.00	7,520.00	14,414.58	7,520.00	53.00	52.70	-90.17	1,319.83	1,214.30	105.53	12.507	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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Sec.08-T07N-R66W - Thornton 6 - Original Hole - Rev 0		Offset Site Error:		0.00 usft	
Survey Program: 0-Pathfinder													Offset Well Error:		0.00 usft			
Reference		Offset		Semi Major Axis		Distance							Warning					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision						
14,600.00	7,520.00	14,514.58	7,520.00	53.68	53.38	-90.17	1,319.83	1,212.94	106.89	12.347	0							
14,700.00	7,520.00	14,614.58	7,520.00	54.36	54.07	-90.17	1,319.83	1,211.57	108.26	12.192	0							
14,800.00	7,520.00	14,714.58	7,520.00	55.04	54.75	-90.17	1,319.83	1,210.21	109.62	12.040	0							
14,900.00	7,520.00	14,814.58	7,520.00	55.72	55.43	-90.17	1,319.83	1,208.84	110.99	11.892	0							
15,000.00	7,520.00	14,914.58	7,520.00	56.40	56.12	-90.17	1,319.83	1,207.47	112.36	11.747	0							
15,100.00	7,520.00	15,014.58	7,520.00	57.09	56.80	-90.17	1,319.83	1,206.10	113.73	11.605	0							
15,200.00	7,520.00	15,114.58	7,520.00	57.77	57.49	-90.17	1,319.83	1,204.73	115.10	11.467	0							
15,300.00	7,520.00	15,214.58	7,520.00	58.45	58.17	-90.17	1,319.83	1,203.36	116.47	11.332	0							
15,400.00	7,520.00	15,314.58	7,520.00	59.14	58.86	-90.17	1,319.83	1,201.99	117.84	11.200	0							
15,500.00	7,520.00	15,414.58	7,520.00	59.82	59.55	-90.17	1,319.83	1,200.62	119.21	11.071	0							
15,600.00	7,520.00	15,514.58	7,520.00	60.51	60.23	-90.17	1,319.83	1,199.25	120.58	10.945	0							
15,700.00	7,520.00	15,614.58	7,520.00	61.19	60.92	-90.17	1,319.83	1,197.87	121.96	10.822	0							
15,800.00	7,520.00	15,714.58	7,520.00	61.88	61.61	-90.17	1,319.83	1,196.50	123.33	10.701	0							
15,900.00	7,520.00	15,814.58	7,520.00	62.56	62.30	-90.17	1,319.83	1,195.12	124.71	10.583	0							
16,000.00	7,520.00	15,914.58	7,520.00	63.25	62.99	-90.17	1,319.83	1,193.75	126.09	10.468	0							
16,100.00	7,520.00	16,014.58	7,520.00	63.93	63.67	-90.17	1,319.83	1,192.37	127.46	10.355	0							
16,200.00	7,520.00	16,114.58	7,520.00	64.62	64.36	-90.17	1,319.83	1,190.99	128.84	10.244	0							
16,300.00	7,520.00	16,214.58	7,520.00	65.31	65.05	-90.17	1,319.83	1,189.61	130.22	10.136	0							
16,400.00	7,520.00	16,314.58	7,520.00	66.00	65.74	-90.17	1,319.83	1,188.23	131.60	10.029	0							
16,500.00	7,520.00	16,414.58	7,520.00	66.68	66.43	-90.17	1,319.83	1,186.85	132.98	9.925	0							
16,600.00	7,520.00	16,514.58	7,520.00	67.37	67.12	-90.17	1,319.83	1,185.47	134.36	9.823	0							
16,700.00	7,520.00	16,614.58	7,520.00	68.06	67.81	-90.17	1,319.83	1,184.09	135.74	9.723	0							
16,800.00	7,520.00	16,714.58	7,520.00	68.75	68.50	-90.17	1,319.83	1,182.71	137.12	9.626	0							
16,900.00	7,520.00	16,814.58	7,520.00	69.44	69.19	-90.17	1,319.83	1,181.33	138.50	9.529	0							
17,000.00	7,520.00	16,914.58	7,520.00	70.13	69.89	-90.17	1,319.83	1,179.95	139.88	9.435	0							
17,100.00	7,520.00	17,014.58	7,520.00	70.82	70.58	-90.17	1,319.83	1,178.57	141.26	9.343	0							
17,200.00	7,520.00	17,114.58	7,520.00	71.51	71.27	-90.17	1,319.83	1,177.18	142.65	9.252	0							
17,300.00	7,520.00	17,214.58	7,520.00	72.20	71.96	-90.17	1,319.83	1,175.80	144.03	9.164	0							
17,400.00	7,520.00	17,314.58	7,520.00	72.89	72.65	-90.17	1,319.83	1,174.42	145.41	9.076	0							
17,500.00	7,520.00	17,414.58	7,520.00	73.58	73.35	-90.17	1,319.83	1,173.03	146.80	8.991	0							
17,553.41	7,520.00	17,468.00	7,520.00	73.95	73.72	-90.17	1,319.83	1,172.29	147.54	8.946	0							
17,600.00	7,520.00	17,513.87	7,520.00	74.27	74.03	-90.17	1,319.84	1,171.66	148.18	8.907	0							
17,616.57	7,520.00	17,530.44	7,520.00	74.39	74.15	-90.17	1,319.85	1,171.44	148.41	8.893	0							
17,645.24	7,520.00	17,547.64	7,520.00	74.58	74.27	-90.17	1,319.91	1,171.19	148.73	8.875	0	SF						



# Schlumberger

## Anticollision Risk Report



<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<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	Riskd Separation Factor	Probability of Collision			
0.00	0.00	0.00	0.00	0.00	0.00	0.01	139.96								
100.00	100.00	96.00	96.00	0.15	0.14	0.01	139.90	139.61	0.29	486.863	0				
200.00	200.00	196.00	196.00	0.32	0.31	0.01	139.90	139.27	0.64	220.212	0				
300.00	300.00	296.00	296.00	0.50	0.49	0.01	139.90	138.92	0.98	142.123	0				
400.00	400.00	396.00	396.00	0.67	0.66	0.01	139.90	138.57	1.33	104.918	0				
500.00	500.00	496.00	496.00	0.84	0.84	0.01	139.90	138.22	1.68	83.151	0				
600.00	600.00	596.00	596.00	1.02	1.01	0.01	139.90	137.87	2.03	68.864	0				
700.00	699.98	695.98	695.98	1.19	1.19	152.23	141.44	139.06	2.38	59.432	0			CC, ES	
800.00	799.84	795.84	795.84	1.37	1.36	153.14	146.09	143.37	2.73	53.580	0				
900.00	899.45	895.45	895.45	1.55	1.53	154.54	153.92	150.85	3.07	50.116	0				
1,000.00	998.70	994.70	994.70	1.73	1.71	156.27	165.02	161.61	3.41	48.343	0				
1,100.00	1,097.47	1,093.47	1,093.47	1.91	1.88	158.17	179.47	175.72	3.75	47.826	0				
1,149.61	1,146.24	1,142.34	1,142.33	2.00	1.97	159.03	187.90	183.98	3.92	47.937	0				
1,200.00	1,195.71	1,192.00	1,191.99	2.10	2.05	159.69	196.86	192.77	4.10	48.062	0				
1,300.00	1,293.88	1,290.75	1,290.61	2.29	2.23	160.15	214.58	210.13	4.45	48.245	0				
1,400.00	1,392.04	1,389.54	1,389.05	2.48	2.40	159.68	232.13	227.33	4.80	48.344	0				
1,500.00	1,490.21	1,487.95	1,486.96	2.68	2.57	158.90	249.65	244.49	5.16	48.411	0				
1,600.00	1,588.37	1,586.35	1,584.87	2.87	2.75	158.23	267.20	261.69	5.51	48.467	0				
1,700.00	1,686.54	1,684.75	1,682.78	3.07	2.92	157.64	284.78	278.91	5.87	48.515	0				
1,800.00	1,784.70	1,783.15	1,780.69	3.26	3.10	157.12	302.39	296.16	6.23	48.555	0				
1,900.00	1,882.87	1,881.55	1,878.59	3.46	3.28	156.65	320.02	313.44	6.59	48.589	0				
2,000.00	1,981.03	1,979.96	1,976.50	3.66	3.45	156.24	337.67	330.73	6.95	48.619	0				
2,100.00	2,079.20	2,078.36	2,074.41	3.85	3.63	155.86	355.34	348.03	7.30	48.644	0				
2,200.00	2,177.36	2,176.76	2,172.32	4.05	3.81	155.52	373.01	365.35	7.67	48.664	0				
2,300.00	2,275.53	2,275.16	2,270.23	4.25	3.98	155.21	390.70	382.68	8.03	48.680	0				
2,400.00	2,373.69	2,373.56	2,368.14	4.45	4.16	154.93	408.40	400.01	8.39	48.694	0				
2,500.00	2,471.86	2,471.97	2,466.05	4.65	4.34	154.67	426.11	417.36	8.75	48.706	0				
2,600.00	2,570.02	2,570.37	2,563.96	4.85	4.52	154.44	443.83	434.72	9.11	48.717	0				
2,700.00	2,668.19	2,668.77	2,661.87	5.05	4.69	154.22	461.55	452.08	9.47	48.726	0				
2,800.00	2,766.36	2,767.17	2,759.78	5.25	4.87	154.01	479.28	469.44	9.83	48.735	0				
2,900.00	2,864.52	2,865.58	2,857.68	5.44	5.05	153.82	497.01	486.81	10.20	48.743	0				
3,000.00	2,962.69	2,963.98	2,955.59	5.64	5.23	153.65	514.75	504.19	10.56	48.750	0				
3,100.00	3,060.85	3,062.38	3,053.50	5.84	5.41	153.48	532.49	521.57	10.92	48.756	0				
3,200.00	3,159.02	3,160.78	3,151.41	6.04	5.58	153.33	550.24	538.96	11.28	48.762	0				
3,300.00	3,257.18	3,259.18	3,249.32	6.24	5.76	153.19	567.99	556.35	11.65	48.767	0				
3,400.00	3,355.35	3,357.59	3,347.23	6.44	5.94	153.05	585.75	573.74	12.01	48.772	0				
3,500.00	3,453.51	3,455.99	3,445.14	6.64	6.12	152.92	603.50	591.13	12.37	48.777	0				
3,600.00	3,551.68	3,554.39	3,543.05	6.84	6.30	152.80	621.26	608.53	12.74	48.781	0				
3,700.00	3,649.84	3,652.79	3,640.96	7.04	6.48	152.69	639.03	625.93	13.10	48.784	0				
3,800.00	3,748.01	3,751.20	3,738.86	7.24	6.66	152.58	656.79	643.33	13.46	48.788	0				
3,900.00	3,846.17	3,849.60	3,836.77	7.44	6.83	152.48	674.56	660.73	13.83	48.791	0				
4,000.00	3,944.34	3,948.00	3,934.68	7.64	7.01	152.39	692.33	678.14	14.19	48.794	0				
4,100.00	4,042.50	4,046.40	4,032.59	7.85	7.19	152.29	710.10	695.55	14.55	48.796	0				
4,200.00	4,140.67	4,144.80	4,130.50	8.05	7.37	152.21	727.87	712.95	14.92	48.799	0				
4,300.00	4,238.84	4,243.21	4,228.41	8.25	7.55	152.12	745.64	730.36	15.28	48.801	0				
4,400.00	4,337.00	4,341.61	4,326.32	8.45	7.73	152.05	763.42	747.78	15.64	48.803	0				
4,500.00	4,435.17	4,440.01	4,424.23	8.65	7.91	151.97	781.20	765.19	16.01	48.805	0				
4,600.00	4,533.33	4,538.41	4,522.14	8.85	8.09	151.90	798.97	782.60	16.37	48.807	0				
4,700.00	4,631.50	4,636.82	4,620.04	9.05	8.27	151.83	816.75	800.02	16.73	48.809	0				
4,800.00	4,729.66	4,735.22	4,717.95	9.25	8.44	151.76	834.53	817.44	17.10	48.810	0				
4,900.00	4,827.83	4,833.62	4,815.86	9.45	8.62	151.70	852.31	834.85	17.46	48.812	0				
5,000.00	4,925.99	4,932.02	4,913.77	9.65	8.80	151.64	870.10	852.27	17.83	48.813	0				
5,100.00	5,024.16	5,030.42	5,011.68	9.85	8.98	151.58	887.88	869.69	18.19	48.814	0				
5,200.00	5,122.32	5,128.83	5,109.59	10.05	9.16	151.52	905.66	887.11	18.55	48.816	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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<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	5,220.49	5,227.23	5,207.50	10.25	9.34	151.47	923.45	904.53	18.92	48.817	0		
5,400.00	5,318.65	5,325.63	5,305.41	10.45	9.52	151.42	941.23	921.95	19.28	48.818	0		
5,500.00	5,416.82	5,424.03	5,403.32	10.65	9.70	151.37	959.02	939.37	19.64	48.819	0		
5,600.00	5,514.98	5,522.44	5,501.22	10.85	9.88	151.32	976.81	956.80	20.01	48.820	0		
5,700.00	5,613.15	5,620.84	5,599.13	11.06	10.05	151.28	994.59	974.22	20.37	48.821	0		
5,800.00	5,711.32	5,719.24	5,697.04	11.26	10.23	151.23	1,012.38	991.65	20.74	48.822	0		
5,900.00	5,809.48	5,817.64	5,794.95	11.46	10.41	151.19	1,030.17	1,009.07	21.10	48.822	0		
6,000.00	5,907.65	5,916.04	5,892.86	11.66	10.59	151.15	1,047.96	1,026.50	21.46	48.823	0		
6,100.00	6,005.81	6,014.45	5,990.77	11.86	10.77	151.11	1,065.75	1,043.92	21.83	48.824	0		
6,200.00	6,103.98	6,112.85	6,088.68	12.06	10.95	151.07	1,083.54	1,061.35	22.19	48.825	0		
6,300.00	6,202.14	6,212.08	6,187.42	12.26	11.13	151.03	1,101.32	1,078.77	22.56	48.824	0		
6,335.65	6,237.14	6,248.65	6,223.85	12.33	11.19	151.04	1,107.61	1,084.93	22.69	48.822	0		
6,400.00	6,300.44	6,314.78	6,289.83	12.46	11.31	151.21	1,118.23	1,095.29	22.95	48.733	0		
6,500.00	6,399.28	6,417.92	6,392.88	12.65	11.49	151.52	1,131.95	1,108.62	23.33	48.517	0		
6,600.00	6,498.59	6,519.64	6,494.59	12.82	11.66	151.88	1,142.30	1,118.61	23.69	48.212	0		
6,700.00	6,598.25	6,618.88	6,593.81	13.00	11.83	152.20	1,149.56	1,125.53	24.03	47.835	0		
6,800.00	6,698.13	6,715.30	6,689.21	13.16	11.97	153.01	1,153.93	1,129.59	24.34	47.408	0		
6,885.26	6,783.38	6,792.94	6,763.86	13.29	12.08	2.20	1,155.77	1,130.81	24.97	46.292	0		
6,900.00	6,798.12	6,805.80	6,775.95	13.32	12.10	2.41	1,155.99	1,130.97	25.02	46.212	0		
6,985.26	6,883.38	6,876.30	6,840.50	13.45	12.18	3.81	1,158.03	1,132.75	25.29	45.794	0		
7,000.00	6,898.12	6,887.85	6,850.76	13.47	12.20	-85.89	1,158.54	1,133.58	24.97	46.406	0		
7,050.00	6,948.01	6,926.48	6,884.35	13.55	12.25	-84.88	1,160.51	1,135.39	25.12	46.198	0		
7,100.00	6,997.50	6,964.35	6,916.10	13.62	12.29	-83.89	1,162.78	1,137.51	25.27	46.015	0		
7,150.00	7,046.29	7,000.00	6,944.81	13.68	12.34	-82.95	1,165.32	1,139.91	25.40	45.870	0		
7,200.00	7,094.07	7,038.17	6,974.19	13.75	12.38	-81.99	1,168.05	1,142.51	25.54	45.730	0		
7,250.00	7,140.56	7,074.25	7,000.58	13.81	12.43	-81.09	1,170.93	1,145.27	25.66	45.627	0		
7,300.00	7,185.46	7,109.87	7,025.22	13.87	12.47	-80.24	1,173.90	1,148.14	25.77	45.556	0		
7,350.00	7,228.49	7,150.00	7,051.20	13.92	12.53	-79.35	1,176.92	1,151.05	25.88	45.482	0		
7,400.00	7,269.40	7,179.93	7,069.30	13.98	12.57	-78.66	1,179.90	1,153.96	25.94	45.488	0		
7,450.00	7,307.93	7,214.46	7,088.76	14.04	12.62	-77.94	1,182.82	1,156.82	26.00	45.490	0		
7,500.00	7,343.84	7,250.00	7,107.15	14.10	12.68	-77.27	1,185.64	1,159.58	26.06	45.501	0		
7,550.00	7,376.91	7,282.71	7,122.55	14.16	12.73	-76.68	1,188.29	1,162.19	26.10	45.536	0		
7,600.00	7,406.94	7,316.51	7,136.88	14.22	12.79	-76.14	1,190.75	1,164.62	26.13	45.568	0		
7,650.00	7,433.74	7,350.00	7,149.46	14.28	12.85	-75.67	1,192.97	1,166.81	26.16	45.600	0		
7,700.00	7,457.15	7,383.58	7,160.41	14.35	12.92	-75.26	1,194.93	1,168.73	26.20	45.610	0		
7,750.00	7,477.02	7,416.91	7,169.62	14.43	12.99	-74.91	1,196.60	1,170.36	26.24	45.604	0		
7,800.00	7,493.23	7,450.00	7,177.09	14.51	13.06	-74.64	1,197.95	1,171.67	26.29	45.571	0		
7,850.00	7,505.69	7,483.30	7,182.91	14.60	13.14	-74.43	1,198.97	1,172.62	26.36	45.493	0		
7,900.00	7,514.30	7,516.41	7,186.98	14.69	13.23	-74.30	1,199.64	1,173.20	26.44	45.375	0		
7,950.00	7,519.02	7,550.00	7,189.37	14.80	13.31	-74.24	1,199.96	1,173.41	26.55	45.204	0		
7,985.26	7,520.00	7,572.79	7,189.98	14.88	13.37	-74.23	1,199.96	1,173.33	26.63	45.055	0		
7,996.89	7,520.00	7,581.54	7,190.00	14.90	13.40	-74.24	1,199.95	1,173.27	26.69	44.963	0		
8,000.00	7,520.00	7,584.65	7,190.00	14.91	13.40	-74.24	1,199.95	1,173.25	26.70	44.935	0		
8,100.00	7,520.00	7,684.65	7,190.00	15.16	13.69	-74.24	1,199.95	1,172.68	27.27	43.998	0		
8,200.00	7,520.00	7,784.65	7,190.00	15.45	14.01	-74.24	1,199.95	1,172.06	27.89	43.017	0		
8,300.00	7,520.00	7,884.65	7,190.00	15.76	14.36	-74.24	1,199.95	1,171.38	28.57	42.003	0		
8,400.00	7,520.00	7,984.65	7,190.00	16.11	14.73	-74.24	1,199.95	1,170.66	29.29	40.968	0		
8,500.00	7,520.00	8,084.65	7,190.00	16.48	15.12	-74.24	1,199.95	1,169.90	30.06	39.923	0		
8,600.00	7,520.00	8,184.65	7,190.00	16.87	15.54	-74.24	1,199.95	1,169.09	30.86	38.878	0		
8,700.00	7,520.00	8,284.65	7,190.00	17.28	15.98	-74.24	1,199.95	1,168.24	31.71	37.841	0		
8,800.00	7,520.00	8,384.65	7,190.00	17.71	16.43	-74.24	1,199.95	1,167.36	32.59	36.818	0		
8,900.00	7,520.00	8,484.65	7,190.00	18.16	16.90	-74.24	1,199.95	1,166.45	33.51	35.814	0		
9,000.00	7,520.00	8,584.65	7,190.00	18.62	17.39	-74.24	1,199.95	1,165.50	34.45	34.833	0		
9,100.00	7,520.00	8,684.65	7,190.00	19.10	17.89	-74.24	1,199.95	1,164.53	35.42	33.878	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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<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				
9,200.00	7,520.00	8,784.65	7,190.00	19.59	18.41	-74.24	1,199.95	1,163.54	36.42	32.951	0					
9,300.00	7,520.00	8,884.65	7,190.00	20.10	18.94	-74.24	1,199.95	1,162.52	37.44	32.054	0					
9,400.00	7,520.00	8,984.65	7,190.00	20.62	19.47	-74.24	1,199.95	1,161.48	38.48	31.186	0					
9,500.00	7,520.00	9,084.65	7,190.00	21.14	20.02	-74.24	1,199.95	1,160.42	39.54	30.350	0					
9,600.00	7,520.00	9,184.65	7,190.00	21.68	20.58	-74.24	1,199.95	1,159.34	40.62	29.544	0					
9,700.00	7,520.00	9,284.65	7,190.00	22.23	21.15	-74.24	1,199.95	1,158.24	41.71	28.768	0					
9,800.00	7,520.00	9,384.65	7,190.00	22.78	21.72	-74.24	1,199.95	1,157.13	42.82	28.021	0					
9,900.00	7,520.00	9,484.65	7,190.00	23.35	22.31	-74.24	1,199.95	1,156.00	43.95	27.304	0					
10,000.00	7,520.00	9,584.65	7,190.00	23.92	22.89	-74.24	1,199.95	1,154.87	45.09	26.614	0					
10,100.00	7,520.00	9,684.65	7,190.00	24.49	23.49	-74.24	1,199.95	1,153.71	46.24	25.952	0					
10,200.00	7,520.00	9,784.65	7,190.00	25.08	24.09	-74.24	1,199.95	1,152.55	47.40	25.315	0					
10,300.00	7,520.00	9,884.65	7,190.00	25.67	24.70	-74.24	1,199.95	1,151.38	48.57	24.704	0					
10,400.00	7,520.00	9,984.65	7,190.00	26.26	25.31	-74.24	1,199.95	1,150.20	49.76	24.117	0					
10,500.00	7,520.00	10,084.65	7,190.00	26.86	25.93	-74.24	1,199.95	1,149.01	50.95	23.553	0					
10,600.00	7,520.00	10,184.65	7,190.00	27.47	26.55	-74.24	1,199.95	1,147.81	52.15	23.011	0					
10,700.00	7,520.00	10,284.65	7,190.00	28.08	27.17	-74.24	1,199.95	1,146.60	53.36	22.490	0					
10,800.00	7,520.00	10,384.65	7,190.00	28.69	27.80	-74.24	1,199.95	1,145.38	54.57	21.989	0					
10,900.00	7,520.00	10,484.65	7,190.00	29.31	28.43	-74.24	1,199.95	1,144.16	55.79	21.507	0					
11,000.00	7,520.00	10,584.65	7,190.00	29.93	29.07	-74.24	1,199.95	1,142.93	57.02	21.043	0					
11,100.00	7,520.00	10,684.65	7,190.00	30.56	29.70	-74.24	1,199.95	1,141.70	58.26	20.597	0					
11,200.00	7,520.00	10,784.65	7,190.00	31.19	30.35	-74.24	1,199.95	1,140.45	59.50	20.168	0					
11,300.00	7,520.00	10,884.65	7,190.00	31.82	30.99	-74.24	1,199.95	1,139.21	60.74	19.754	0					
11,400.00	7,520.00	10,984.65	7,190.00	32.45	31.64	-74.24	1,199.95	1,137.96	62.00	19.356	0					
11,500.00	7,520.00	11,084.65	7,190.00	33.09	32.29	-74.24	1,199.95	1,136.70	63.25	18.971	0					
11,600.00	7,520.00	11,184.65	7,190.00	33.73	32.94	-74.24	1,199.95	1,135.44	64.51	18.601	0					
11,700.00	7,520.00	11,284.65	7,190.00	34.38	33.59	-74.24	1,199.95	1,134.18	65.78	18.243	0					
11,800.00	7,520.00	11,384.65	7,190.00	35.02	34.25	-74.24	1,199.95	1,132.91	67.04	17.898	0					
11,900.00	7,520.00	11,484.65	7,190.00	35.67	34.90	-74.24	1,199.95	1,131.64	68.32	17.565	0					
12,000.00	7,520.00	11,584.65	7,190.00	36.32	35.56	-74.24	1,199.95	1,130.36	69.59	17.243	0					
12,100.00	7,520.00	11,684.65	7,190.00	36.97	36.22	-74.24	1,199.95	1,129.08	70.87	16.932	0					
12,200.00	7,520.00	11,784.65	7,190.00	37.62	36.88	-74.24	1,199.95	1,127.80	72.15	16.631	0					
12,300.00	7,520.00	11,884.65	7,190.00	38.28	37.55	-74.24	1,199.95	1,126.52	73.44	16.340	0					
12,400.00	7,520.00	11,984.65	7,190.00	38.93	38.21	-74.24	1,199.95	1,125.23	74.72	16.058	0					
12,500.00	7,520.00	12,084.65	7,190.00	39.59	38.88	-74.24	1,199.95	1,123.94	76.02	15.786	0					
12,600.00	7,520.00	12,184.65	7,190.00	40.25	39.55	-74.24	1,199.95	1,122.64	77.31	15.522	0					
12,700.00	7,520.00	12,284.65	7,190.00	40.91	40.22	-74.24	1,199.95	1,121.35	78.60	15.266	0					
12,800.00	7,520.00	12,384.65	7,190.00	41.58	40.89	-74.24	1,199.95	1,120.05	79.90	15.018	0					
12,900.00	7,520.00	12,484.65	7,190.00	42.24	41.56	-74.24	1,199.95	1,118.75	81.20	14.777	0					
13,000.00	7,520.00	12,584.65	7,190.00	42.90	42.23	-74.24	1,199.95	1,117.45	82.50	14.544	0					
13,100.00	7,520.00	12,684.65	7,190.00	43.57	42.90	-74.24	1,199.95	1,116.15	83.81	14.318	0					
13,200.00	7,520.00	12,784.65	7,190.00	44.24	43.58	-74.24	1,199.95	1,114.84	85.11	14.098	0					
13,300.00	7,520.00	12,884.65	7,190.00	44.91	44.25	-74.24	1,199.95	1,113.53	86.42	13.885	0					
13,400.00	7,520.00	12,984.65	7,190.00	45.58	44.93	-74.24	1,199.95	1,112.22	87.73	13.678	0					
13,500.00	7,520.00	13,084.65	7,190.00	46.25	45.60	-74.24	1,199.95	1,110.91	89.04	13.476	0					
13,600.00	7,520.00	13,184.65	7,190.00	46.92	46.28	-74.24	1,199.95	1,109.60	90.36	13.280	0					
13,700.00	7,520.00	13,284.65	7,190.00	47.59	46.96	-74.24	1,199.95	1,108.28	91.67	13.090	0					
13,800.00	7,520.00	13,384.65	7,190.00	48.27	47.64	-74.24	1,199.95	1,106.97	92.99	12.905	0					
13,900.00	7,520.00	13,484.65	7,190.00	48.94	48.32	-74.24	1,199.95	1,105.65	94.30	12.724	0					
14,000.00	7,520.00	13,584.65	7,190.00	49.62	49.00	-74.24	1,199.95	1,104.33	95.62	12.549	0					
14,100.00	7,520.00	13,684.65	7,190.00	50.29	49.68	-74.24	1,199.95	1,103.01	96.94	12.378	0					
14,200.00	7,520.00	13,784.65	7,190.00	50.97	50.36	-74.24	1,199.95	1,101.69	98.26	12.212	0					
14,300.00	7,520.00	13,884.65	7,190.00	51.65	51.05	-74.24	1,199.95	1,100.37	99.58	12.050	0					
14,400.00	7,520.00	13,984.65	7,190.00	52.32	51.73	-74.24	1,199.95	1,099.05	100.91	11.892	0					
14,500.00	7,520.00	14,084.65	7,190.00	53.00	52.41	-74.24	1,199.95	1,097.72	102.23	11.738	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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision	
14,600.00	7,520.00	14,184.65	7,190.00	53.68	53.10	-74.24	1,199.95	1,096.40	103.56	11.587	0		
14,700.00	7,520.00	14,284.65	7,190.00	54.36	53.78	-74.24	1,199.95	1,095.07	104.88	11.441	0		
14,800.00	7,520.00	14,384.65	7,190.00	55.04	54.47	-74.24	1,199.95	1,093.74	106.21	11.298	0		
14,900.00	7,520.00	14,484.65	7,190.00	55.72	55.15	-74.24	1,199.95	1,092.41	107.54	11.158	0		
15,000.00	7,520.00	14,584.65	7,190.00	56.40	55.84	-74.24	1,199.95	1,091.08	108.87	11.022	0		
15,100.00	7,520.00	14,684.65	7,190.00	57.09	56.52	-74.24	1,199.95	1,089.75	110.20	10.889	0		
15,200.00	7,520.00	14,784.65	7,190.00	57.77	57.21	-74.24	1,199.95	1,088.42	111.53	10.759	0		
15,300.00	7,520.00	14,884.65	7,190.00	58.45	57.90	-74.24	1,199.95	1,087.09	112.86	10.632	0		
15,400.00	7,520.00	14,984.65	7,190.00	59.14	58.58	-74.24	1,199.95	1,085.76	114.20	10.508	0		
15,500.00	7,520.00	15,084.65	7,190.00	59.82	59.27	-74.24	1,199.95	1,084.42	115.53	10.387	0		
15,600.00	7,520.00	15,184.65	7,190.00	60.51	59.96	-74.24	1,199.95	1,083.09	116.86	10.268	0		
15,700.00	7,520.00	15,284.65	7,190.00	61.19	60.65	-74.24	1,199.95	1,081.76	118.20	10.152	0		
15,800.00	7,520.00	15,384.65	7,190.00	61.88	61.34	-74.24	1,199.95	1,080.42	119.53	10.039	0		
15,900.00	7,520.00	15,484.65	7,190.00	62.56	62.03	-74.24	1,199.95	1,079.08	120.87	9.928	0		
16,000.00	7,520.00	15,584.65	7,190.00	63.25	62.72	-74.24	1,199.95	1,077.75	122.21	9.819	0		
16,100.00	7,520.00	15,684.65	7,190.00	63.93	63.41	-74.24	1,199.95	1,076.41	123.54	9.713	0		
16,200.00	7,520.00	15,784.65	7,190.00	64.62	64.10	-74.24	1,199.95	1,075.07	124.88	9.609	0		
16,300.00	7,520.00	15,884.65	7,190.00	65.31	64.79	-74.24	1,199.95	1,073.73	126.22	9.507	0		
16,400.00	7,520.00	15,984.65	7,190.00	66.00	65.48	-74.24	1,199.95	1,072.39	127.56	9.407	0		
16,500.00	7,520.00	16,084.65	7,190.00	66.68	66.17	-74.24	1,199.95	1,071.05	128.90	9.309	0		
16,600.00	7,520.00	16,184.65	7,190.00	67.37	66.86	-74.24	1,199.95	1,069.71	130.24	9.213	0		
16,700.00	7,520.00	16,284.65	7,190.00	68.06	67.55	-74.24	1,199.95	1,068.37	131.58	9.120	0		
16,800.00	7,520.00	16,384.65	7,190.00	68.75	68.24	-74.24	1,199.95	1,067.03	132.92	9.028	0		
16,900.00	7,520.00	16,484.65	7,190.00	69.44	68.94	-74.24	1,199.95	1,065.69	134.26	8.937	0		
17,000.00	7,520.00	16,584.65	7,190.00	70.13	69.63	-74.24	1,199.95	1,064.35	135.61	8.849	0		
17,100.00	7,520.00	16,684.65	7,190.00	70.82	70.32	-74.24	1,199.95	1,063.00	136.95	8.762	0		
17,200.00	7,520.00	16,784.65	7,190.00	71.51	71.01	-74.24	1,199.95	1,061.66	138.29	8.677	0		
17,300.00	7,520.00	16,884.65	7,190.00	72.20	71.71	-74.24	1,199.95	1,060.32	139.63	8.594	0		
17,400.00	7,520.00	16,984.65	7,190.00	72.89	72.40	-74.24	1,199.95	1,058.97	140.98	8.512	0		
17,500.00	7,520.00	17,084.65	7,190.00	73.58	73.09	-74.24	1,199.95	1,057.63	142.32	8.431	0		
17,600.00	7,520.00	17,184.65	7,190.00	74.27	73.79	-74.24	1,199.95	1,056.29	143.67	8.352	0		
17,619.50	7,520.00	17,204.11	7,190.00	74.41	73.92	-74.24	1,199.95	1,056.02	143.93	8.337	0		
17,645.24	7,520.00	17,219.06	7,190.00	74.58	74.03	-74.24	1,200.00	1,055.80	144.20	8.322	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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<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	111.92				0		
100.00	100.00	96.00	96.00	0.15	0.14	-0.02	111.85	111.56	0.29	389.236	0		
200.00	200.00	196.00	196.00	0.32	0.31	-0.02	111.85	111.21	0.64	176.054	0		
300.00	300.00	296.00	296.00	0.50	0.49	-0.02	111.85	110.86	0.98	113.624	0		
400.00	400.00	396.00	396.00	0.67	0.66	-0.02	111.85	110.51	1.33	83.879	0		
500.00	500.00	496.00	496.00	0.84	0.84	-0.02	111.85	110.16	1.68	66.477	0		
600.00	600.00	596.00	596.00	1.02	1.01	-0.02	111.85	109.82	2.03	55.055	0		CC, ES
700.00	699.98	695.98	695.98	1.19	1.19	152.28	113.39	111.01	2.38	47.644	0		
800.00	799.84	795.84	795.84	1.37	1.36	153.42	118.05	115.32	2.73	43.295	0		
900.00	899.45	895.45	895.45	1.55	1.53	155.13	125.91	122.84	3.07	40.995	0		
1,000.00	998.70	994.70	994.70	1.73	1.71	157.18	137.07	133.66	3.41	40.158	0		
1,100.00	1,097.47	1,096.29	1,096.27	1.91	1.89	158.92	150.75	147.00	3.76	40.123	0		
1,149.61	1,146.24	1,146.85	1,146.79	2.00	1.97	159.43	158.06	154.13	3.93	40.241	0		
1,200.00	1,195.71	1,198.34	1,198.18	2.10	2.06	159.74	165.39	161.29	4.11	40.261	0		
1,300.00	1,293.88	1,300.96	1,300.40	2.29	2.25	159.55	178.45	173.98	4.47	39.933	0		
1,400.00	1,392.04	1,400.74	1,399.58	2.48	2.42	158.82	190.26	185.43	4.83	39.417	0		
1,500.00	1,490.21	1,500.01	1,498.26	2.68	2.60	158.17	202.08	196.89	5.19	38.972	0		
1,600.00	1,588.37	1,599.29	1,596.93	2.87	2.78	157.60	213.92	208.37	5.54	38.581	0		
1,700.00	1,686.54	1,698.56	1,695.61	3.07	2.96	157.08	225.78	219.87	5.90	38.236	0		
1,800.00	1,784.70	1,797.84	1,794.28	3.26	3.14	156.62	237.65	231.39	6.27	37.928	0		
1,900.00	1,882.87	1,897.11	1,892.95	3.46	3.31	156.20	249.54	242.91	6.63	37.653	0		
2,000.00	1,981.03	1,996.39	1,991.63	3.66	3.49	155.82	261.44	254.45	6.99	37.401	0		
2,100.00	2,079.20	2,095.66	2,090.30	3.85	3.67	155.47	273.36	266.00	7.35	37.174	0		
2,200.00	2,177.36	2,194.94	2,188.97	4.05	3.85	155.15	285.28	277.56	7.72	36.967	0		
2,300.00	2,275.53	2,294.21	2,287.65	4.25	4.03	154.85	297.21	289.12	8.08	36.778	0		
2,400.00	2,373.69	2,393.49	2,386.32	4.45	4.22	154.58	309.14	300.70	8.45	36.605	0		
2,500.00	2,471.86	2,492.76	2,484.99	4.65	4.40	154.33	321.08	312.27	8.81	36.445	0		
2,600.00	2,570.02	2,592.04	2,583.67	4.85	4.58	154.10	333.03	323.86	9.17	36.298	0		
2,700.00	2,668.19	2,691.31	2,682.34	5.05	4.76	153.88	344.99	335.45	9.54	36.162	0		
2,800.00	2,766.36	2,790.59	2,781.02	5.25	4.94	153.68	356.94	347.04	9.91	36.036	0		
2,900.00	2,864.52	2,889.86	2,879.69	5.44	5.12	153.49	368.90	358.63	10.27	35.918	0		
3,000.00	2,962.69	2,989.14	2,978.36	5.64	5.30	153.31	380.87	370.23	10.64	35.809	0		
3,100.00	3,060.85	3,088.41	3,077.04	5.84	5.48	153.15	392.84	381.84	11.00	35.706	0		
3,200.00	3,159.02	3,187.69	3,175.71	6.04	5.66	152.99	404.81	393.44	11.37	35.610	0		
3,300.00	3,257.18	3,286.96	3,274.38	6.24	5.85	152.84	416.79	405.05	11.73	35.519	0		
3,400.00	3,355.35	3,386.24	3,373.06	6.44	6.03	152.70	428.76	416.66	12.10	35.434	0		
3,500.00	3,453.51	3,485.51	3,471.73	6.64	6.21	152.57	440.74	428.28	12.47	35.354	0		
3,600.00	3,551.68	3,584.79	3,570.41	6.84	6.39	152.45	452.72	439.89	12.83	35.279	0		
3,700.00	3,649.84	3,684.06	3,669.08	7.04	6.57	152.33	464.71	451.51	13.20	35.207	0		
3,800.00	3,748.01	3,783.33	3,767.75	7.24	6.75	152.22	476.69	463.13	13.57	35.139	0		
3,900.00	3,846.17	3,882.61	3,866.43	7.44	6.94	152.11	488.68	474.75	13.93	35.075	0		
4,000.00	3,944.34	3,981.88	3,965.10	7.64	7.12	152.01	500.67	486.37	14.30	35.014	0		
4,100.00	4,042.50	4,081.16	4,063.77	7.85	7.30	151.91	512.66	497.99	14.67	34.956	0		
4,200.00	4,140.67	4,180.43	4,162.45	8.05	7.48	151.82	524.65	509.62	15.03	34.900	0		
4,300.00	4,238.84	4,279.71	4,261.12	8.25	7.66	151.73	536.65	521.25	15.40	34.848	0		
4,400.00	4,337.00	4,378.98	4,359.79	8.45	7.85	151.64	548.64	532.87	15.77	34.797	0		
4,500.00	4,435.17	4,478.26	4,458.47	8.65	8.03	151.56	560.64	544.50	16.13	34.749	0		
4,600.00	4,533.33	4,577.53	4,557.14	8.85	8.21	151.49	572.63	556.13	16.50	34.703	0		
4,700.00	4,631.50	4,676.81	4,655.82	9.05	8.39	151.41	584.63	567.76	16.87	34.659	0		
4,800.00	4,729.66	4,776.08	4,754.49	9.25	8.57	151.34	596.63	579.39	17.24	34.617	0		
4,900.00	4,827.83	4,875.36	4,853.16	9.45	8.76	151.27	608.63	591.03	17.60	34.577	0		
5,000.00	4,925.99	4,974.63	4,951.84	9.65	8.94	151.21	620.63	602.66	17.97	34.538	0		
5,100.00	5,024.16	5,073.91	5,050.51	9.85	9.12	151.14	632.63	614.29	18.34	34.501	0		
5,200.00	5,122.32	5,173.18	5,149.18	10.05	9.30	151.08	644.63	625.93	18.70	34.465	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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<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	Risked Separation Factor	Probability of Collision				
5,300.00	5,220.49	5,272.46	5,247.86	10.25	9.48	151.02	656.63	637.56	19.07	34.430	0					
5,400.00	5,318.65	5,371.73	5,346.53	10.45	9.67	150.97	668.64	649.20	19.44	34.397	0					
5,500.00	5,416.82	5,471.01	5,445.21	10.65	9.85	150.91	680.64	660.83	19.81	34.365	0					
5,600.00	5,514.98	5,570.28	5,543.88	10.85	10.03	150.86	692.64	672.47	20.17	34.334	0					
5,700.00	5,613.15	5,669.56	5,642.55	11.06	10.21	150.81	704.65	684.11	20.54	34.304	0					
5,800.00	5,711.32	5,768.83	5,741.23	11.26	10.39	150.76	716.65	695.75	20.91	34.276	0					
5,900.00	5,809.48	5,868.11	5,839.90	11.46	10.58	150.71	728.66	707.38	21.28	34.248	0					
6,000.00	5,907.65	5,967.38	5,938.57	11.66	10.76	150.66	740.67	719.02	21.64	34.221	0					
6,100.00	6,005.81	6,066.66	6,037.25	11.86	10.94	150.62	752.67	730.66	22.01	34.195	0					
6,200.00	6,103.98	6,165.93	6,135.92	12.06	11.12	150.58	764.68	742.30	22.38	34.170	0					
6,300.00	6,202.14	6,255.16	6,224.73	12.26	11.28	150.63	777.31	754.59	22.72	34.211	0					
6,335.65	6,237.14	6,286.77	6,256.26	12.33	11.34	150.69	782.14	759.29	22.84	34.242	0					
6,400.00	6,300.44	6,343.77	6,313.17	12.46	11.44	150.92	790.64	767.57	23.07	34.266	0					
6,500.00	6,399.28	6,432.28	6,401.62	12.65	11.59	151.31	802.48	779.06	23.42	34.268	0					
6,600.00	6,498.59	6,525.26	6,494.59	12.82	11.75	151.74	812.53	788.78	23.75	34.211	0					
6,700.00	6,598.25	6,624.65	6,593.96	13.00	11.91	152.17	819.78	795.70	24.07	34.053	0					
6,800.00	6,698.13	6,721.42	6,689.70	13.16	12.05	153.30	824.19	799.83	24.36	33.831	0					
6,885.26	6,783.38	6,800.00	6,765.22	13.29	12.16	2.94	826.26	801.18	25.07	32.953	0					
6,900.00	6,798.12	6,812.21	6,776.69	13.32	12.18	3.23	826.54	801.42	25.12	32.900	0					
6,985.26	6,883.38	6,882.88	6,841.37	13.45	12.27	5.19	829.32	803.91	25.41	32.639	0					
7,000.00	6,898.12	6,894.46	6,851.64	13.47	12.28	-84.39	830.01	805.07	24.94	33.278	0					
7,050.00	6,948.01	6,933.17	6,885.27	13.55	12.33	-82.98	832.71	807.62	25.08	33.200	0					
7,100.00	6,997.50	6,971.12	6,917.04	13.62	12.37	-81.60	835.83	810.62	25.21	33.152	0					
7,150.00	7,046.29	7,008.38	6,946.99	13.68	12.42	-80.27	839.32	813.99	25.33	33.133	0					
7,200.00	7,094.07	7,050.00	6,978.83	13.75	12.47	-78.85	843.11	817.66	25.45	33.127	0					
7,250.00	7,140.56	7,081.18	7,001.51	13.81	12.51	-77.75	847.06	821.53	25.53	33.179	0					
7,300.00	7,185.46	7,116.85	7,026.13	13.87	12.55	-76.57	851.15	825.55	25.60	33.246	0					
7,350.00	7,228.49	7,150.00	7,047.68	13.92	12.59	-75.50	855.29	829.65	25.64	33.352	0					
7,400.00	7,269.40	7,186.98	7,070.14	13.98	12.64	-74.41	859.40	833.72	25.69	33.458	0					
7,450.00	7,307.93	7,221.54	7,089.55	14.04	12.69	-73.45	863.42	837.72	25.70	33.596	0					
7,500.00	7,343.84	7,250.00	7,104.35	14.10	12.73	-72.64	867.31	841.64	25.67	33.784	0					
7,550.00	7,376.91	7,289.84	7,123.22	14.16	12.79	-71.75	870.93	845.25	25.68	33.912	0					
7,600.00	7,406.94	7,323.66	7,137.49	14.22	12.84	-71.02	874.31	848.64	25.66	34.072	0					
7,650.00	7,433.74	7,350.00	7,147.46	14.28	12.88	-70.45	877.41	851.81	25.60	34.276	0					
7,700.00	7,457.15	7,390.76	7,160.88	14.35	12.95	-69.83	880.06	854.45	25.61	34.359	0					
7,750.00	7,477.02	7,424.11	7,170.02	14.43	13.03	-69.37	882.36	856.76	25.60	34.461	0					
7,800.00	7,493.23	7,450.00	7,175.94	14.51	13.09	-69.04	884.28	858.72	25.57	34.587	0					
7,850.00	7,505.69	7,490.52	7,183.14	14.60	13.19	-68.72	885.66	860.02	25.64	34.544	0					
7,900.00	7,514.30	7,523.63	7,187.14	14.69	13.27	-68.54	886.61	860.92	25.69	34.505	0					
7,950.00	7,519.02	7,556.70	7,189.41	14.80	13.36	-68.45	887.09	861.30	25.78	34.408	0					
7,985.26	7,520.00	7,584.04	7,190.00	14.88	13.43	-68.44	887.14	861.25	25.89	34.266	0					
7,993.62	7,520.00	7,586.33	7,190.00	14.90	13.44	-68.44	887.12	861.22	25.90	34.251	0					
8,000.00	7,520.00	7,592.70	7,190.00	14.91	13.46	-68.44	887.12	861.18	25.93	34.206	0					
8,100.00	7,520.00	7,692.70	7,190.00	15.16	13.75	-68.44	887.12	860.62	26.50	33.477	0					
8,200.00	7,520.00	7,792.70	7,190.00	15.45	14.07	-68.44	887.12	860.00	27.12	32.714	0					
8,300.00	7,520.00	7,892.70	7,190.00	15.76	14.42	-68.44	887.12	859.33	27.79	31.928	0					
8,400.00	7,520.00	7,992.70	7,190.00	16.11	14.79	-68.44	887.12	858.62	28.50	31.128	0					
8,500.00	7,520.00	8,092.71	7,190.00	16.48	15.18	-68.44	887.12	857.86	29.26	30.322	0					
8,600.00	7,520.00	8,192.71	7,190.00	16.87	15.60	-68.44	887.12	857.06	30.05	29.518	0					
8,700.00	7,520.00	8,292.71	7,190.00	17.28	16.03	-68.44	887.12	856.23	30.89	28.722	0					
8,800.00	7,520.00	8,392.71	7,190.00	17.71	16.49	-68.44	887.12	855.36	31.75	27.938	0					
8,900.00	7,520.00	8,492.71	7,190.00	18.16	16.96	-68.44	887.12	854.46	32.65	27.169	0					
9,000.00	7,520.00	8,592.71	7,190.00	18.62	17.45	-68.44	887.12	853.54	33.58	26.419	0					
9,100.00	7,520.00	8,692.71	7,190.00	19.10	17.95	-68.44	887.12	852.58	34.53	25.690	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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error: 0.00 usft	
Survey Program: 0-Pathfinder												Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision	
9,200.00	7,520.00	8,792.71	7,190.00	19.59	18.46	-68.44	887.11	851.61	35.51	24.983	0		
9,300.00	7,520.00	8,892.71	7,190.00	20.10	18.99	-68.44	887.11	850.61	36.51	24.299	0		
9,400.00	7,520.00	8,992.71	7,190.00	20.62	19.53	-68.44	887.11	849.58	37.53	23.639	0		
9,500.00	7,520.00	9,092.71	7,190.00	21.14	20.07	-68.44	887.11	848.55	38.57	23.002	0		
9,600.00	7,520.00	9,192.71	7,190.00	21.68	20.63	-68.44	887.11	847.49	39.62	22.389	0		
9,700.00	7,520.00	9,292.71	7,190.00	22.23	21.20	-68.44	887.11	846.42	40.70	21.799	0		
9,800.00	7,520.00	9,392.71	7,190.00	22.78	21.77	-68.44	887.11	845.33	41.78	21.232	0		
9,900.00	7,520.00	9,492.71	7,190.00	23.35	22.35	-68.44	887.11	844.23	42.88	20.687	0		
10,000.00	7,520.00	9,592.71	7,190.00	23.92	22.94	-68.44	887.11	843.11	44.00	20.164	0		
10,100.00	7,520.00	9,692.71	7,190.00	24.49	23.54	-68.44	887.11	841.99	45.12	19.661	0		
10,200.00	7,520.00	9,792.71	7,190.00	25.08	24.14	-68.44	887.10	840.85	46.26	19.178	0		
10,300.00	7,520.00	9,892.71	7,190.00	25.67	24.74	-68.44	887.10	839.70	47.40	18.715	0		
10,400.00	7,520.00	9,992.71	7,190.00	26.26	25.35	-68.44	887.10	838.55	48.56	18.270	0		
10,500.00	7,520.00	10,092.72	7,190.00	26.86	25.97	-68.44	887.10	837.38	49.72	17.842	0		
10,600.00	7,520.00	10,192.72	7,190.00	27.47	26.59	-68.44	887.10	836.21	50.89	17.431	0		
10,700.00	7,520.00	10,292.72	7,190.00	28.08	27.21	-68.44	887.10	835.03	52.07	17.036	0		
10,800.00	7,520.00	10,392.72	7,190.00	28.69	27.84	-68.44	887.10	833.84	53.26	16.657	0		
10,900.00	7,520.00	10,492.72	7,190.00	29.31	28.47	-68.44	887.09	832.64	54.45	16.292	0		
11,000.00	7,520.00	10,592.72	7,190.00	29.93	29.11	-68.44	887.09	831.44	55.65	15.941	0		
11,100.00	7,520.00	10,692.72	7,190.00	30.56	29.74	-68.44	887.09	830.24	56.85	15.603	0		
11,200.00	7,520.00	10,792.72	7,190.00	31.19	30.39	-68.44	887.09	829.03	58.06	15.278	0		
11,300.00	7,520.00	10,892.72	7,190.00	31.82	31.03	-68.44	887.09	827.81	59.28	14.964	0		
11,400.00	7,520.00	10,992.72	7,190.00	32.45	31.68	-68.44	887.09	826.59	60.50	14.663	0		
11,500.00	7,520.00	11,092.72	7,190.00	33.09	32.32	-68.44	887.08	825.36	61.72	14.372	0		
11,600.00	7,520.00	11,192.72	7,190.00	33.73	32.97	-68.44	887.08	824.13	62.95	14.091	0		
11,700.00	7,520.00	11,292.72	7,190.00	34.38	33.63	-68.44	887.08	822.89	64.19	13.820	0		
11,800.00	7,520.00	11,392.72	7,190.00	35.02	34.28	-68.44	887.08	821.65	65.42	13.559	0		
11,900.00	7,520.00	11,492.72	7,190.00	35.67	34.94	-68.44	887.08	820.41	66.66	13.307	0		
12,000.00	7,520.00	11,592.72	7,190.00	36.32	35.60	-68.44	887.07	819.17	67.91	13.063	0		
12,100.00	7,520.00	11,692.72	7,190.00	36.97	36.26	-68.44	887.07	817.92	69.15	12.828	0		
12,200.00	7,520.00	11,792.72	7,190.00	37.62	36.92	-68.44	887.07	816.67	70.40	12.600	0		
12,300.00	7,520.00	11,892.72	7,190.00	38.28	37.58	-68.44	887.07	815.41	71.66	12.380	0		
12,400.00	7,520.00	11,992.72	7,190.00	38.93	38.25	-68.44	887.06	814.15	72.91	12.166	0		
12,500.00	7,520.00	12,092.73	7,190.00	39.59	38.91	-68.44	887.06	812.89	74.17	11.960	0		
12,600.00	7,520.00	12,192.73	7,190.00	40.25	39.58	-68.44	887.06	811.63	75.43	11.760	0		
12,700.00	7,520.00	12,292.73	7,190.00	40.91	40.25	-68.44	887.06	810.37	76.69	11.567	0		
12,800.00	7,520.00	12,392.73	7,190.00	41.58	40.92	-68.44	887.05	809.10	77.96	11.379	0		
12,900.00	7,520.00	12,492.73	7,190.00	42.24	41.59	-68.44	887.05	807.83	79.22	11.197	0		
13,000.00	7,520.00	12,592.73	7,190.00	42.90	42.26	-68.44	887.05	806.56	80.49	11.020	0		
13,100.00	7,520.00	12,692.73	7,190.00	43.57	42.93	-68.44	887.05	805.28	81.76	10.849	0		
13,200.00	7,520.00	12,792.73	7,190.00	44.24	43.61	-68.44	887.04	804.01	83.04	10.683	0		
13,300.00	7,520.00	12,892.73	7,190.00	44.91	44.28	-68.44	887.04	802.73	84.31	10.521	0		
13,400.00	7,520.00	12,992.73	7,190.00	45.58	44.96	-68.44	887.04	801.45	85.59	10.364	0		
13,500.00	7,520.00	13,092.73	7,190.00	46.25	45.64	-68.44	887.03	800.17	86.86	10.212	0		
13,600.00	7,520.00	13,192.73	7,190.00	46.92	46.31	-68.44	887.03	798.89	88.14	10.064	0		
13,700.00	7,520.00	13,292.73	7,190.00	47.59	46.99	-68.44	887.03	797.60	89.42	9.919	0		
13,800.00	7,520.00	13,392.73	7,190.00	48.27	47.67	-68.44	887.02	796.32	90.71	9.779	0		
13,900.00	7,520.00	13,492.73	7,190.00	48.94	48.35	-68.44	887.02	795.03	91.99	9.643	0		
14,000.00	7,520.00	13,592.73	7,190.00	49.62	49.03	-68.44	887.02	793.75	93.27	9.510	0		
14,100.00	7,520.00	13,692.73	7,190.00	50.29	49.71	-68.44	887.01	792.46	94.56	9.381	0		
14,200.00	7,520.00	13,792.73	7,190.00	50.97	50.39	-68.44	887.01	791.17	95.85	9.255	0		
14,300.00	7,520.00	13,892.73	7,190.00	51.65	51.07	-68.44	887.01	789.87	97.13	9.132	0		
14,400.00	7,520.00	13,992.73	7,190.00	52.32	51.76	-68.44	887.00	788.58	98.42	9.012	0		
14,500.00	7,520.00	14,092.74	7,190.00	53.00	52.44	-68.44	887.00	787.29	99.71	8.896	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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision		
14,600.00	7,520.00	14,192.74	7,190.00	53.68	53.12	-68.44	887.00	785.99	101.00	8.782	0			
14,700.00	7,520.00	14,292.74	7,190.00	54.36	53.81	-68.44	886.99	784.70	102.30	8.671	0			
14,800.00	7,520.00	14,392.74	7,190.00	55.04	54.49	-68.44	886.99	783.40	103.59	8.563	0			
14,900.00	7,520.00	14,492.74	7,190.00	55.72	55.18	-68.44	886.99	782.10	104.88	8.457	0			
15,000.00	7,520.00	14,592.74	7,190.00	56.40	55.86	-68.44	886.98	780.80	106.18	8.354	0			
15,100.00	7,520.00	14,692.74	7,190.00	57.09	56.55	-68.44	886.98	779.50	107.47	8.253	0			
15,200.00	7,520.00	14,792.74	7,190.00	57.77	57.24	-68.44	886.97	778.20	108.77	8.155	0			
15,300.00	7,520.00	14,892.74	7,190.00	58.45	57.92	-68.44	886.97	776.90	110.07	8.058	0			
15,400.00	7,520.00	14,992.74	7,190.00	59.14	58.61	-68.44	886.97	775.60	111.37	7.964	0			
15,500.00	7,520.00	15,092.74	7,190.00	59.82	59.30	-68.44	886.96	774.30	112.66	7.873	0			
15,600.00	7,520.00	15,192.74	7,190.00	60.51	59.99	-68.44	886.96	772.99	113.96	7.783	0			
15,700.00	7,520.00	15,292.74	7,190.00	61.19	60.68	-68.44	886.95	771.69	115.26	7.695	0			
15,800.00	7,520.00	15,392.74	7,190.00	61.88	61.36	-68.44	886.95	770.38	116.56	7.609	0			
15,900.00	7,520.00	15,492.74	7,190.00	62.56	62.05	-68.44	886.94	769.08	117.87	7.525	0			
16,000.00	7,520.00	15,592.74	7,190.00	63.25	62.74	-68.44	886.94	767.77	119.17	7.443	0			
16,100.00	7,520.00	15,692.74	7,190.00	63.93	63.43	-68.43	886.94	766.47	120.47	7.362	0			
16,200.00	7,520.00	15,792.74	7,190.00	64.62	64.12	-68.43	886.93	765.16	121.77	7.283	0			
16,300.00	7,520.00	15,892.74	7,190.00	65.31	64.81	-68.43	886.93	763.85	123.08	7.206	0			
16,400.00	7,520.00	15,992.74	7,190.00	66.00	65.50	-68.43	886.92	762.54	124.38	7.131	0			
16,500.00	7,520.00	16,092.74	7,190.00	66.68	66.20	-68.43	886.92	761.23	125.69	7.057	0			
16,600.00	7,520.00	16,192.75	7,190.00	67.37	66.89	-68.43	886.91	759.92	126.99	6.984	0			
16,700.00	7,520.00	16,292.75	7,190.00	68.06	67.58	-68.43	886.91	758.61	128.30	6.913	0			
16,800.00	7,520.00	16,392.75	7,190.00	68.75	68.27	-68.43	886.90	757.30	129.60	6.843	0			
16,900.00	7,520.00	16,492.75	7,190.00	69.44	68.96	-68.43	886.90	755.99	130.91	6.775	0			
17,000.00	7,520.00	16,592.75	7,190.00	70.13	69.65	-68.43	886.89	754.68	132.22	6.708	0			
17,100.00	7,520.00	16,692.75	7,190.00	70.82	70.35	-68.43	886.89	753.36	133.52	6.642	0			
17,200.00	7,520.00	16,792.75	7,190.00	71.51	71.04	-68.43	886.88	752.05	134.83	6.578	0			
17,300.00	7,520.00	16,892.75	7,190.00	72.20	71.73	-68.43	886.88	750.74	136.14	6.514	0			
17,400.00	7,520.00	16,992.75	7,190.00	72.89	72.42	-68.43	886.87	749.42	137.45	6.452	0			
17,500.00	7,520.00	17,092.75	7,190.00	73.58	73.12	-68.43	886.87	748.11	138.76	6.391	0			
17,600.00	7,520.00	17,192.75	7,190.00	74.27	73.81	-68.43	886.86	746.79	140.07	6.332	0			
17,632.11	7,520.00	17,224.86	7,190.00	74.49	74.03	-68.43	886.86	746.37	140.49	6.313	0			
17,645.24	7,520.00	17,230.36	7,190.00	74.58	74.07	-68.43	886.89	746.28	140.61	6.307	0		SF	



# Schlumberger

## Anticollision Risk Report

**PATHFINDER**  
A Schlumberger Company

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<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	-0.07	84.21					0	CC, ES			
100.00	100.00	97.00	97.00	0.15	0.14	-0.07	84.16	83.87	0.29	291.389	0					
200.00	200.00	197.00	197.00	0.32	0.32	-0.07	84.16	83.52	0.64	132.107	0					
300.00	300.00	297.00	297.00	0.50	0.49	-0.07	84.16	83.17	0.99	85.344	0					
400.00	400.00	397.00	397.00	0.67	0.66	-0.07	84.16	82.82	1.34	63.032	0					
500.00	500.00	497.00	497.00	0.84	0.84	-0.07	84.16	82.47	1.68	49.968	0					
600.00	600.00	597.00	597.00	1.02	1.01	-0.07	84.16	82.12	2.03	41.390	0					
700.00	699.98	696.98	696.98	1.19	1.19	152.37	85.70	83.32	2.38	35.984	0					
800.00	799.84	796.84	796.84	1.37	1.36	153.87	90.37	87.64	2.73	33.123	0					
900.00	899.45	896.45	896.45	1.55	1.54	156.04	98.27	95.20	3.07	31.982	0					
1,000.00	998.70	998.28	998.26	1.73	1.71	157.97	108.39	104.97	3.42	31.700	0					
1,100.00	1,097.47	1,100.48	1,100.32	1.91	1.89	158.93	119.37	115.60	3.77	31.700	0					
1,149.61	1,146.24	1,151.28	1,150.96	2.00	1.98	159.11	125.10	121.16	3.94	31.771	0					
1,200.00	1,195.71	1,202.99	1,202.42	2.10	2.07	159.09	130.70	126.58	4.12	31.729	0					
1,300.00	1,293.88	1,303.35	1,302.13	2.29	2.25	158.57	140.61	136.14	4.48	31.402	0					
1,400.00	1,392.04	1,402.85	1,400.98	2.48	2.43	158.09	150.46	145.62	4.84	31.111	0					
1,500.00	1,490.21	1,502.36	1,499.83	2.68	2.61	157.67	160.31	155.11	5.20	30.855	0					
1,600.00	1,588.37	1,601.87	1,598.68	2.87	2.79	157.29	170.17	164.61	5.56	30.630	0					
1,700.00	1,686.54	1,701.37	1,697.53	3.07	2.97	156.96	180.04	174.12	5.92	30.429	0					
1,800.00	1,784.70	1,800.88	1,796.38	3.26	3.15	156.66	189.91	183.63	6.28	30.250	0					
1,900.00	1,882.87	1,900.39	1,895.23	3.46	3.33	156.39	199.79	193.15	6.64	30.089	0					
2,000.00	1,981.03	1,999.89	1,994.08	3.66	3.51	156.15	209.67	202.67	7.00	29.943	0					
2,100.00	2,079.20	2,099.40	2,092.93	3.85	3.69	155.92	219.55	212.19	7.37	29.810	0					
2,200.00	2,177.36	2,198.91	2,191.78	4.05	3.88	155.72	229.44	221.71	7.73	29.689	0					
2,300.00	2,275.53	2,298.42	2,290.62	4.25	4.06	155.54	239.33	231.24	8.09	29.578	0					
2,400.00	2,373.69	2,397.92	2,389.47	4.45	4.24	155.36	249.22	240.77	8.46	29.476	0					
2,500.00	2,471.86	2,497.43	2,488.32	4.65	4.42	155.21	259.12	250.30	8.82	29.382	0					
2,600.00	2,570.02	2,596.94	2,587.17	4.85	4.60	155.06	269.01	259.83	9.18	29.295	0					
2,700.00	2,668.19	2,696.44	2,686.02	5.05	4.79	154.92	278.91	269.36	9.55	29.214	0					
2,800.00	2,766.36	2,795.95	2,784.87	5.25	4.97	154.80	288.81	278.90	9.91	29.138	0					
2,900.00	2,864.52	2,895.46	2,883.72	5.44	5.15	154.68	298.71	288.43	10.28	29.068	0					
3,000.00	2,962.69	2,994.96	2,982.57	5.64	5.33	154.57	308.61	297.97	10.64	29.002	0					
3,100.00	3,060.85	3,094.47	3,081.42	5.84	5.52	154.46	318.51	307.51	11.01	28.941	0					
3,200.00	3,159.02	3,193.98	3,180.27	6.04	5.70	154.37	328.42	317.05	11.37	28.883	0					
3,300.00	3,257.18	3,293.48	3,279.12	6.24	5.88	154.27	338.32	326.59	11.74	28.828	0					
3,400.00	3,355.35	3,392.99	3,377.97	6.44	6.07	154.19	348.23	336.13	12.10	28.776	0					
3,500.00	3,453.51	3,492.50	3,476.81	6.64	6.25	154.11	358.13	345.67	12.47	28.728	0					
3,600.00	3,551.68	3,592.00	3,575.66	6.84	6.43	154.03	368.04	355.21	12.83	28.682	0					
3,700.00	3,649.84	3,691.51	3,674.51	7.04	6.61	153.96	377.95	364.75	13.20	28.638	0					
3,800.00	3,748.01	3,791.02	3,773.36	7.24	6.80	153.89	387.85	374.29	13.56	28.597	0					
3,900.00	3,846.17	3,890.53	3,872.21	7.44	6.98	153.82	397.76	383.84	13.93	28.558	0					
4,000.00	3,944.34	3,990.03	3,971.06	7.64	7.16	153.76	407.67	393.38	14.29	28.521	0					
4,100.00	4,042.50	4,089.54	4,069.91	7.85	7.35	153.70	417.58	402.92	14.66	28.485	0					
4,200.00	4,140.67	4,189.05	4,168.76	8.05	7.53	153.64	427.49	412.47	15.03	28.452	0					
4,300.00	4,238.84	4,288.55	4,267.61	8.25	7.71	153.58	437.40	422.01	15.39	28.419	0					
4,400.00	4,337.00	4,388.06	4,366.46	8.45	7.90	153.53	447.31	431.56	15.76	28.389	0					
4,500.00	4,435.17	4,487.57	4,465.31	8.65	8.08	153.48	457.22	441.10	16.12	28.359	0					
4,600.00	4,533.33	4,587.07	4,564.16	8.85	8.26	153.43	467.14	450.65	16.49	28.331	0					
4,700.00	4,631.50	4,686.58	4,663.00	9.05	8.45	153.39	477.05	460.19	16.85	28.304	0					
4,800.00	4,729.66	4,786.09	4,761.85	9.25	8.63	153.34	486.96	469.74	17.22	28.278	0					
4,900.00	4,827.83	4,885.59	4,860.70	9.45	8.81	153.30	496.87	479.29	17.59	28.253	0					
5,000.00	4,925.99	4,985.10	4,959.55	9.65	9.00	153.26	506.78	488.83	17.95	28.229	0					
5,100.00	5,024.16	5,084.61	5,058.40	9.85	9.18	153.22	516.70	498.38	18.32	28.206	0					
5,200.00	5,122.32	5,184.11	5,157.25	10.05	9.36	153.19	526.61	507.93	18.68	28.184	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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<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	5,220.49	5,283.62	5,256.10	10.25	9.55	153.15	536.52	517.47	19.05	28.163	0					
5,400.00	5,318.65	5,383.13	5,354.95	10.45	9.73	153.11	546.44	527.02	19.42	28.143	0					
5,500.00	5,416.82	5,482.64	5,453.80	10.65	9.91	153.08	556.35	536.57	19.78	28.123	0					
5,600.00	5,514.98	5,582.14	5,552.65	10.85	10.10	153.05	566.26	546.11	20.15	28.104	0					
5,700.00	5,613.15	5,681.65	5,651.50	11.06	10.28	153.02	576.18	555.66	20.52	28.085	0					
5,800.00	5,711.32	5,781.16	5,750.35	11.26	10.46	152.99	586.09	565.21	20.88	28.068	0					
5,900.00	5,809.48	5,880.66	5,849.19	11.46	10.65	152.96	596.01	574.76	21.25	28.050	0					
6,000.00	5,907.65	5,980.17	5,948.04	11.66	10.83	152.93	605.92	584.31	21.61	28.034	0					
6,100.00	6,005.81	6,079.68	6,046.89	11.86	11.01	152.90	615.84	593.86	21.98	28.018	0					
6,200.00	6,103.98	6,179.18	6,145.74	12.06	11.20	152.88	625.75	603.40	22.35	28.002	0					
6,300.00	6,202.14	6,278.69	6,244.59	12.26	11.38	152.85	635.66	612.95	22.71	27.987	0					
6,335.65	6,237.14	6,314.16	6,279.83	12.33	11.45	152.84	639.20	616.36	22.84	27.982	0					
6,400.00	6,300.44	6,378.25	6,343.50	12.46	11.56	152.85	644.94	621.84	23.10	27.925	0					
6,500.00	6,399.28	6,478.02	6,442.61	12.65	11.75	152.72	651.32	627.84	23.48	27.744	0					
6,600.00	6,498.59	6,567.05	6,531.16	12.82	11.91	152.54	655.34	631.52	23.82	27.517	0					
6,700.00	6,598.25	6,654.64	6,618.51	13.00	12.06	152.42	658.14	634.01	24.13	27.274	0					
6,800.00	6,698.13	6,742.26	6,706.05	13.16	12.21	152.35	659.73	635.31	24.42	27.012	0					
6,885.26	6,783.38	6,816.97	6,780.75	13.29	12.34	0.42	660.13	634.96	25.17	26.230	0					
6,891.43	6,789.55	6,822.77	6,786.55	13.30	12.35	0.42	660.13	634.94	25.19	26.209	0					
6,900.00	6,798.12	6,831.34	6,795.12	13.32	12.36	0.42	660.13	634.91	25.22	26.180	0					
6,985.26	6,883.38	6,916.60	6,880.38	13.45	12.51	0.42	660.13	634.63	25.50	25.889	0					
7,000.00	6,898.12	6,931.26	6,895.03	13.47	12.53	-89.58	660.13	635.08	25.04	26.360	0					
7,050.00	6,948.01	6,980.89	6,944.57	13.55	12.61	-89.61	660.12	634.92	25.20	26.196	0					
7,100.00	6,997.50	7,030.55	6,993.76	13.62	12.68	-89.63	660.12	634.77	25.35	26.042	0					
7,150.00	7,046.29	7,080.23	7,042.31	13.68	12.75	-89.66	660.12	634.63	25.49	25.897	0					
7,200.00	7,094.07	7,129.93	7,089.90	13.75	12.82	-89.69	660.12	634.49	25.63	25.761	0					
7,250.00	7,140.56	7,179.66	7,136.27	13.81	12.88	-89.72	660.12	634.36	25.75	25.631	0					
7,300.00	7,185.46	7,229.42	7,181.11	13.87	12.95	-89.75	660.11	634.24	25.88	25.507	0					
7,350.00	7,228.49	7,279.21	7,224.17	13.92	13.01	-89.78	660.11	634.11	26.00	25.386	0					
7,400.00	7,269.40	7,329.03	7,265.16	13.98	13.07	-89.82	660.11	633.99	26.13	25.266	0					
7,450.00	7,307.93	7,378.88	7,303.84	14.04	13.13	-89.86	660.11	633.86	26.25	25.145	0					
7,500.00	7,343.84	7,428.77	7,339.97	14.10	13.19	-89.89	660.11	633.73	26.38	25.022	0					
7,550.00	7,376.91	7,478.69	7,373.32	14.16	13.25	-89.93	660.11	633.59	26.52	24.895	0					
7,600.00	7,406.94	7,528.64	7,403.68	14.22	13.32	-89.97	660.11	633.45	26.66	24.761	0					
7,636.10	7,426.63	7,564.73	7,423.63	14.27	13.37	-90.00	660.11	633.34	26.77	24.658	0					
7,650.00	7,433.74	7,578.63	7,430.85	14.28	13.39	-90.01	660.11	633.29	26.81	24.618	0					
7,700.00	7,457.15	7,628.66	7,454.67	14.35	13.46	-90.05	660.11	633.13	26.98	24.466	0					
7,750.00	7,477.02	7,678.72	7,474.97	14.43	13.54	-90.09	660.11	632.95	27.16	24.303	0					
7,800.00	7,493.23	7,728.81	7,491.62	14.51	13.63	-90.13	660.11	632.75	27.36	24.128	0					
7,850.00	7,505.69	7,778.94	7,504.52	14.60	13.73	-90.16	660.11	632.54	27.57	23.941	0					
7,900.00	7,514.30	7,829.11	7,513.58	14.69	13.84	-90.20	660.11	632.31	27.80	23.743	0					
7,950.00	7,519.02	7,879.30	7,518.72	14.80	13.96	-90.23	660.11	632.06	28.05	23.534	0					
7,985.26	7,520.00	7,914.72	7,519.98	14.88	14.06	-90.26	660.11	631.88	28.23	23.382	0					
8,000.00	7,520.00	7,929.48	7,520.00	14.91	14.10	-90.26	660.12	631.80	28.31	23.316	0					
8,100.00	7,520.00	8,029.48	7,520.00	15.16	14.39	-90.26	660.12	631.24	28.88	22.857	0					
8,200.00	7,520.00	8,129.48	7,520.00	15.45	14.70	-90.26	660.12	630.61	29.50	22.375	0					
8,300.00	7,520.00	8,229.48	7,520.00	15.76	15.04	-90.26	660.12	629.94	30.18	21.875	0					
8,400.00	7,520.00	8,329.48	7,520.00	16.11	15.41	-90.26	660.12	629.21	30.90	21.362	0					
8,500.00	7,520.00	8,429.48	7,520.00	16.48	15.80	-90.26	660.12	628.44	31.67	20.842	0					
8,600.00	7,520.00	8,529.48	7,520.00	16.87	16.20	-90.26	660.12	627.63	32.49	20.320	0					
8,700.00	7,520.00	8,629.48	7,520.00	17.28	16.63	-90.26	660.12	626.78	33.34	19.801	0					
8,800.00	7,520.00	8,729.48	7,520.00	17.71	17.08	-90.26	660.12	625.89	34.23	19.286	0					
8,900.00	7,520.00	8,829.48	7,520.00	18.16	17.54	-90.26	660.12	624.96	35.15	18.779	0					
9,000.00	7,520.00	8,929.48	7,520.00	18.62	18.02	-90.26	660.12	624.01	36.11	18.283	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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error: 0.00 usft	
Survey Program: 0-Pathfinder												Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision	
9,100.00	7,520.00	9,029.48	7,520.00	19.10	18.51	-90.26	660.12	623.03	37.09	17.798	0		
9,200.00	7,520.00	9,129.48	7,520.00	19.59	19.01	-90.26	660.12	622.02	38.10	17.326	0		
9,300.00	7,520.00	9,229.48	7,520.00	20.10	19.53	-90.26	660.12	620.98	39.13	16.868	0		
9,400.00	7,520.00	9,329.48	7,520.00	20.62	20.06	-90.26	660.12	619.92	40.19	16.425	0		
9,500.00	7,520.00	9,429.48	7,520.00	21.14	20.60	-90.26	660.12	618.85	41.27	15.996	0		
9,600.00	7,520.00	9,529.48	7,520.00	21.68	21.15	-90.26	660.12	617.75	42.37	15.581	0		
9,700.00	7,520.00	9,629.48	7,520.00	22.23	21.71	-90.26	660.12	616.63	43.48	15.182	0		
9,800.00	7,520.00	9,729.48	7,520.00	22.78	22.27	-90.26	660.12	615.50	44.61	14.797	0		
9,900.00	7,520.00	9,829.48	7,520.00	23.35	22.85	-90.26	660.12	614.36	45.76	14.426	0		
10,000.00	7,520.00	9,929.48	7,520.00	23.92	23.43	-90.26	660.12	613.19	46.92	14.069	0		
10,100.00	7,520.00	10,029.48	7,520.00	24.49	24.02	-90.26	660.12	612.02	48.09	13.725	0		
10,200.00	7,520.00	10,129.48	7,520.00	25.08	24.61	-90.26	660.12	610.83	49.28	13.395	0		
10,300.00	7,520.00	10,229.48	7,520.00	25.67	25.21	-90.26	660.12	609.64	50.48	13.077	0		
10,400.00	7,520.00	10,329.48	7,520.00	26.26	25.81	-90.26	660.12	608.43	51.69	12.771	0		
10,500.00	7,520.00	10,429.48	7,520.00	26.86	26.42	-90.26	660.12	607.21	52.91	12.477	0		
10,600.00	7,520.00	10,529.48	7,520.00	27.47	27.04	-90.26	660.12	605.98	54.13	12.194	0		
10,700.00	7,520.00	10,629.48	7,520.00	28.08	27.65	-90.26	660.12	604.75	55.37	11.922	0		
10,800.00	7,520.00	10,729.48	7,520.00	28.69	28.28	-90.26	660.12	603.50	56.61	11.660	0		
10,900.00	7,520.00	10,829.48	7,520.00	29.31	28.90	-90.26	660.12	602.25	57.86	11.408	0		
11,000.00	7,520.00	10,929.48	7,520.00	29.93	29.53	-90.26	660.12	600.99	59.12	11.165	0		
11,100.00	7,520.00	11,029.48	7,520.00	30.56	30.16	-90.26	660.12	599.73	60.39	10.931	0		
11,200.00	7,520.00	11,129.48	7,520.00	31.19	30.80	-90.26	660.12	598.46	61.66	10.706	0		
11,300.00	7,520.00	11,229.48	7,520.00	31.82	31.44	-90.26	660.12	597.18	62.94	10.489	0		
11,400.00	7,520.00	11,329.48	7,520.00	32.45	32.08	-90.26	660.12	595.90	64.22	10.279	0		
11,500.00	7,520.00	11,429.48	7,520.00	33.09	32.72	-90.26	660.12	594.61	65.51	10.077	0		
11,600.00	7,520.00	11,529.48	7,520.00	33.73	33.37	-90.26	660.12	593.32	66.80	9.882	0		
11,700.00	7,520.00	11,629.48	7,520.00	34.38	34.02	-90.26	660.12	592.02	68.09	9.694	0		
11,800.00	7,520.00	11,729.48	7,520.00	35.02	34.67	-90.26	660.12	590.72	69.40	9.512	0		
11,900.00	7,520.00	11,829.48	7,520.00	35.67	35.32	-90.26	660.12	589.41	70.70	9.337	0		
12,000.00	7,520.00	11,929.48	7,520.00	36.32	35.98	-90.26	660.12	588.11	72.01	9.167	0		
12,100.00	7,520.00	12,029.48	7,520.00	36.97	36.63	-90.26	660.12	586.79	73.32	9.003	0		
12,200.00	7,520.00	12,129.48	7,520.00	37.62	37.29	-90.26	660.12	585.48	74.64	8.844	0		
12,300.00	7,520.00	12,229.48	7,520.00	38.28	37.95	-90.26	660.12	584.16	75.96	8.691	0		
12,400.00	7,520.00	12,329.48	7,520.00	38.93	38.61	-90.26	660.12	582.83	77.28	8.542	0		
12,500.00	7,520.00	12,429.48	7,520.00	39.59	39.27	-90.26	660.12	581.51	78.61	8.398	0		
12,600.00	7,520.00	12,529.48	7,520.00	40.25	39.94	-90.26	660.12	580.18	79.93	8.258	0		
12,700.00	7,520.00	12,629.48	7,520.00	40.91	40.60	-90.26	660.12	578.85	81.27	8.123	0		
12,800.00	7,520.00	12,729.48	7,520.00	41.58	41.27	-90.26	660.12	577.52	82.60	7.992	0		
12,900.00	7,520.00	12,829.48	7,520.00	42.24	41.94	-90.26	660.12	576.18	83.93	7.865	0		
13,000.00	7,520.00	12,929.48	7,520.00	42.90	42.61	-90.26	660.12	574.84	85.27	7.741	0		
13,100.00	7,520.00	13,029.48	7,520.00	43.57	43.28	-90.26	660.12	573.50	86.61	7.621	0		
13,200.00	7,520.00	13,129.48	7,520.00	44.24	43.95	-90.26	660.12	572.16	87.96	7.505	0		
13,300.00	7,520.00	13,229.48	7,520.00	44.91	44.62	-90.26	660.12	570.82	89.30	7.392	0		
13,400.00	7,520.00	13,329.48	7,520.00	45.58	45.29	-90.26	660.12	569.47	90.65	7.282	0		
13,500.00	7,520.00	13,429.48	7,520.00	46.25	45.97	-90.26	660.12	568.12	91.99	7.176	0		
13,600.00	7,520.00	13,529.48	7,520.00	46.92	46.64	-90.26	660.12	566.77	93.34	7.072	0		
13,700.00	7,520.00	13,629.48	7,520.00	47.59	47.32	-90.26	660.12	565.42	94.70	6.971	0		
13,800.00	7,520.00	13,729.48	7,520.00	48.27	48.00	-90.26	660.12	564.07	96.05	6.873	0		
13,900.00	7,520.00	13,829.48	7,520.00	48.94	48.67	-90.26	660.12	562.71	97.40	6.777	0		
14,000.00	7,520.00	13,929.48	7,520.00	49.62	49.35	-90.26	660.12	561.36	98.76	6.684	0		
14,100.00	7,520.00	14,029.48	7,520.00	50.29	50.03	-90.26	660.12	560.00	100.12	6.593	0		
14,200.00	7,520.00	14,129.48	7,520.00	50.97	50.71	-90.26	660.12	558.64	101.48	6.505	0		
14,300.00	7,520.00	14,229.48	7,520.00	51.65	51.39	-90.26	660.12	557.28	102.84	6.419	0		
14,400.00	7,520.00	14,329.48	7,520.00	52.32	52.07	-90.26	660.12	555.92	104.20	6.335	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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision		
14,500.00	7,520.00	14,429.48	7,520.00	53.00	52.75	-90.26	660.12	554.56	105.56	6.253	0			
14,600.00	7,520.00	14,529.48	7,520.00	53.68	53.43	-90.26	660.12	553.19	106.92	6.174	0			
14,700.00	7,520.00	14,629.48	7,520.00	54.36	54.12	-90.26	660.12	551.83	108.29	6.096	0			
14,800.00	7,520.00	14,729.48	7,520.00	55.04	54.80	-90.26	660.12	550.46	109.65	6.020	0			
14,900.00	7,520.00	14,829.48	7,520.00	55.72	55.48	-90.26	660.12	549.09	111.02	5.946	0			
15,000.00	7,520.00	14,929.48	7,520.00	56.40	56.17	-90.26	660.12	547.73	112.39	5.873	0			
15,100.00	7,520.00	15,029.48	7,520.00	57.09	56.85	-90.26	660.12	546.36	113.76	5.803	0			
15,200.00	7,520.00	15,129.48	7,520.00	57.77	57.54	-90.26	660.12	544.99	115.13	5.734	0			
15,300.00	7,520.00	15,229.48	7,520.00	58.45	58.22	-90.26	660.12	543.62	116.50	5.666	0			
15,400.00	7,520.00	15,329.48	7,520.00	59.14	58.91	-90.26	660.12	542.24	117.87	5.600	0			
15,500.00	7,520.00	15,429.48	7,520.00	59.82	59.59	-90.26	660.12	540.87	119.24	5.536	0			
15,600.00	7,520.00	15,529.48	7,520.00	60.51	60.28	-90.26	660.12	539.50	120.62	5.473	0			
15,700.00	7,520.00	15,629.48	7,520.00	61.19	60.97	-90.26	660.12	538.13	121.99	5.411	0			
15,800.00	7,520.00	15,729.48	7,520.00	61.88	61.65	-90.26	660.12	536.75	123.36	5.351	0			
15,900.00	7,520.00	15,829.48	7,520.00	62.56	62.34	-90.26	660.12	535.38	124.74	5.292	0			
16,000.00	7,520.00	15,929.48	7,520.00	63.25	63.03	-90.26	660.12	534.00	126.12	5.234	0			
16,100.00	7,520.00	16,029.48	7,520.00	63.93	63.72	-90.26	660.12	532.62	127.49	5.178	0			
16,200.00	7,520.00	16,129.48	7,520.00	64.62	64.41	-90.26	660.12	531.24	128.87	5.122	0			
16,300.00	7,520.00	16,229.48	7,520.00	65.31	65.10	-90.26	660.12	529.87	130.25	5.068	0			
16,400.00	7,520.00	16,329.48	7,520.00	66.00	65.79	-90.26	660.12	528.49	131.63	5.015	0			
16,500.00	7,520.00	16,429.48	7,520.00	66.68	66.48	-90.26	660.12	527.11	133.01	4.963	0			
16,600.00	7,520.00	16,529.48	7,520.00	67.37	67.17	-90.26	660.12	525.73	134.39	4.912	0			
16,700.00	7,520.00	16,629.48	7,520.00	68.06	67.86	-90.26	660.12	524.35	135.77	4.862	0			
16,800.00	7,520.00	16,729.48	7,520.00	68.75	68.55	-90.26	660.12	522.97	137.15	4.813	0			
16,900.00	7,520.00	16,829.48	7,520.00	69.44	69.24	-90.26	660.12	521.59	138.53	4.765	0			
17,000.00	7,520.00	16,929.48	7,520.00	70.13	69.93	-90.26	660.12	520.20	139.91	4.718	0			
17,100.00	7,520.00	17,029.48	7,520.00	70.82	70.62	-90.26	660.12	518.82	141.29	4.672	0			
17,200.00	7,520.00	17,129.48	7,520.00	71.51	71.31	-90.26	660.12	517.44	142.68	4.627	0			
17,300.00	7,520.00	17,229.48	7,520.00	72.20	72.00	-90.26	660.12	516.05	144.06	4.582	0			
17,400.00	7,520.00	17,329.48	7,520.00	72.89	72.69	-90.26	660.12	514.67	145.44	4.539	0			
17,500.00	7,520.00	17,429.48	7,520.00	73.58	73.39	-90.26	660.12	513.29	146.83	4.496	0			
17,600.00	7,520.00	17,529.52	7,520.00	74.27	74.08	-90.26	660.11	511.90	148.21	4.454	0			
17,632.73	7,520.00	17,562.25	7,520.00	74.50	74.31	-90.26	660.11	511.44	148.67	4.440	0			
17,645.24	7,520.00	17,568.49	7,520.00	74.58	74.35	-90.26	660.14	511.35	148.80	4.437	0		SF	

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Thornton 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<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 @ 5055.00usft (Xtreme 7 - 16')

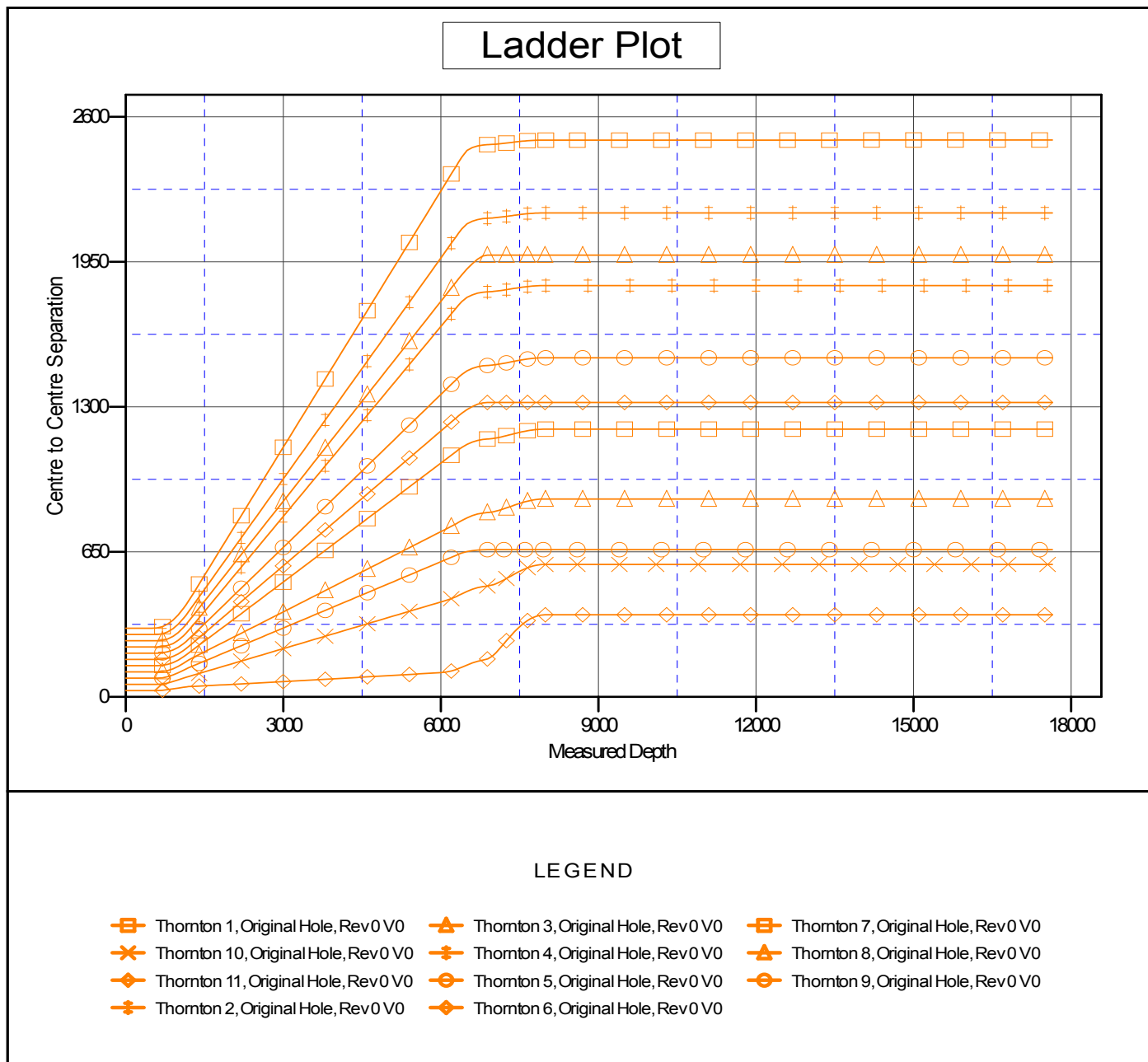
Offset Depths are relative to Offset Datum

Central Meridian is 105° 30' 0.000 W °

Coordinates are relative to: Thornton 12

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 12
<b>Project:</b>	Weld Co., Co	<b>TVD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Reference Site:</b>	Sec.08-T07N-R66W	<b>MD Reference:</b>	KB @ 5055.00usft (Xtreme 7 - 16')
<b>Site Error:</b>	0.00	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Thornton 12	<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 @ 5055.00usft (Xtreme 7 - 16')

Offset Depths are relative to Offset Datum

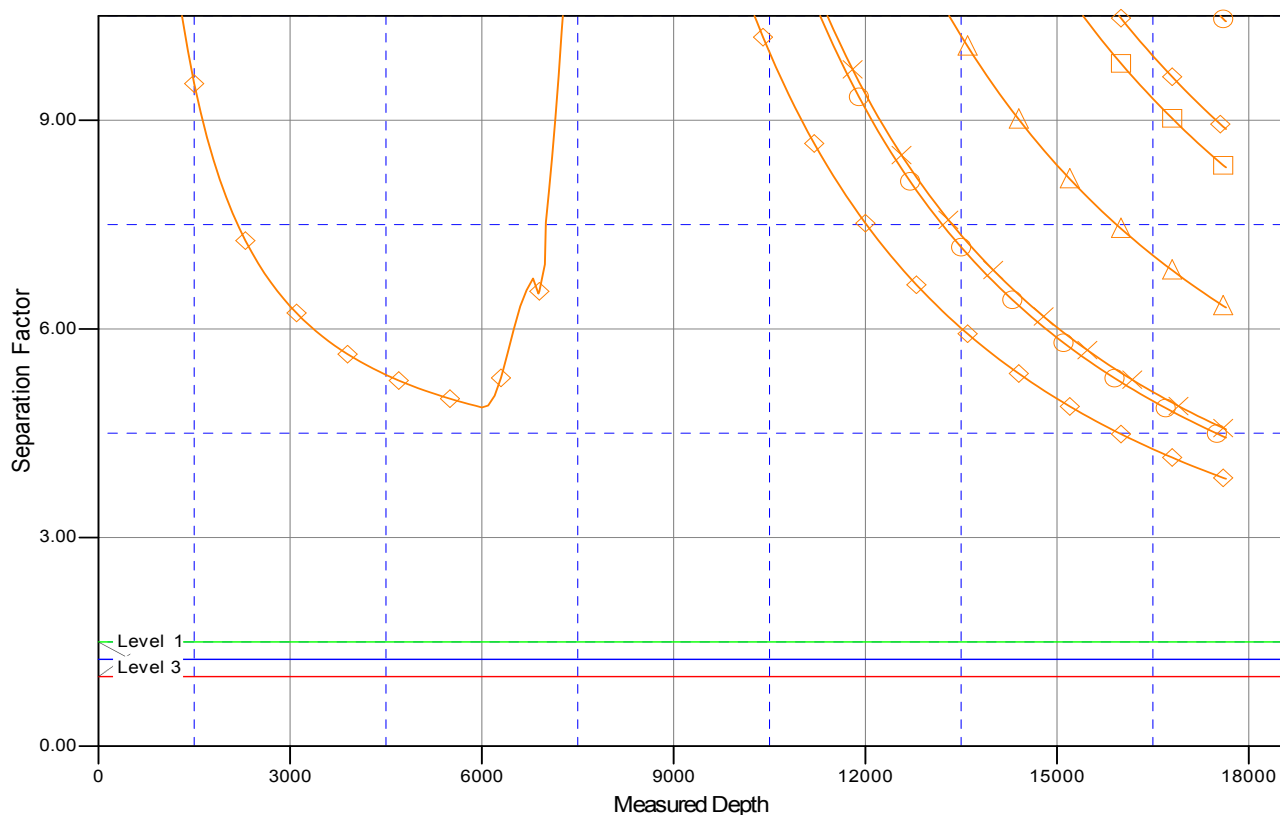
Central Meridian is 105° 30' 0.000 W °

Coordinates are relative to: Thornton 12

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 11, 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 |                                    |