

# **EXTRACTION OIL & GAS**

**Broomfield County  
Sec 10-T1S-R68W  
INTERCHANGE B S22-30-15N**

**ORIGINAL WELLBORE  
PROPOSAL 1**

## **Anticollision Report**

**24 January, 2018**



## Anticollision Report

<b>Company:</b>	EXTRACTION OIL & GAS	<b>Local Co-ordinate Reference:</b>	Well INTERCHANGE B S22-30-15N
<b>Project:</b>	Broomfield County	<b>TVD Reference:</b>	KB 25' @ 5231.00usft
<b>Reference Site:</b>	Sec 10-T1S-R68W	<b>MD Reference:</b>	KB 25' @ 5231.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	INTERCHANGE B S22-30-15N	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	ORIGINAL WELLBORE	<b>Database:</b>	EDT_32Bit_ODBC
<b>Reference Design:</b>	PROPOSAL 1	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	PROPOSAL 1		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	MD + Stations Interval 100.00usft	<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 9,999.98 usft	<b>Error Surface:</b>	Pedal Curve
<b>Warning Levels Evaluated at:</b>	2.00 Sigma	<b>Casing Method:</b>	Not applied

<b>Survey Tool Program</b>		<b>Date</b>	1/24/2018	
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.00	24,745.17	PROPOSAL 1 (ORIGINAL WELLBORE)	MWD OWSG	OWSG MWD - Standard

Summary	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
<b>Site Name</b> Offset Well - Wellbore - Design						
Sec 10-T1S-R68W						
ABND VERT BEYER MA 10-3 - Wellbore #1 - Design #1	4,835.23	4,109.65	1,156.35	1,032.40	9.329	CC
ABND VERT BEYER MA 10-3 - Wellbore #1 - Design #1	4,900.00	4,138.29	1,157.17	1,031.87	9.235	ES
ABND VERT BEYER MA 10-3 - Wellbore #1 - Design #1	5,300.00	4,434.35	1,197.84	1,062.95	8.880	SF
ABND VERT C.A.H.B 1-10 - Wellbore #1 - Design #1	5,512.07	4,552.32	109.75	-31.56	0.777	Level 1, CC, ES, SF
ABND VERT CAHB 2-10 - Wellbore #1 - Design #1	3,614.14	3,184.55	1,049.04	958.81	11.627	CC
ABND VERT CAHB 2-10 - Wellbore #1 - Design #1	3,700.00	3,248.10	1,050.63	958.11	11.356	ES
ABND VERT CAHB 2-10 - Wellbore #1 - Design #1	4,300.00	3,707.81	1,145.94	1,039.09	10.725	SF
ABND VERT CAHB MA 10-4 - Wellbore #1 - Design #1	3,729.87	3,309.80	2,250.36	2,156.19	23.898	CC
ABND VERT CAHB MA 10-4 - Wellbore #1 - Design #1	3,900.00	3,416.13	2,253.26	2,154.90	22.908	ES
ABND VERT CAHB MA 10-4 - Wellbore #1 - Design #1	10,100.00	7,851.00	3,374.53	3,157.19	15.527	SF
ABND VERT TYMKOVICH 1-10 - Wellbore #1 - Design #1	6,672.28	5,180.00	1,113.99	1,033.80	13.892	CC, ES
ABND VERT TYMKOVICH 1-10 - Wellbore #1 - Design #1	6,700.00	5,180.00	1,114.38	1,033.95	13.856	SF
EXIST VERT BEYER MA 10-5 - Wellbore #1 - Design #1	2,008.88	1,968.77	1,481.84	1,433.72	30.795	CC
EXIST VERT BEYER MA 10-5 - Wellbore #1 - Design #1	2,200.00	2,134.11	1,484.94	1,431.92	28.010	ES
EXIST VERT BEYER MA 10-5 - Wellbore #1 - Design #1	11,600.00	7,855.98	3,370.25	3,156.18	15.743	SF
EXIST VERT SHARPE 1-10 - Wellbore #1 - Design #1	13,733.99	7,785.97	643.83	418.26	2.854	CC, ES, SF
EXIST VERT SHARPE 2-10 - Wellbore #1 - Design #1	600.00	578.00	299.83	286.70	22.832	CC
EXIST VERT SHARPE 2-10 - Wellbore #1 - Design #1	700.00	677.98	301.10	285.60	19.415	ES
EXIST VERT SHARPE 2-10 - Wellbore #1 - Design #1	12,900.00	7,817.98	2,290.68	2,071.96	10.473	SF
INTERCHANGE B S22-30-14N - ORIGINAL WELLBORE	600.00	600.00	18.10	14.25	4.698	CC
INTERCHANGE B S22-30-14N - ORIGINAL WELLBORE	24,745.35	24,690.50	259.34	-229.66	0.530	Level 1, ES, SF
INTERCHANGE B S22-30-16C - ORIGINAL WELLBORE	500.00	500.00	17.92	14.78	5.712	CC
INTERCHANGE B S22-30-16C - ORIGINAL WELLBORE	24,745.35	25,005.70	370.07	-16.60	0.957	Level 1, ES, SF
INTERCHANGE B S22-30-17N - ORIGINAL WELLBORE	400.00	400.00	36.02	33.60	14.886	CC
INTERCHANGE B S22-30-17N - ORIGINAL WELLBORE	24,745.35	24,876.34	518.40	30.35	1.062	Level 2, ES, SF
INTERCHANGE B S22-30-18N - ORIGINAL WELLBORE	300.00	300.00	53.93	52.23	31.675	CC, ES
INTERCHANGE B S22-30-18N - ORIGINAL WELLBORE	24,745.35	24,943.53	777.34	289.21	1.592	SF
INTERCHANGE B S22-30-19C - ORIGINAL WELLBORE	200.00	200.00	71.76	70.78	72.798	CC, ES
INTERCHANGE B S22-30-19C - ORIGINAL WELLBORE	24,745.35	25,216.42	1,073.58	600.68	2.270	SF
INTERCHANGE B S22-30-20N - ORIGINAL WELLBORE	100.00	100.00	89.95	89.68	334.577	CC, ES
INTERCHANGE B S22-30-20N - ORIGINAL WELLBORE	24,745.35	25,135.92	1,259.78	773.10	2.589	SF

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

## Anticollision Report

<b>Company:</b>	EXTRACTION OIL & GAS	<b>Local Co-ordinate Reference:</b>	Well INTERCHANGE B S22-30-15N
<b>Project:</b>	Broomfield County	<b>TVD Reference:</b>	KB 25' @ 5231.00usft
<b>Reference Site:</b>	Sec 10-T1S-R68W	<b>MD Reference:</b>	KB 25' @ 5231.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	INTERCHANGE B S22-30-15N	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	ORIGINAL WELLBORE	<b>Database:</b>	EDT_32Bit_ODBC
<b>Reference Design:</b>	PROPOSAL 1	<b>Offset TVD Reference:</b>	Offset Datum

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
<b>Sec 15-T1S-R68W</b>						
ABND DD PERGOLA 1-15 - Wellbore #1 - Wellbore #1	18,067.25	7,500.00	527.46	377.49	3.517	CC
ABND DD PERGOLA 1-15 - Wellbore #1 - Wellbore #1	18,100.00	7,500.00	528.48	376.86	3.486	ES, SF
ABND DD PERGOLA 2-15 - Wellbore #1 - Wellbore #1	15,743.22	7,500.00	388.41	294.07	4.117	CC, ES
ABND DD PERGOLA 2-15 - Wellbore #1 - Wellbore #1	15,800.00	7,500.00	392.54	296.49	4.087	SF
ABND VERT CALDWELL FARMS 1-A - Wellbore #1 - De	16,547.87	7,814.95	2,228.44	1,964.01	8.427	CC, ES
ABND VERT CALDWELL FARMS 1-A - Wellbore #1 - De	16,700.00	7,814.95	2,233.63	1,967.93	8.407	SF
ABND VERT HURON H UNIT 1 - Wellbore #1 - Design #	19,188.18	7,842.93	3,035.74	2,728.48	9.880	CC
ABND VERT HURON H UNIT 1 - Wellbore #1 - Design #	19,200.00	7,842.93	3,035.76	2,728.38	9.876	ES
ABND VERT HURON H UNIT 1 - Wellbore #1 - Design #	19,400.00	7,842.93	3,043.12	2,733.93	9.842	SF
EXIST VERT MATHENA 1-15 - Wellbore #1 - Design #1	600.00	602.00	3,043.88	3,030.26	223.529	CC
EXIST VERT MATHENA 1-15 - Wellbore #1 - Design #1	700.00	702.02	3,045.57	3,029.57	190.412	ES
EXIST VERT MATHENA 1-15 - Wellbore #1 - Design #1	15,700.00	7,837.95	3,398.09	3,147.67	13.570	SF
<b>Sec 22-T1S-R68W</b>						
ABND VERT FOSTER 1-22 - Wellbore #1 - Design #1	23,134.12	7,801.10	3,272.22	2,899.13	8.771	CC
ABND VERT FOSTER 1-22 - Wellbore #1 - Design #1	23,200.00	7,801.10	3,272.88	2,899.13	8.757	ES
ABND VERT FOSTER 1-22 - Wellbore #1 - Design #1	23,300.00	7,801.10	3,276.42	2,901.82	8.747	SF
EXIST VERT NORTH HURON 1-22 - Wellbore #1 - Desi	21,094.57	7,815.92	3,016.35	2,677.75	8.908	CC
EXIST VERT NORTH HURON 1-22 - Wellbore #1 - Desi	21,100.00	7,815.92	3,016.36	2,677.70	8.907	ES
EXIST VERT NORTH HURON 1-22 - Wellbore #1 - Desi	21,300.00	7,815.91	3,023.34	2,683.00	8.883	SF
EXIST VERT POITZ 1-22 - Wellbore #1 - Design #1	20,589.09	7,780.92	534.60	205.22	1.623	CC
EXIST VERT POITZ 1-22 - Wellbore #1 - Design #1	20,600.00	7,780.92	534.71	204.79	1.621	ES, SF

Offset Design												Offset Site Error:	0.00 usft	
Survey Program: 0-INC												Offset Well Error:		0.00 usft
Reference		Offset		Semi Major Axis			Distance					Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)		Separation Factor	
0.00	0.00	7.00	-7.00	0.00	0.08	6.16	2,446.10	263.96	2,460.30					
100.00	100.00	107.00	93.00	0.13	1.35	6.16	2,446.10	263.96	2,460.30	2,458.82	1.48	1,662.568		
200.00	200.00	207.00	193.00	0.49	3.62	6.16	2,446.10	263.96	2,460.30	2,456.18	4.12	597.753		
300.00	300.00	307.00	293.00	0.85	5.70	6.16	2,446.10	263.96	2,460.30	2,453.75	6.55	375.595		
400.00	400.00	407.00	393.00	1.21	7.74	6.16	2,446.10	263.96	2,460.30	2,451.35	8.95	274.888		
500.00	500.00	507.00	493.00	1.57	9.77	6.16	2,446.10	263.96	2,460.30	2,448.96	11.34	217.009		
600.00	600.00	607.00	593.00	1.93	11.79	6.16	2,446.10	263.96	2,460.30	2,446.58	13.72	179.344		
700.00	699.98	707.02	692.98	2.28	13.81	-28.07	2,446.10	263.96	2,458.76	2,442.66	16.10	152.761		
800.00	799.84	807.16	792.84	2.64	15.83	-28.17	2,446.10	263.96	2,454.14	2,435.67	18.47	132.838		
900.00	899.45	907.55	892.45	3.01	17.85	-28.34	2,446.10	263.96	2,446.46	2,425.60	20.86	117.278		
1,000.00	998.70	1,008.30	991.70	3.38	19.88	-28.58	2,446.10	263.96	2,435.72	2,412.47	23.26	104.734		
1,100.00	1,097.47	1,109.53	1,090.47	3.77	21.92	-28.89	2,446.10	263.96	2,421.97	2,396.30	25.67	94.363		
1,200.00	1,195.62	1,188.62	1,188.62	4.18	23.52	-29.27	2,446.10	263.96	2,405.22	2,377.58	27.64	87.028		
1,300.00	1,293.06	1,286.06	1,286.06	4.62	25.48	-29.73	2,446.10	263.96	2,385.52	2,355.53	29.99	79.554		
1,400.00	1,389.64	1,382.64	1,382.64	5.09	27.42	-30.28	2,446.10	263.96	2,362.92	2,330.59	32.33	73.091		
1,500.00	1,485.27	1,478.27	1,478.27	5.60	29.35	-30.90	2,446.10	263.96	2,337.47	2,302.80	34.66	67.430		
1,600.00	1,579.82	1,572.82	1,572.82	6.15	31.25	-31.62	2,446.10	263.96	2,309.23	2,272.23	37.00	62.420		
1,700.00	1,673.17	1,666.17	1,666.17	6.75	33.13	-32.43	2,446.10	263.96	2,278.28	2,238.96	39.32	57.942		
1,800.00	1,765.21	1,758.21	1,758.21	7.39	34.98	-33.34	2,446.10	263.96	2,244.70	2,203.07	41.64	53.908		
1,900.00	1,855.84	1,848.84	1,848.84	8.09	36.80	-34.36	2,446.10	263.96	2,208.59	2,164.64	43.95	50.247		
2,000.00	1,944.94	1,937.94	1,937.94	8.83	38.59	-35.50	2,446.10	263.96	2,170.04	2,123.78	46.27	46.903		
2,100.00	2,032.39	2,025.39	2,025.39	9.63	40.35	-36.75	2,446.10	263.96	2,129.18	2,080.60	48.58	43.830		

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