

EXTRACTION OIL & GAS

Broomfield County

Sec 7-T1S-R68W

LIVINGSTON S19-25-4N

ORIGINAL WELLBORE

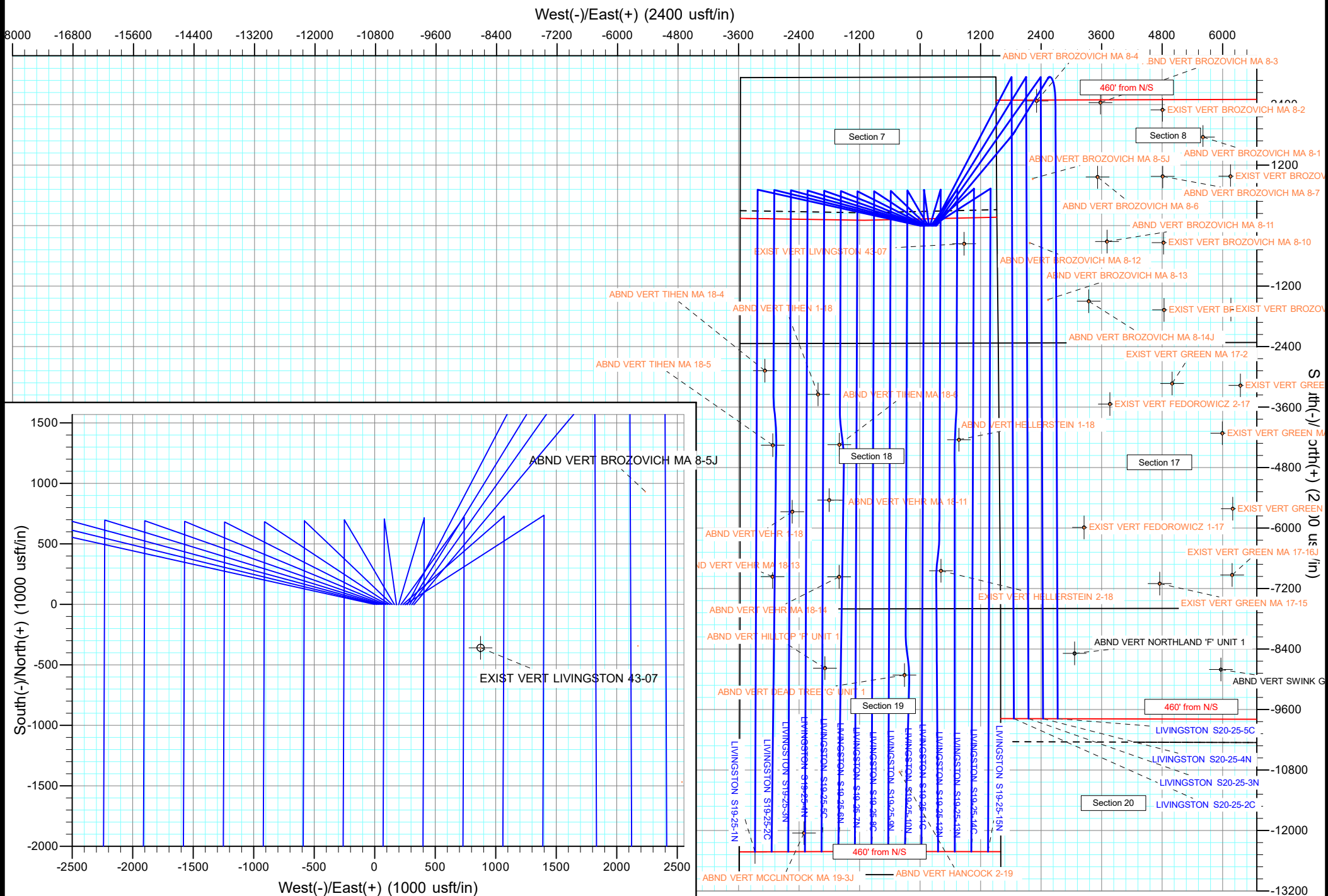
PROPOSAL 1

Anticollision Report

11 January, 2018



Project: Broomfield County
Site: Sec 7-T1S-R68W
Well: LIVINGSTON S19-25-1N
ORIGINAL WELLBORE
PROPOSAL 1



Anticollision Report

Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well LIVINGSTON S19-25-4N
Project:	Broomfield County	TVD Reference:	KB 25' @ 5336.00usft
Reference Site:	Sec 7-T1S-R68W	MD Reference:	KB 25' @ 5336.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	LIVINGSTON S19-25-4N	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	ORIGINAL WELLBORE	Database:	EDT_32Bit_ODBC
Reference Design:	PROPOSAL 1	Offset TVD Reference:	Offset Datum

Reference	PROPOSAL 1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD + Stations Interval 100.00usft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 9,999.98 usft	Error Surface:	Pedal Curve
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date	1/11/2018		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	21,363.12	PROPOSAL 1 (ORIGINAL WELLBORE)	MWD OWSG	OWSG MWD - Standard

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Sec 18-T1S-R68W						
ABND VERT HELLERSTEIN 1-18 - Wellbore #1 - Design	13,178.03	8,121.93	3,022.23	2,773.38	12.145	CC
ABND VERT HELLERSTEIN 1-18 - Wellbore #1 - Design	13,200.00	8,121.93	3,022.31	2,773.26	12.135	ES
ABND VERT HELLERSTEIN 1-18 - Wellbore #1 - Design	13,400.00	8,121.92	3,030.37	2,779.64	12.086	SF
ABND VERT TIHEN 1-18 - Wellbore #1 - Design #1	12,289.33	8,083.94	223.98	-9.89	0.958	Level 1, CC, ES, SF
ABND VERT TIHEN MA 18-4 - Wellbore #1 - Design #1	11,823.50	8,016.95	831.67	606.32	3.690	CC, ES
ABND VERT TIHEN MA 18-4 - Wellbore #1 - Design #1	11,900.00	8,016.95	835.19	607.09	3.662	SF
ABND VERT TIHEN MA 18-5 - Wellbore #1 - Design #1	13,301.83	8,048.93	669.01	419.61	2.682	CC, ES
ABND VERT TIHEN MA 18-5 - Wellbore #1 - Design #1	13,400.00	8,048.92	676.18	422.72	2.668	SF
ABND VERT TIHEN MA 18-6 - Wellbore #1 - Design #1	13,285.77	8,114.93	651.10	400.64	2.600	CC, ES, SF
ABND VERT VEHR 1-18 - Wellbore #1 - Design #1	14,618.99	8,084.90	277.11	138.51	1.999	CC, ES, SF
ABND VERT VEHR MA 18-11 - Wellbore #1 - Design #1	14,386.66	8,107.91	453.59	185.01	1.689	CC, ES, SF
ABND VERT VEHR MA 18-13 - Wellbore #1 - Design #1	15,910.02	8,139.88	664.55	503.83	4.135	CC, ES
ABND VERT VEHR MA 18-13 - Wellbore #1 - Design #1	16,000.00	8,139.88	670.62	506.23	4.079	SF
ABND VERT VEHR MA 18-14 - Wellbore #1 - Design #1	15,900.00	8,119.88	656.09	361.30	2.226	ES, SF
ABND VERT VEHR MA 18-14 - Wellbore #1 - Design #1	15,908.54	8,119.88	656.04	361.40	2.227	CC
EXIST VERT HELLERSTEIN 2-18 - Wellbore #1 - Design	15,779.61	8,049.89	2,675.53	2,384.50	9.193	CC
EXIST VERT HELLERSTEIN 2-18 - Wellbore #1 - Design	15,800.00	8,049.88	2,675.61	2,384.41	9.188	ES
EXIST VERT HELLERSTEIN 2-18 - Wellbore #1 - Design	15,900.00	8,049.88	2,678.23	2,386.33	9.175	SF
Sec 19-T1S-R68W						
ABND VERT DEAD TREE 'G' UNIT 1 - Wellbore #1 - De	17,851.54	8,052.85	1,960.51	1,633.75	6.000	CC, ES
ABND VERT DEAD TREE 'G' UNIT 1 - Wellbore #1 - De	17,900.00	8,052.85	1,961.11	1,634.16	5.998	SF
ABND VERT HANCOCK 2-19 - Wellbore #1 - Design #1	19,767.99	8,028.82	1,869.98	1,510.39	5.200	CC, ES
ABND VERT HANCOCK 2-19 - Wellbore #1 - Design #1	19,800.00	8,028.82	1,870.26	1,510.56	5.199	SF
ABND VERT HILLTOP 'F' UNIT 1 - Wellbore #1 - Design	17,700.00	8,064.85	383.31	57.86	1.178	Level 2, ES, SF
ABND VERT HILLTOP 'F' UNIT 1 - Wellbore #1 - Design	17,720.05	8,064.85	382.78	58.07	1.179	Level 2, CC
ABND VERT MCCLINTOCK MA 19-3J - Wellbore #1 - De	20,992.09	8,057.80	19.42	-361.06	0.051	Level 1, CC, ES, SF

Anticollision Report

Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well LIVINGSTON S19-25-4N
Project:	Broomfield County	TVD Reference:	KB 25' @ 5336.00usft
Reference Site:	Sec 7-T1S-R68W	MD Reference:	KB 25' @ 5336.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	LIVINGSTON S19-25-4N	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	ORIGINAL WELLBORE	Database:	EDT_32Bit_ODBC
Reference Design:	PROPOSAL 1	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Sec 7-T1S-R68W						
EXIST VERT LIVINGSTON 43-07 - Wellbore #1 - Design	400.00	412.00	895.54	886.50	99.047	CC
EXIST VERT LIVINGSTON 43-07 - Wellbore #1 - Design	500.00	511.98	897.27	885.85	78.549	ES
EXIST VERT LIVINGSTON 43-07 - Wellbore #1 - Design	9,600.00	8,069.99	3,124.62	2,925.87	15.721	SF
LIVINGSTON S19-25-10N - ORIGINAL WELLBORE - PR	400.00	400.00	107.89	105.47	44.590	CC, ES
LIVINGSTON S19-25-10N - ORIGINAL WELLBORE - PR	21,363.19	20,984.79	1,980.90	1,529.08	4.384	SF
LIVINGSTON S19-25-11C - ORIGINAL WELLBORE - PR	400.00	400.00	125.83	123.41	52.003	CC, ES
LIVINGSTON S19-25-11C - ORIGINAL WELLBORE - PR	21,364.03	21,209.73	2,323.74	1,873.04	5.156	SF
LIVINGSTON S19-25-12N - ORIGINAL WELLBORE - PR	400.00	400.00	143.77	141.35	59.415	CC, ES
LIVINGSTON S19-25-12N - ORIGINAL WELLBORE - PR	21,364.03	20,977.30	2,641.15	2,189.65	5.850	SF
LIVINGSTON S19-25-13N - ORIGINAL WELLBORE - PR	400.00	400.00	161.98	159.56	66.943	CC, ES
LIVINGSTON S19-25-13N - ORIGINAL WELLBORE - PR	21,364.03	21,022.78	2,971.21	2,519.29	6.575	SF
LIVINGSTON S19-25-14C - ORIGINAL WELLBORE - PR	400.00	400.00	179.92	177.50	74.355	CC, ES
LIVINGSTON S19-25-14C - ORIGINAL WELLBORE - PR	21,364.03	21,307.88	3,310.50	2,859.18	7.335	SF
LIVINGSTON S19-25-15N - ORIGINAL WELLBORE - PR	400.00	400.00	197.85	195.43	81.768	CC, ES
LIVINGSTON S19-25-15N - ORIGINAL WELLBORE - PR	21,364.03	21,136.91	3,631.51	3,179.91	8.042	SF
LIVINGSTON S19-25-1N - ORIGINAL WELLBORE - PR	0.00	25.00	54.09			
LIVINGSTON S19-25-1N - ORIGINAL WELLBORE - PR	100.00	124.55	54.19	53.83	151.181	ES
LIVINGSTON S19-25-1N - ORIGINAL WELLBORE - PR	21,364.03	21,740.18	990.88	537.00	2.183	SF
LIVINGSTON S19-25-2C - ORIGINAL WELLBORE - PR	105.56	130.56	36.15	35.75	90.766	CC
LIVINGSTON S19-25-2C - ORIGINAL WELLBORE - PR	200.00	224.70	36.26	35.18	33.761	ES
LIVINGSTON S19-25-2C - ORIGINAL WELLBORE - PR	21,364.03	21,821.08	695.61	265.49	1.617	SF
LIVINGSTON S19-25-3N - ORIGINAL WELLBORE - PR	300.00	300.00	17.94	16.24	10.535	CC
LIVINGSTON S19-25-3N - ORIGINAL WELLBORE - PR	21,364.03	21,478.20	330.28	-122.72	0.729	Level 1, ES, SF
LIVINGSTON S19-25-5C - ORIGINAL WELLBORE - PR	400.00	400.00	17.94	15.52	7.412	CC
LIVINGSTON S19-25-5C - ORIGINAL WELLBORE - PR	21,270.72	23,564.13	410.54	-13.64	0.968	Level 1, ES, SF
LIVINGSTON S19-25-6N - ORIGINAL WELLBORE - PR	400.00	400.00	35.87	33.45	14.825	CC, ES
LIVINGSTON S19-25-6N - ORIGINAL WELLBORE - PR	21,357.04	21,176.33	660.51	208.05	1.460	Level 3, SF
LIVINGSTON S19-25-7N - ORIGINAL WELLBORE - PR	400.00	400.00	53.81	51.39	22.237	CC, ES
LIVINGSTON S19-25-7N - ORIGINAL WELLBORE - PR	21,355.46	21,092.73	990.52	538.31	2.190	SF
LIVINGSTON S19-25-8C - ORIGINAL WELLBORE - PR	400.00	400.00	72.02	69.60	29.765	CC, ES
LIVINGSTON S19-25-8C - ORIGINAL WELLBORE - PR	21,363.19	21,271.27	1,342.96	894.78	2.997	SF
LIVINGSTON S19-25-9N - ORIGINAL WELLBORE - PR	400.00	400.00	89.96	87.54	37.178	CC, ES
LIVINGSTON S19-25-9N - ORIGINAL WELLBORE - PR	21,363.19	20,998.12	1,650.61	1,198.88	3.654	SF
LIVINGSTON S20-25-2C - ORIGINAL WELLBORE - PR	400.00	400.00	215.79	213.37	89.181	CC, ES
LIVINGSTON S20-25-2C - ORIGINAL WELLBORE - PR	19,100.00	21,633.46	4,158.28	3,777.19	10.912	SF
LIVINGSTON S20-25-3N - ORIGINAL WELLBORE - PR	300.00	300.00	234.00	232.30	137.428	CC, ES
LIVINGSTON S20-25-3N - ORIGINAL WELLBORE - PR	19,100.00	21,479.55	4,440.09	4,058.51	11.636	SF
LIVINGSTON S20-25-4N - ORIGINAL WELLBORE - PR	200.00	200.00	251.94	250.95	255.569	CC, ES
LIVINGSTON S20-25-4N - ORIGINAL WELLBORE - PR	19,200.00	21,546.10	4,738.56	4,355.89	12.383	SF
LIVINGSTON S20-25-5C - ORIGINAL WELLBORE - PR	100.00	100.00	269.88	269.61	1,003.804	CC, ES
LIVINGSTON S20-25-5C - ORIGINAL WELLBORE - PR	19,300.00	21,756.63	5,044.01	4,660.17	13.141	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	64.00	64.00	0.00	0.76	170.40	-4,245.59	718.38	4,305.94					
100.00	100.00	164.00	164.00	0.13	2.65	170.40	-4,245.59	718.38	4,305.94	4,303.15	2.79		1,545.229	
200.00	200.00	264.00	264.00	0.49	4.81	170.40	-4,245.59	718.38	4,305.94	4,300.64	5.30		812.336	
300.00	300.00	364.00	364.00	0.85	6.86	170.40	-4,245.59	718.38	4,305.94	4,298.23	7.71	558.163		

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