

EXTRACTION OIL & GAS

Broomfield County

Sec 7-T1S-R68W

LIVINGSTON S19-25-8C

ORIGINAL WELLBORE

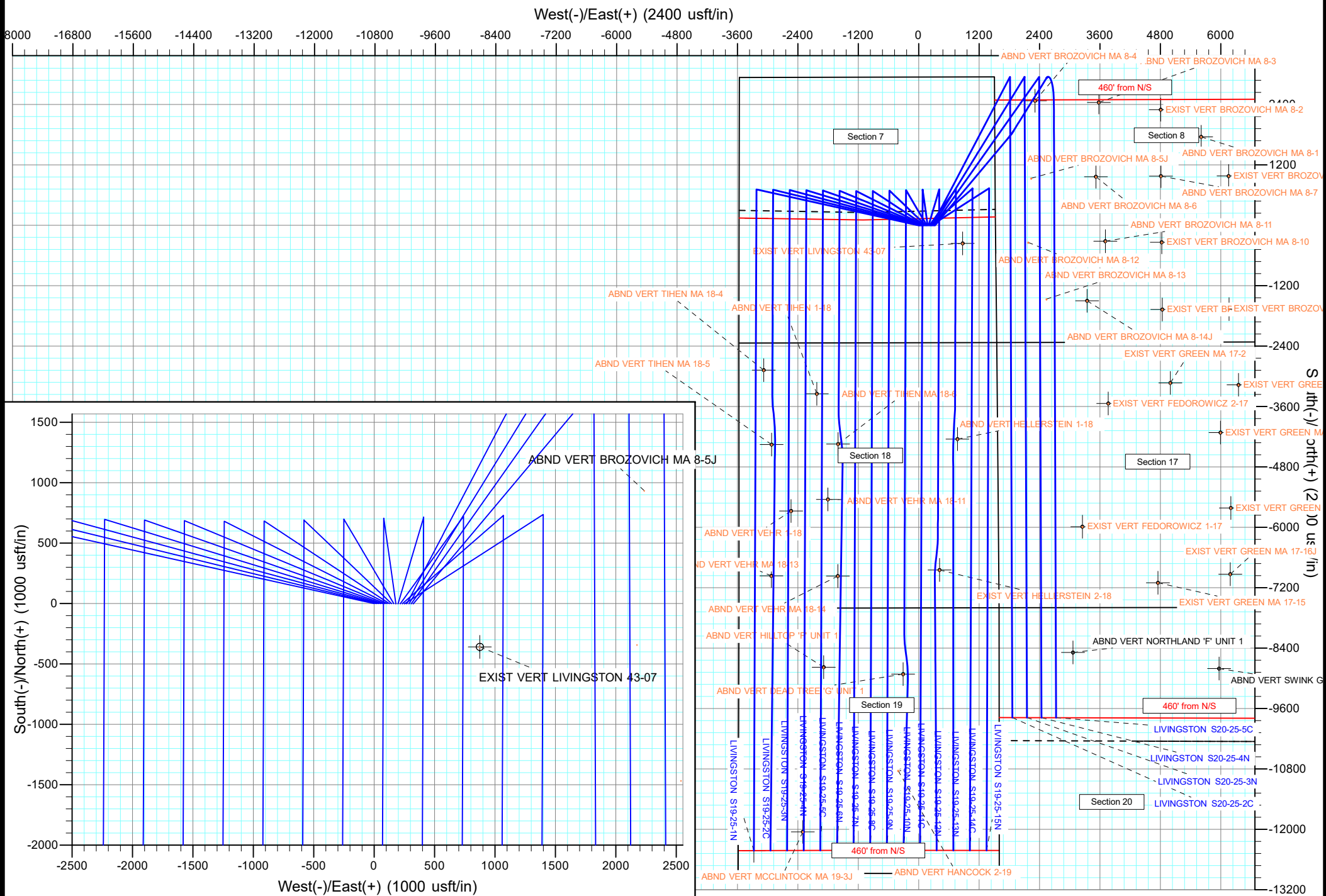
PROPOSAL 1

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 S19-25-8C
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 S19-25-8C	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	21,270.83	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	13,095.81	8,365.99	1,701.79	1,449.11	6.735	CC
ABND VERT HELLERSTEIN 1-18 - Wellbore #1 - Design	13,100.00	8,365.99	1,701.80	1,449.08	6.734	ES
ABND VERT HELLERSTEIN 1-18 - Wellbore #1 - Design	13,200.00	8,365.99	1,704.98	1,451.36	6.723	SF
ABND VERT TIHEN 1-18 - Wellbore #1 - Design #1	12,206.81	8,328.00	1,096.36	858.84	4.616	CC, ES
ABND VERT TIHEN 1-18 - Wellbore #1 - Design #1	12,300.00	8,327.99	1,100.32	860.68	4.592	SF
ABND VERT TIHEN MA 18-4 - Wellbore #1 - Design #1	11,740.87	8,261.00	2,151.97	1,923.08	9.402	CC
ABND VERT TIHEN MA 18-4 - Wellbore #1 - Design #1	11,800.00	8,261.00	2,152.78	1,922.74	9.358	ES
ABND VERT TIHEN MA 18-4 - Wellbore #1 - Design #1	12,100.00	8,261.00	2,181.73	1,946.37	9.270	SF
ABND VERT TIHEN MA 18-5 - Wellbore #1 - Design #1	13,219.22	8,307.01	1,989.47	1,735.94	7.847	CC
ABND VERT TIHEN MA 18-5 - Wellbore #1 - Design #1	13,300.00	8,307.01	1,991.10	1,735.88	7.801	ES
ABND VERT TIHEN MA 18-5 - Wellbore #1 - Design #1	13,500.00	8,307.01	2,009.18	1,750.30	7.761	SF
ABND VERT TIHEN MA 18-6 - Wellbore #1 - Design #1	13,203.30	8,358.99	669.35	415.04	2.632	CC, ES, SF
ABND VERT VEHR 1-18 - Wellbore #1 - Design #1	14,536.42	8,328.99	1,597.70	1,459.13	11.530	CC
ABND VERT VEHR 1-18 - Wellbore #1 - Design #1	14,600.00	8,328.99	1,598.96	1,458.95	11.421	ES
ABND VERT VEHR 1-18 - Wellbore #1 - Design #1	14,800.00	8,328.99	1,619.29	1,475.82	11.287	SF
ABND VERT VEHR MA 18-11 - Wellbore #1 - Design #1	14,304.16	8,351.99	866.98	594.40	3.181	CC, ES
ABND VERT VEHR MA 18-11 - Wellbore #1 - Design #1	14,400.00	8,351.99	872.26	597.44	3.174	SF
ABND VERT VEHR MA 18-13 - Wellbore #1 - Design #1	15,827.41	8,383.99	1,985.28	1,824.47	12.345	CC
ABND VERT VEHR MA 18-13 - Wellbore #1 - Design #1	15,900.00	8,383.99	1,986.61	1,824.22	12.233	ES
ABND VERT VEHR MA 18-13 - Wellbore #1 - Design #1	16,100.00	8,383.99	2,003.91	1,838.04	12.081	SF
ABND VERT VEHR MA 18-14 - Wellbore #1 - Design #1	15,826.07	8,363.99	664.69	365.92	2.225	CC, ES, SF
EXIST VERT HELLERSTEIN 2-18 - Wellbore #1 - Design	15,697.36	8,306.01	1,354.81	1,059.42	4.587	CC
EXIST VERT HELLERSTEIN 2-18 - Wellbore #1 - Design	15,700.00	8,306.01	1,354.82	1,059.40	4.586	ES, SF
Sec 19-T1S-R68W						
ABND VERT DEAD TREE 'G' UNIT 1 - Wellbore #1 - De	17,769.21	8,303.01	639.58	308.45	1.932	CC, ES, SF
ABND VERT HANCOCK 2-19 - Wellbore #1 - Design #1	19,685.65	8,272.98	548.85	184.93	1.508	CC, ES, SF
ABND VERT HILLTOP 'F' UNIT 1 - Wellbore #1 - Design	17,637.55	8,308.99	938.14	609.18	2.852	CC, ES
ABND VERT HILLTOP 'F' UNIT 1 - Wellbore #1 - Design	17,700.00	8,308.99	940.21	609.75	2.845	SF
ABND VERT MCCLINTOCK MA 19-3J - Wellbore #1 - De	20,910.26	8,301.98	1,340.68	954.75	3.474	CC, ES
ABND VERT MCCLINTOCK MA 19-3J - Wellbore #1 - De	21,000.00	8,301.98	1,343.68	955.87	3.465	SF

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

Anticollision Report

Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well LIVINGSTON S19-25-8C
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 S19-25-8C	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	800.00	812.00	829.87	811.30	44.707	CC
EXIST VERT LIVINGSTON 43-07 - Wellbore #1 - Design	900.00	911.98	831.60	810.66	39.728	ES
EXIST VERT LIVINGSTON 43-07 - Wellbore #1 - Design	9,300.00	8,314.00	1,791.56	1,591.53	8.957	SF
LIVINGSTON S19-25-10N - ORIGINAL WELLBORE - PR	800.00	800.00	35.87	30.58	6.784	CC, ES
LIVINGSTON S19-25-10N - ORIGINAL WELLBORE - PR	21,269.80	20,984.79	703.48	275.93	1.645	SF
LIVINGSTON S19-25-11C - ORIGINAL WELLBORE - PR	800.00	800.00	53.81	48.52	10.176	CC, ES
LIVINGSTON S19-25-11C - ORIGINAL WELLBORE - PR	21,271.27	21,212.55	990.29	539.10	2.195	SF
LIVINGSTON S19-25-12N - ORIGINAL WELLBORE - PR	800.00	800.00	71.74	66.46	13.568	CC, ES
LIVINGSTON S19-25-12N - ORIGINAL WELLBORE - PR	21,271.27	20,981.37	1,342.90	898.31	3.021	SF
LIVINGSTON S19-25-13N - ORIGINAL WELLBORE - PR	800.00	800.00	89.96	84.67	17.014	CC, ES
LIVINGSTON S19-25-13N - ORIGINAL WELLBORE - PR	21,271.27	21,018.29	1,668.55	1,221.42	3.732	SF
LIVINGSTON S19-25-14C - ORIGINAL WELLBORE - PR	800.00	800.00	107.89	102.61	20.406	CC, ES
LIVINGSTON S19-25-14C - ORIGINAL WELLBORE - PR	21,271.27	21,311.38	1,980.90	1,529.59	4.389	SF
LIVINGSTON S19-25-15N - ORIGINAL WELLBORE - PR	800.00	800.00	125.83	120.54	23.798	CC, ES
LIVINGSTON S19-25-15N - ORIGINAL WELLBORE - PR	21,271.27	21,136.91	2,323.76	1,874.71	5.175	SF
LIVINGSTON S19-25-1N - ORIGINAL WELLBORE - PR	0.00	25.00	126.11			
LIVINGSTON S19-25-1N - ORIGINAL WELLBORE - PR	100.00	123.97	126.21	125.86	354.219	ES
LIVINGSTON S19-25-1N - ORIGINAL WELLBORE - PR	21,271.27	21,729.66	2,326.74	1,874.67	5.147	SF
LIVINGSTON S19-25-2C - ORIGINAL WELLBORE - PR	105.56	130.56	108.18	107.78	271.591	CC
LIVINGSTON S19-25-2C - ORIGINAL WELLBORE - PR	200.00	224.11	108.28	107.21	101.019	ES
LIVINGSTON S19-25-2C - ORIGINAL WELLBORE - PR	21,271.27	21,801.28	1,980.86	1,528.26	4.377	SF
LIVINGSTON S19-25-3N - ORIGINAL WELLBORE - PR	300.00	300.00	89.96	88.26	52.833	CC, ES
LIVINGSTON S19-25-3N - ORIGINAL WELLBORE - PR	21,271.27	21,467.90	1,668.79	1,218.47	3.706	SF
LIVINGSTON S19-25-4N - ORIGINAL WELLBORE - PR	400.00	400.00	72.02	69.60	29.765	CC, ES
LIVINGSTON S19-25-4N - ORIGINAL WELLBORE - PR	21,271.27	21,359.78	1,342.95	894.73	2.996	SF
LIVINGSTON S19-25-5C - ORIGINAL WELLBORE - PR	500.00	500.00	54.09	50.95	17.244	CC, ES
LIVINGSTON S19-25-5C - ORIGINAL WELLBORE - PR	21,271.27	21,484.65	990.58	538.90	2.193	SF
LIVINGSTON S19-25-6N - ORIGINAL WELLBORE - PR	600.00	600.00	36.15	32.30	9.382	CC, ES
LIVINGSTON S19-25-6N - ORIGINAL WELLBORE - PR	21,271.27	21,159.47	703.85	270.66	1.625	SF
LIVINGSTON S19-25-7N - ORIGINAL WELLBORE - PR	700.00	700.00	18.22	13.65	3.985	CC
LIVINGSTON S19-25-7N - ORIGINAL WELLBORE - PR	21,178.63	25,978.55	410.62	-49.47	0.892	Level 1, ES, SF
LIVINGSTON S19-25-9N - ORIGINAL WELLBORE - PR	800.00	800.00	17.94	12.65	3.392	CC, ES
LIVINGSTON S19-25-9N - ORIGINAL WELLBORE - PR	21,271.27	21,000.72	410.41	30.53	1.080	Level 2, SF
LIVINGSTON S20-25-2C - ORIGINAL WELLBORE - PR	400.00	400.00	143.77	141.35	59.415	CC, ES
LIVINGSTON S20-25-2C - ORIGINAL WELLBORE - PR	18,800.00	21,633.46	2,816.87	2,437.75	7.430	SF
LIVINGSTON S20-25-3N - ORIGINAL WELLBORE - PR	300.00	300.00	161.98	160.28	95.130	CC, ES
LIVINGSTON S20-25-3N - ORIGINAL WELLBORE - PR	18,900.00	21,479.55	3,123.35	2,743.74	8.228	SF
LIVINGSTON S20-25-4N - ORIGINAL WELLBORE - PR	200.00	200.00	179.92	178.93	182.509	CC, ES
LIVINGSTON S20-25-4N - ORIGINAL WELLBORE - PR	18,900.00	21,546.10	3,411.67	3,031.76	8.980	SF
LIVINGSTON S20-25-5C - ORIGINAL WELLBORE - PR	100.00	100.00	197.85	197.58	735.915	CC, ES
LIVINGSTON S20-25-5C - ORIGINAL WELLBORE - PR	19,000.00	21,756.63	3,701.08	3,319.21	9.692	SF

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 0-INC												Offset Well Error:	0.00 usft
Sec 18-T1S-R68W - ABND VERT HELLERSTEIN 1-18 - Wellbore #1 - Design #1													
Reference		Offset		Semi Major Axis			Distance						
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	Warning
0.00	0.00	64.00	64.00	0.00	0.76	171.34	-4,245.23	646.35	4,294.15				
100.00	100.00	164.00	164.00	0.13	2.65	171.34	-4,245.23	646.35	4,294.15	4,291.36	2.79	1,540.999	
200.00	200.00	264.00	264.00	0.49	4.81	171.34	-4,245.23	646.35	4,294.15	4,288.85	5.30	810.112	
300.00	300.00	364.00	364.00	0.85	6.86	171.34	-4,245.23	646.35	4,294.15	4,286.44	7.71	556.635	

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