

EXTRACTION OIL & GAS

Broomfield County

Sec 7-T1S-R68W

LIVINGSTON S19-25-2C

ORIGINAL WELLBORE

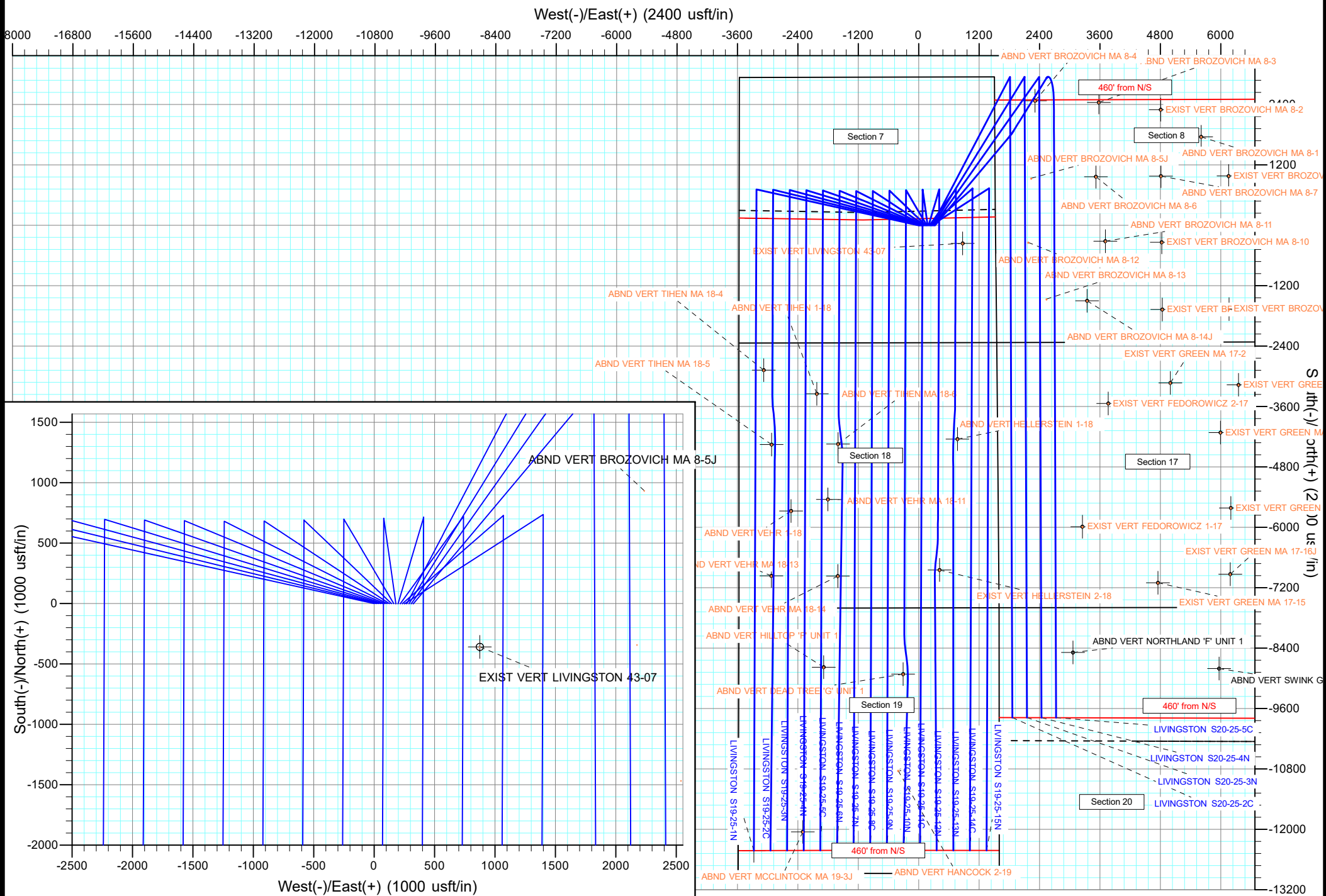
PROPOSAL 1

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 S19-25-2C
Project:	Broomfield County	TVD Reference:	KB 25' @ 5361.00usft
Reference Site:	Sec 7-T1S-R68W	MD Reference:	KB 25' @ 5361.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	LIVINGSTON S19-25-2C	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	21,829.73	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	13,613.78	8,341.00	3,623.51	3,369.01	14.238	CC
ABND VERT HELLERSTEIN 1-18 - Wellbore #1 - Design	13,613.87	8,341.00	3,623.51	3,369.01	14.238	ES
ABND VERT HELLERSTEIN 1-18 - Wellbore #1 - Design	14,000.00	8,341.00	3,644.05	3,386.26	14.136	SF
ABND VERT TIHEN 1-18 - Wellbore #1 - Design #1	12,700.00	8,303.00	885.37	645.18	3.686	SF
ABND VERT TIHEN 1-18 - Wellbore #1 - Design #1	12,748.06	8,303.00	884.07	644.37	3.688	CC, ES
ABND VERT TIHEN MA 18-4 - Wellbore #1 - Design #1	12,282.26	8,236.00	171.60	-59.72	0.742	Level 1, CC
ABND VERT TIHEN MA 18-4 - Wellbore #1 - Design #1	12,300.00	8,236.00	172.51	-61.26	0.738	Level 1, ES, SF
ABND VERT TIHEN MA 18-5 - Wellbore #1 - Design #1	13,763.89	8,268.00	66.75	-188.69	0.261	Level 1, CC, ES, SF
ABND VERT TIHEN MA 18-6 - Wellbore #1 - Design #1	13,738.38	8,334.00	1,253.21	996.85	4.888	CC, ES, SF
ABND VERT VEHR 1-18 - Wellbore #1 - Design #1	15,078.22	8,304.00	334.58	193.86	2.378	CC, ES, SF
ABND VERT VEHR MA 18-11 - Wellbore #1 - Design #1	14,800.00	8,327.00	1,064.37	789.82	3.877	SF
ABND VERT VEHR MA 18-11 - Wellbore #1 - Design #1	14,840.66	8,327.00	1,063.59	789.31	3.878	CC, ES
ABND VERT VEHR MA 18-13 - Wellbore #1 - Design #1	16,371.99	8,359.00	43.61	-119.10	0.268	Level 1, CC, ES, SF
ABND VERT VEHR MA 18-14 - Wellbore #1 - Design #1	16,361.05	8,339.00	1,276.93	976.85	4.255	CC, ES, SF
EXIST VERT HELLERSTEIN 2-18 - Wellbore #1 - Design	16,217.66	8,269.00	3,295.45	2,999.20	11.124	CC, ES
EXIST VERT HELLERSTEIN 2-18 - Wellbore #1 - Design	16,400.00	8,269.00	3,300.49	3,002.84	11.089	SF
Sec 19-T1S-R68W						
ABND VERT DEAD TREE 'G' UNIT 1 - Wellbore #1 - De	18,294.66	8,272.00	2,595.29	2,263.44	7.821	CC
ABND VERT DEAD TREE 'G' UNIT 1 - Wellbore #1 - De	18,300.00	8,272.00	2,595.30	2,263.42	7.820	ES
ABND VERT DEAD TREE 'G' UNIT 1 - Wellbore #1 - De	18,400.00	8,272.00	2,597.43	2,265.06	7.815	SF
ABND VERT HANCOCK 2-19 - Wellbore #1 - Design #1	20,211.71	8,248.00	2,518.49	2,153.95	6.909	CC, ES
ABND VERT HANCOCK 2-19 - Wellbore #1 - Design #1	20,300.00	8,248.00	2,520.04	2,155.11	6.906	SF
ABND VERT HILLTOP 'F' UNIT 1 - Wellbore #1 - Design	18,174.47	8,284.00	1,016.66	686.65	3.081	CC, ES, SF
ABND VERT MCCLINTOCK MA 19-3J - Wellbore #1 - De	21,450.02	8,277.00	637.92	251.25	1.650	CC, ES, SF

Anticollision Report

Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well LIVINGSTON S19-25-2C
Project:	Broomfield County	TVD Reference:	KB 25' @ 5361.00usft
Reference Site:	Sec 7-T1S-R68W	MD Reference:	KB 25' @ 5361.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	LIVINGSTON S19-25-2C	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	200.00	187.00	928.93	925.26	253.691	CC
EXIST VERT LIVINGSTON 43-07 - Wellbore #1 - Design	300.00	286.98	930.65	924.53	151.995	ES
EXIST VERT LIVINGSTON 43-07 - Wellbore #1 - Design	10,200.00	8,289.00	3,796.14	3,589.38	18.360	SF
LIVINGSTON S19-25-10N - ORIGINAL WELLBORE - PR	200.00	175.00	144.05	143.15	160.734	CC, ES
LIVINGSTON S19-25-10N - ORIGINAL WELLBORE - PR	21,829.73	20,984.79	2,650.27	2,200.10	5.887	SF
LIVINGSTON S19-25-11C - ORIGINAL WELLBORE - PR	200.00	175.00	161.98	161.09	180.749	CC, ES
LIVINGSTON S19-25-11C - ORIGINAL WELLBORE - PR	21,829.73	21,208.84	2,971.30	2,518.96	6.569	SF
LIVINGSTON S19-25-12N - ORIGINAL WELLBORE - PR	200.00	175.00	179.92	179.02	200.762	CC, ES
LIVINGSTON S19-25-12N - ORIGINAL WELLBORE - PR	21,829.73	20,974.15	3,308.70	2,858.13	7.343	SF
LIVINGSTON S19-25-13N - ORIGINAL WELLBORE - PR	200.00	175.00	198.13	197.24	221.087	CC, ES
LIVINGSTON S19-25-13N - ORIGINAL WELLBORE - PR	21,829.73	21,021.36	3,638.10	3,186.81	8.062	SF
LIVINGSTON S19-25-14C - ORIGINAL WELLBORE - PR	200.00	175.00	216.07	215.17	241.100	CC, ES
LIVINGSTON S19-25-14C - ORIGINAL WELLBORE - PR	21,829.73	21,307.88	3,961.87	3,509.37	8.755	SF
LIVINGSTON S19-25-15N - ORIGINAL WELLBORE - PR	200.00	175.00	234.01	233.11	261.116	CC, ES
LIVINGSTON S19-25-15N - ORIGINAL WELLBORE - PR	21,829.73	21,136.91	4,297.39	3,846.00	9.520	SF
LIVINGSTON S19-25-1N - ORIGINAL WELLBORE - PR	100.00	100.00	17.94	17.67	66.711	CC
LIVINGSTON S19-25-1N - ORIGINAL WELLBORE - PR	21,829.73	21,744.16	410.64	8.52	1.021	Level 2, ES, SF
LIVINGSTON S19-25-3N - ORIGINAL WELLBORE - PR	200.00	175.00	18.22	17.32	20.326	CC
LIVINGSTON S19-25-3N - ORIGINAL WELLBORE - PR	21,829.73	21,482.38	396.06	9.14	1.024	Level 2, ES, SF
LIVINGSTON S19-25-4N - ORIGINAL WELLBORE - PR	200.00	175.00	36.15	35.26	40.341	CC, ES
LIVINGSTON S19-25-4N - ORIGINAL WELLBORE - PR	21,829.73	21,365.99	695.67	265.88	1.619	SF
LIVINGSTON S19-25-5C - ORIGINAL WELLBORE - PR	200.00	175.00	54.09	53.19	60.354	CC, ES
LIVINGSTON S19-25-5C - ORIGINAL WELLBORE - PR	21,829.73	21,493.68	990.62	537.16	2.185	SF
LIVINGSTON S19-25-6N - ORIGINAL WELLBORE - PR	200.00	175.00	72.02	71.13	80.367	CC, ES
LIVINGSTON S19-25-6N - ORIGINAL WELLBORE - PR	21,813.07	21,177.56	1,338.49	892.98	3.004	SF
LIVINGSTON S19-25-7N - ORIGINAL WELLBORE - PR	200.00	175.00	89.96	89.06	100.382	CC, ES
LIVINGSTON S19-25-7N - ORIGINAL WELLBORE - PR	21,829.73	21,087.76	1,665.08	1,217.88	3.723	SF
LIVINGSTON S19-25-8C - ORIGINAL WELLBORE - PR	200.00	175.00	108.18	107.28	120.708	CC, ES
LIVINGSTON S19-25-8C - ORIGINAL WELLBORE - PR	21,800.00	21,269.09	1,980.86	1,528.33	4.377	SF
LIVINGSTON S19-25-9N - ORIGINAL WELLBORE - PR	200.00	175.00	126.11	125.21	140.721	CC, ES
LIVINGSTON S19-25-9N - ORIGINAL WELLBORE - PR	21,829.73	20,998.12	2,321.27	1,871.80	5.164	SF
LIVINGSTON S20-25-2C - ORIGINAL WELLBORE - PR	200.00	175.00	251.94	251.05	281.128	CC, ES
LIVINGSTON S20-25-2C - ORIGINAL WELLBORE - PR	19,600.00	21,633.46	4,796.01	4,413.45	12.536	SF
LIVINGSTON S20-25-3N - ORIGINAL WELLBORE - PR	200.00	175.00	270.16	269.26	301.454	CC, ES
LIVINGSTON S20-25-3N - ORIGINAL WELLBORE - PR	19,700.00	21,479.55	5,099.92	4,716.86	13.313	SF
LIVINGSTON S20-25-4N - ORIGINAL WELLBORE - PR	200.00	175.00	288.09	287.20	321.467	CC, ES
LIVINGSTON S20-25-4N - ORIGINAL WELLBORE - PR	19,800.00	21,546.10	5,399.84	5,015.59	14.053	SF
LIVINGSTON S20-25-5C - ORIGINAL WELLBORE - PR	100.00	75.00	306.03	305.79	1,300.884	CC
LIVINGSTON S20-25-5C - ORIGINAL WELLBORE - PR	200.00	170.20	306.62	305.74	348.146	ES
LIVINGSTON S20-25-5C - ORIGINAL WELLBORE - PR	19,900.00	21,756.63	5,696.48	5,310.34	14.752	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														
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Semi Major Axis Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
0.00	0.00	39.00	39.00	0.00	0.46	169.92	-4,245.95	754.54	4,312.47					
100.00	100.00	139.00	139.00	0.13	2.08	169.92	-4,245.95	754.54	4,312.47	4,310.26	2.21	1,948.303		
200.00	200.00	239.00	239.00	0.49	4.29	169.92	-4,245.95	754.54	4,312.47	4,307.69	4.78	901.993		
300.00	299.98	338.98	338.98	0.85	6.35	-113.77	-4,245.95	754.54	4,313.18	4,305.98	7.20	599.121		
400.00	399.84	438.84	438.84	1.21	8.39	-113.79	-4,245.95	754.54	4,315.29	4,305.70	9.59	449.857		

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