

EXTRACTION OIL & GAS

Broomfield County

Sec 7-T1S-R68W

LIVINGSTON S19-25-7N

ORIGINAL WELLBORE

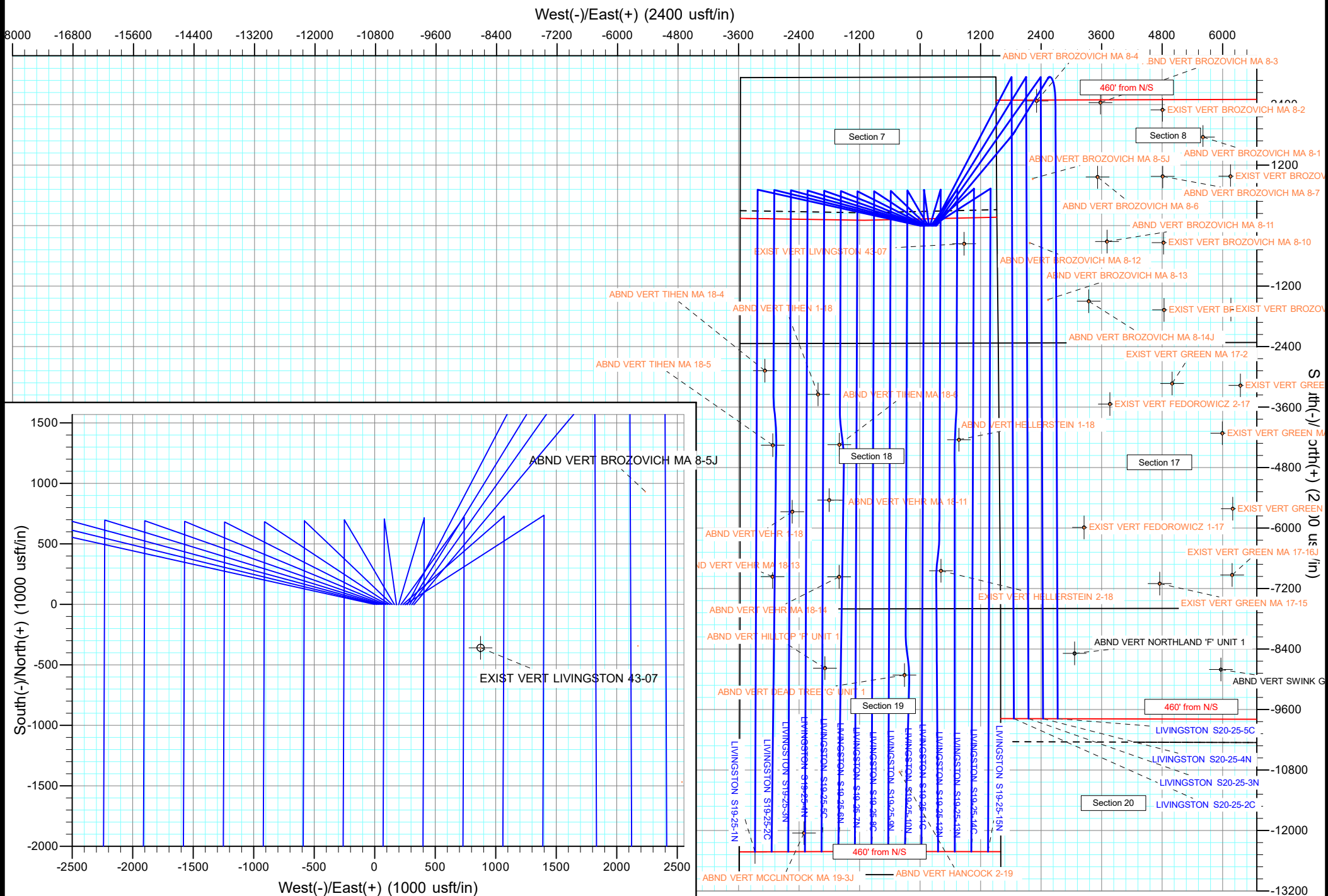
PROPOSAL 1

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 S19-25-7N
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 S19-25-7N	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	21,087.23	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	12,910.15	8,121.99	2,031.97	1,784.26	8.203	CC, ES
ABND VERT HELLERSTEIN 1-18 - Wellbore #1 - Design	13,000.00	8,121.99	2,033.95	1,785.42	8.184	SF
ABND VERT TIHEN 1-18 - Wellbore #1 - Design #1	12,021.19	8,083.99	766.20	533.66	3.295	CC, ES
ABND VERT TIHEN 1-18 - Wellbore #1 - Design #1	12,100.00	8,083.99	770.25	535.44	3.280	SF
ABND VERT TIHEN MA 18-4 - Wellbore #1 - Design #1	11,555.26	8,016.99	1,821.81	1,597.91	8.137	CC
ABND VERT TIHEN MA 18-4 - Wellbore #1 - Design #1	11,600.00	8,016.99	1,822.36	1,597.49	8.104	ES
ABND VERT TIHEN MA 18-4 - Wellbore #1 - Design #1	11,800.00	8,016.99	1,838.18	1,609.27	8.030	SF
ABND VERT TIHEN MA 18-5 - Wellbore #1 - Design #1	13,033.61	8,048.99	1,659.29	1,411.01	6.683	CC
ABND VERT TIHEN MA 18-5 - Wellbore #1 - Design #1	13,100.00	8,048.99	1,660.62	1,410.76	6.646	ES
ABND VERT TIHEN MA 18-5 - Wellbore #1 - Design #1	13,200.00	8,048.99	1,667.61	1,415.60	6.617	SF
ABND VERT TIHEN MA 18-6 - Wellbore #1 - Design #1	13,017.67	8,114.99	339.17	89.83	1.360	Level 3, CC, ES, SF
ABND VERT VEHR 1-18 - Wellbore #1 - Design #1	14,350.81	8,084.98	1,267.50	1,129.85	9.208	CC
ABND VERT VEHR 1-18 - Wellbore #1 - Design #1	14,400.00	8,084.98	1,268.46	1,129.50	9.128	ES
ABND VERT VEHR 1-18 - Wellbore #1 - Design #1	14,500.00	8,084.98	1,276.25	1,135.09	9.041	SF
ABND VERT VEHR MA 18-11 - Wellbore #1 - Design #1	14,118.54	8,107.99	536.78	269.17	2.006	CC, ES, SF
ABND VERT VEHR MA 18-13 - Wellbore #1 - Design #1	15,641.80	8,139.98	1,655.07	1,495.17	10.350	CC
ABND VERT VEHR MA 18-13 - Wellbore #1 - Design #1	15,700.00	8,139.98	1,656.09	1,494.75	10.265	ES
ABND VERT VEHR MA 18-13 - Wellbore #1 - Design #1	15,900.00	8,139.98	1,675.09	1,509.99	10.146	SF
ABND VERT VEHR MA 18-14 - Wellbore #1 - Design #1	15,640.44	8,119.98	334.48	40.65	1.138	Level 2, CC, ES, SF
EXIST VERT HELLERSTEIN 2-18 - Wellbore #1 - Design	15,511.70	8,049.98	1,685.02	1,394.82	5.806	CC, ES
EXIST VERT HELLERSTEIN 2-18 - Wellbore #1 - Design	15,600.00	8,049.98	1,687.34	1,396.54	5.803	SF
Sec 19-T1S-R68W						
ABND VERT DEAD TREE 'G' UNIT 1 - Wellbore #1 - De	17,583.57	8,052.98	969.82	643.74	2.974	CC, ES, SF
ABND VERT HANCOCK 2-19 - Wellbore #1 - Design #1	19,500.00	8,028.97	879.11	520.12	2.449	CC, ES, SF
ABND VERT HILLTOP 'F' UNIT 1 - Wellbore #1 - Design	17,451.93	8,064.98	607.90	283.88	1.876	CC, ES
ABND VERT HILLTOP 'F' UNIT 1 - Wellbore #1 - Design	17,500.00	8,064.98	609.80	284.24	1.873	SF
ABND VERT MCCLINTOCK MA 19-3J - Wellbore #1 - De	20,724.65	8,057.97	1,010.39	629.39	2.652	CC, ES
ABND VERT MCCLINTOCK MA 19-3J - Wellbore #1 - De	20,800.00	8,057.97	1,013.20	630.34	2.646	SF

Anticollision Report

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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	700.00	712.00	846.34	830.15	52.286	CC
EXIST VERT LIVINGSTON 43-07 - Wellbore #1 - Design	800.00	811.98	848.08	829.53	45.700	ES
EXIST VERT LIVINGSTON 43-07 - Wellbore #1 - Design	9,100.00	8,070.00	2,120.74	1,925.85	10.882	SF
LIVINGSTON S19-25-10N - ORIGINAL WELLBORE - PR	700.00	700.00	54.09	49.52	11.834	CC, ES
LIVINGSTON S19-25-10N - ORIGINAL WELLBORE - PR	21,084.54	20,984.79	990.11	538.87	2.194	SF
LIVINGSTON S19-25-11C - ORIGINAL WELLBORE - PR	700.00	700.00	72.02	67.45	15.758	CC, ES
LIVINGSTON S19-25-11C - ORIGINAL WELLBORE - PR	21,087.76	21,210.45	1,342.92	896.74	3.010	SF
LIVINGSTON S19-25-12N - ORIGINAL WELLBORE - PR	700.00	700.00	89.96	85.39	19.682	CC, ES
LIVINGSTON S19-25-12N - ORIGINAL WELLBORE - PR	21,087.76	20,979.82	1,650.84	1,199.88	3.661	SF
LIVINGSTON S19-25-13N - ORIGINAL WELLBORE - PR	700.00	700.00	108.17	103.60	23.668	CC, ES
LIVINGSTON S19-25-13N - ORIGINAL WELLBORE - PR	21,087.76	21,018.65	1,980.90	1,529.71	4.390	SF
LIVINGSTON S19-25-14C - ORIGINAL WELLBORE - PR	700.00	700.00	126.11	121.54	27.592	CC, ES
LIVINGSTON S19-25-14C - ORIGINAL WELLBORE - PR	21,087.76	21,313.46	2,324.03	1,874.44	5.169	SF
LIVINGSTON S19-25-15N - ORIGINAL WELLBORE - PR	700.00	700.00	144.05	139.48	31.516	CC, ES
LIVINGSTON S19-25-15N - ORIGINAL WELLBORE - PR	21,087.76	21,136.91	2,641.20	2,190.26	5.857	SF
LIVINGSTON S19-25-1N - ORIGINAL WELLBORE - PR	0.00	25.00	107.90			
LIVINGSTON S19-25-1N - ORIGINAL WELLBORE - PR	100.00	124.11	108.00	107.64	302.646	ES
LIVINGSTON S19-25-1N - ORIGINAL WELLBORE - PR	21,087.76	21,731.85	1,981.01	1,528.19	4.375	SF
LIVINGSTON S19-25-2C - ORIGINAL WELLBORE - PR	105.56	130.56	89.96	89.56	225.858	CC
LIVINGSTON S19-25-2C - ORIGINAL WELLBORE - PR	200.00	224.26	90.06	88.99	83.985	ES
LIVINGSTON S19-25-2C - ORIGINAL WELLBORE - PR	21,087.76	21,805.80	1,664.91	1,217.45	3.721	SF
LIVINGSTON S19-25-3N - ORIGINAL WELLBORE - PR	300.00	300.00	71.75	70.04	42.135	CC, ES
LIVINGSTON S19-25-3N - ORIGINAL WELLBORE - PR	21,087.76	21,469.88	1,320.57	868.41	2.921	SF
LIVINGSTON S19-25-4N - ORIGINAL WELLBORE - PR	400.00	400.00	53.81	51.39	22.237	CC, ES
LIVINGSTON S19-25-4N - ORIGINAL WELLBORE - PR	21,087.76	21,359.81	990.31	538.48	2.192	SF
LIVINGSTON S19-25-5C - ORIGINAL WELLBORE - PR	500.00	500.00	35.87	32.74	11.437	CC, ES
LIVINGSTON S19-25-5C - ORIGINAL WELLBORE - PR	21,087.76	21,485.91	703.93	278.08	1.653	SF
LIVINGSTON S19-25-6N - ORIGINAL WELLBORE - PR	600.00	600.00	17.94	14.09	4.655	CC
LIVINGSTON S19-25-6N - ORIGINAL WELLBORE - PR	21,087.76	21,164.87	329.96	-121.65	0.731	Level 1, ES, SF
LIVINGSTON S19-25-8C - ORIGINAL WELLBORE - PR	700.00	700.00	18.22	13.65	3.985	CC, ES
LIVINGSTON S19-25-8C - ORIGINAL WELLBORE - PR	21,087.76	21,275.58	410.62	21.53	1.055	Level 2, SF
LIVINGSTON S19-25-9N - ORIGINAL WELLBORE - PR	700.00	700.00	36.15	31.58	7.910	CC, ES
LIVINGSTON S19-25-9N - ORIGINAL WELLBORE - PR	21,087.76	21,004.28	660.27	208.79	1.462	Level 3, SF
LIVINGSTON S20-25-2C - ORIGINAL WELLBORE - PR	400.00	400.00	161.98	159.56	66.943	CC, ES
LIVINGSTON S20-25-2C - ORIGINAL WELLBORE - PR	18,700.00	21,633.46	3,161.92	2,783.08	8.346	SF
LIVINGSTON S20-25-3N - ORIGINAL WELLBORE - PR	300.00	300.00	180.20	178.49	105.828	CC, ES
LIVINGSTON S20-25-3N - ORIGINAL WELLBORE - PR	18,700.00	21,479.55	3,441.77	3,061.95	9.061	SF
LIVINGSTON S20-25-4N - ORIGINAL WELLBORE - PR	200.00	200.00	198.13	197.15	200.987	CC, ES
LIVINGSTON S20-25-4N - ORIGINAL WELLBORE - PR	18,800.00	21,546.10	3,739.50	3,358.54	9.816	SF
LIVINGSTON S20-25-5C - ORIGINAL WELLBORE - PR	100.00	100.00	216.07	215.80	803.667	CC, ES
LIVINGSTON S20-25-5C - ORIGINAL WELLBORE - PR	18,900.00	21,756.63	4,046.02	3,664.31	10.600	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	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbore	Centre	Between	Between	Minimum		Separation
Depth	Depth	Depth	Depth			Toolface	+N/-S	+E/-W	Centres	Ellipses	Separation		Factor
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
0.00	0.00	64.00	64.00	0.00	0.76	171.10	-4,245.23	664.57	4,296.93				
100.00	100.00	164.00	164.00	0.13	2.65	171.10	-4,245.23	664.57	4,296.93	4,294.14	2.79	1,541.996	
200.00	200.00	264.00	264.00	0.49	4.81	171.10	-4,245.23	664.57	4,296.93	4,291.63	5.30	810.636	
300.00	300.00	364.00	364.00	0.85	6.86	171.10	-4,245.23	664.57	4,296.93	4,289.22	7.71	556.996	

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