

EXTRACTION OIL & GAS

Broomfield County

Sec 7-T1S-R68W

LIVINGSTON S19-25-6N

ORIGINAL WELLBORE

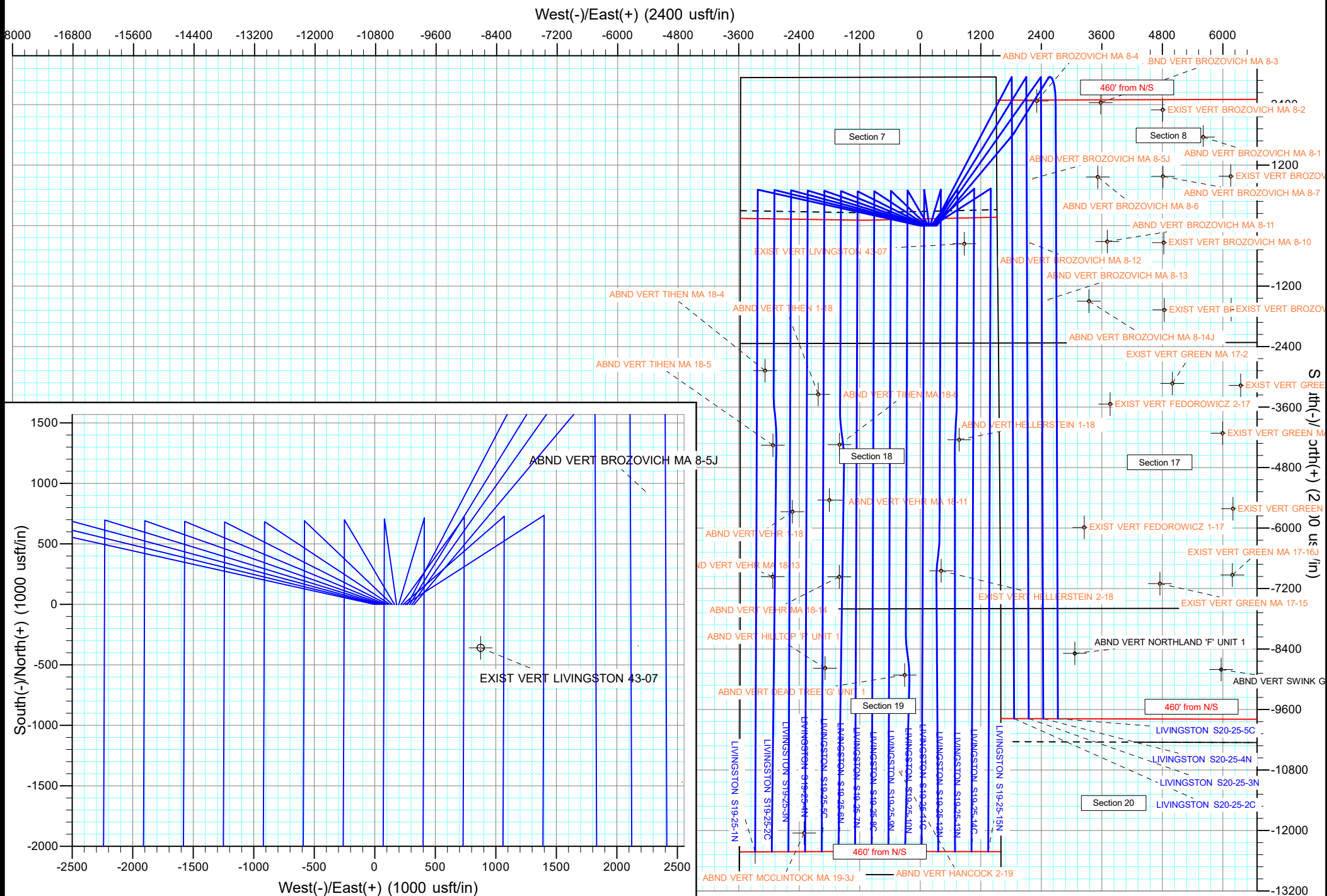
PROPOSAL 1

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 S19-25-6N
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 S19-25-6N	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	21,169.94	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	13,176.01	8,121.95	2,298.45	2,048.49	9.195	CC, ES
ABND VERT HELLERSTEIN 1-18 - Wellbore #1 - Design	13,300.00	8,121.95	2,304.47	2,053.66	9.188	SF
ABND VERT TIHEN 1-18 - Wellbore #1 - Design #1	12,096.97	8,083.96	436.30	203.37	1.873	CC
ABND VERT TIHEN 1-18 - Wellbore #1 - Design #1	12,100.00	8,083.96	436.31	203.23	1.872	ES, SF
ABND VERT TIHEN MA 18-4 - Wellbore #1 - Design #1	11,631.05	8,016.96	1,491.91	1,267.59	6.651	CC
ABND VERT TIHEN MA 18-4 - Wellbore #1 - Design #1	11,700.00	8,016.96	1,493.51	1,267.50	6.608	ES
ABND VERT TIHEN MA 18-4 - Wellbore #1 - Design #1	11,800.00	8,016.96	1,501.45	1,273.15	6.577	SF
ABND VERT TIHEN MA 18-5 - Wellbore #1 - Design #1	12,913.73	8,048.95	1,382.60	1,139.95	5.698	CC
ABND VERT TIHEN MA 18-5 - Wellbore #1 - Design #1	12,996.94	8,048.95	1,385.10	1,139.68	5.644	ES
ABND VERT TIHEN MA 18-5 - Wellbore #1 - Design #1	13,200.00	8,048.95	1,404.84	1,153.72	5.594	SF
ABND VERT TIHEN MA 18-6 - Wellbore #1 - Design #1	13,089.11	8,114.95	72.33	-175.37	0.292	Level 1, CC
ABND VERT TIHEN MA 18-6 - Wellbore #1 - Design #1	13,100.00	8,114.95	73.12	-177.38	0.292	Level 1, ES, SF
ABND VERT VEHR 1-18 - Wellbore #1 - Design #1	14,441.52	8,084.95	1,007.36	868.82	7.271	CC, ES
ABND VERT VEHR 1-18 - Wellbore #1 - Design #1	14,600.00	8,084.95	1,019.75	877.42	7.165	SF
ABND VERT VEHR MA 18-11 - Wellbore #1 - Design #1	14,201.63	8,107.95	279.11	10.72	1.040	Level 2, CC, ES, SF
ABND VERT VEHR MA 18-13 - Wellbore #1 - Design #1	15,736.49	8,139.95	1,381.43	1,220.66	8.593	CC
ABND VERT VEHR MA 18-13 - Wellbore #1 - Design #1	15,800.00	8,139.95	1,382.88	1,220.45	8.514	ES
ABND VERT VEHR MA 18-13 - Wellbore #1 - Design #1	15,900.00	8,139.95	1,391.07	1,226.54	8.455	SF
ABND VERT VEHR MA 18-14 - Wellbore #1 - Design #1	15,721.33	8,119.95	60.92	-233.53	0.207	Level 1, CC, ES, SF
EXIST VERT HELLERSTEIN 2-18 - Wellbore #1 - Design	15,571.51	8,049.95	1,957.13	1,666.65	6.738	CC
EXIST VERT HELLERSTEIN 2-18 - Wellbore #1 - Design	15,600.00	8,049.95	1,957.33	1,666.60	6.732	ES
EXIST VERT HELLERSTEIN 2-18 - Wellbore #1 - Design	15,700.00	8,049.95	1,961.34	1,669.93	6.730	SF
Sec 19-T1S-R68W						
ABND VERT DEAD TREE 'G' UNIT 1 - Wellbore #1 - De	17,650.73	8,052.95	1,263.60	937.26	3.872	CC, ES, SF
ABND VERT HANCOCK 2-19 - Wellbore #1 - Design #1	19,568.01	8,028.95	1,192.92	833.75	3.321	CC, ES, SF
ABND VERT HILLTOP 'F' UNIT 1 - Wellbore #1 - Design	17,535.58	8,064.95	315.40	-9.18	0.972	Level 1, CC, ES, SF
ABND VERT MCCLINTOCK MA 19-3J - Wellbore #1 - De	20,812.33	8,057.95	683.69	302.24	1.792	CC, ES, SF

Anticollision Report

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Reference Site:	Sec 7-T1S-R68W	MD Reference:	KB 25' @ 5336.00usft
Site Error:	0.00 usft	North Reference:	True
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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	600.00	612.00	862.78	848.97	62.478	CC
EXIST VERT LIVINGSTON 43-07 - Wellbore #1 - Design	700.00	711.98	864.52	848.34	53.426	ES
EXIST VERT LIVINGSTON 43-07 - Wellbore #1 - Design	9,300.00	8,069.99	2,457.49	2,261.19	12.519	SF
LIVINGSTON S19-25-10N - ORIGINAL WELLBORE - PR	600.00	600.00	72.02	68.17	18.690	CC, ES
LIVINGSTON S19-25-10N - ORIGINAL WELLBORE - PR	21,150.92	20,984.79	1,320.45	869.23	2.926	SF
LIVINGSTON S19-25-11C - ORIGINAL WELLBORE - PR	600.00	600.00	89.96	86.11	23.345	CC, ES
LIVINGSTON S19-25-11C - ORIGINAL WELLBORE - PR	21,170.53	21,209.71	1,668.52	1,220.30	3.723	SF
LIVINGSTON S19-25-12N - ORIGINAL WELLBORE - PR	600.00	600.00	107.90	104.04	27.999	CC, ES
LIVINGSTON S19-25-12N - ORIGINAL WELLBORE - PR	21,170.53	20,978.49	1,980.84	1,529.95	4.393	SF
LIVINGSTON S19-25-13N - ORIGINAL WELLBORE - PR	600.00	600.00	126.11	122.26	32.726	CC, ES
LIVINGSTON S19-25-13N - ORIGINAL WELLBORE - PR	21,170.53	21,019.53	2,310.91	1,859.72	5.122	SF
LIVINGSTON S19-25-14C - ORIGINAL WELLBORE - PR	600.00	600.00	144.05	140.19	37.380	CC, ES
LIVINGSTON S19-25-14C - ORIGINAL WELLBORE - PR	21,170.53	21,315.64	2,652.43	2,202.26	5.892	SF
LIVINGSTON S19-25-15N - ORIGINAL WELLBORE - PR	600.00	600.00	161.98	158.13	42.035	CC, ES
LIVINGSTON S19-25-15N - ORIGINAL WELLBORE - PR	21,170.53	21,136.91	2,971.21	2,520.28	6.589	SF
LIVINGSTON S19-25-1N - ORIGINAL WELLBORE - PR	0.00	25.00	89.96			
LIVINGSTON S19-25-1N - ORIGINAL WELLBORE - PR	100.00	124.26	90.06	89.70	252.007	ES
LIVINGSTON S19-25-1N - ORIGINAL WELLBORE - PR	21,170.53	21,734.13	1,651.04	1,198.13	3.645	SF
LIVINGSTON S19-25-2C - ORIGINAL WELLBORE - PR	105.56	130.56	72.02	71.62	180.823	CC
LIVINGSTON S19-25-2C - ORIGINAL WELLBORE - PR	200.00	224.40	72.13	71.05	67.226	ES
LIVINGSTON S19-25-2C - ORIGINAL WELLBORE - PR	21,170.53	21,810.38	1,338.50	893.29	3.006	SF
LIVINGSTON S19-25-3N - ORIGINAL WELLBORE - PR	300.00	300.00	53.81	52.10	31.601	CC, ES
LIVINGSTON S19-25-3N - ORIGINAL WELLBORE - PR	21,170.53	21,472.16	990.57	538.37	2.191	SF
LIVINGSTON S19-25-4N - ORIGINAL WELLBORE - PR	400.00	400.00	35.87	33.45	14.825	CC, ES
LIVINGSTON S19-25-4N - ORIGINAL WELLBORE - PR	21,170.53	21,360.72	660.30	208.47	1.461	Level 3, SF
LIVINGSTON S19-25-5C - ORIGINAL WELLBORE - PR	500.00	500.00	17.94	14.80	5.718	CC, ES
LIVINGSTON S19-25-5C - ORIGINAL WELLBORE - PR	21,170.53	21,487.28	410.64	33.33	1.088	Level 2, SF
LIVINGSTON S19-25-7N - ORIGINAL WELLBORE - PR	600.00	600.00	17.94	14.09	4.655	CC
LIVINGSTON S19-25-7N - ORIGINAL WELLBORE - PR	21,170.53	21,091.78	329.98	-121.63	0.731	Level 1, ES, SF
LIVINGSTON S19-25-8C - ORIGINAL WELLBORE - PR	600.00	600.00	36.15	32.30	9.382	CC, ES
LIVINGSTON S19-25-8C - ORIGINAL WELLBORE - PR	21,170.53	21,271.27	703.94	271.07	1.626	SF
LIVINGSTON S19-25-9N - ORIGINAL WELLBORE - PR	600.00	600.00	54.09	50.23	14.036	CC, ES
LIVINGSTON S19-25-9N - ORIGINAL WELLBORE - PR	21,170.53	20,998.12	990.31	539.19	2.195	SF
LIVINGSTON S20-25-2C - ORIGINAL WELLBORE - PR	400.00	400.00	179.92	177.50	74.356	CC, ES
LIVINGSTON S20-25-2C - ORIGINAL WELLBORE - PR	18,800.00	21,633.46	3,467.38	3,087.88	9.137	SF
LIVINGSTON S20-25-3N - ORIGINAL WELLBORE - PR	300.00	300.00	198.13	196.43	116.362	CC, ES
LIVINGSTON S20-25-3N - ORIGINAL WELLBORE - PR	18,800.00	21,479.55	3,748.09	3,367.86	9.857	SF
LIVINGSTON S20-25-4N - ORIGINAL WELLBORE - PR	200.00	200.00	216.07	215.08	219.182	CC, ES
LIVINGSTON S20-25-4N - ORIGINAL WELLBORE - PR	18,900.00	21,546.10	4,046.74	3,665.37	10.611	SF
LIVINGSTON S20-25-5C - ORIGINAL WELLBORE - PR	100.00	100.00	234.01	233.74	870.384	CC, ES
LIVINGSTON S20-25-5C - ORIGINAL WELLBORE - PR	19,000.00	21,756.63	4,353.56	3,971.29	11.389	SF

Offset Design											
Survey Program: 0-INC											
Reference											
Offset											
Semi Major Axis											
Reference											
Offset											
Highside Toolface (°)											
Offset Wellbore Centre											
+N/-S											
+E/-W											
Distance											
Between Centres (usft)											
Between Ellipses (usft)											
Minimum Separation (usft)											
Separation Factor											
Warning											
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)
0.00	0.00	64.00	64.00	0.00	0.76	170.87	-4,245.59	682.51	4,300.10		
100.00	100.00	164.00	164.00	0.13	2.65	170.87	-4,245.59	682.51	4,300.10	4,297.31	2.79
200.00	200.00	264.00	264.00	0.49	4.81	170.87	-4,245.59	682.51	4,300.10	4,294.80	5.30
300.00	300.00	364.00	364.00	0.85	6.86	170.87	-4,245.59	682.51	4,300.10	4,292.39	7.71

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