

EXTRACTION OIL & GAS

Broomfield County

Sec 7-T1S-R68W

LIVINGSTON S19-25-12N

ORIGINAL WELLBORE

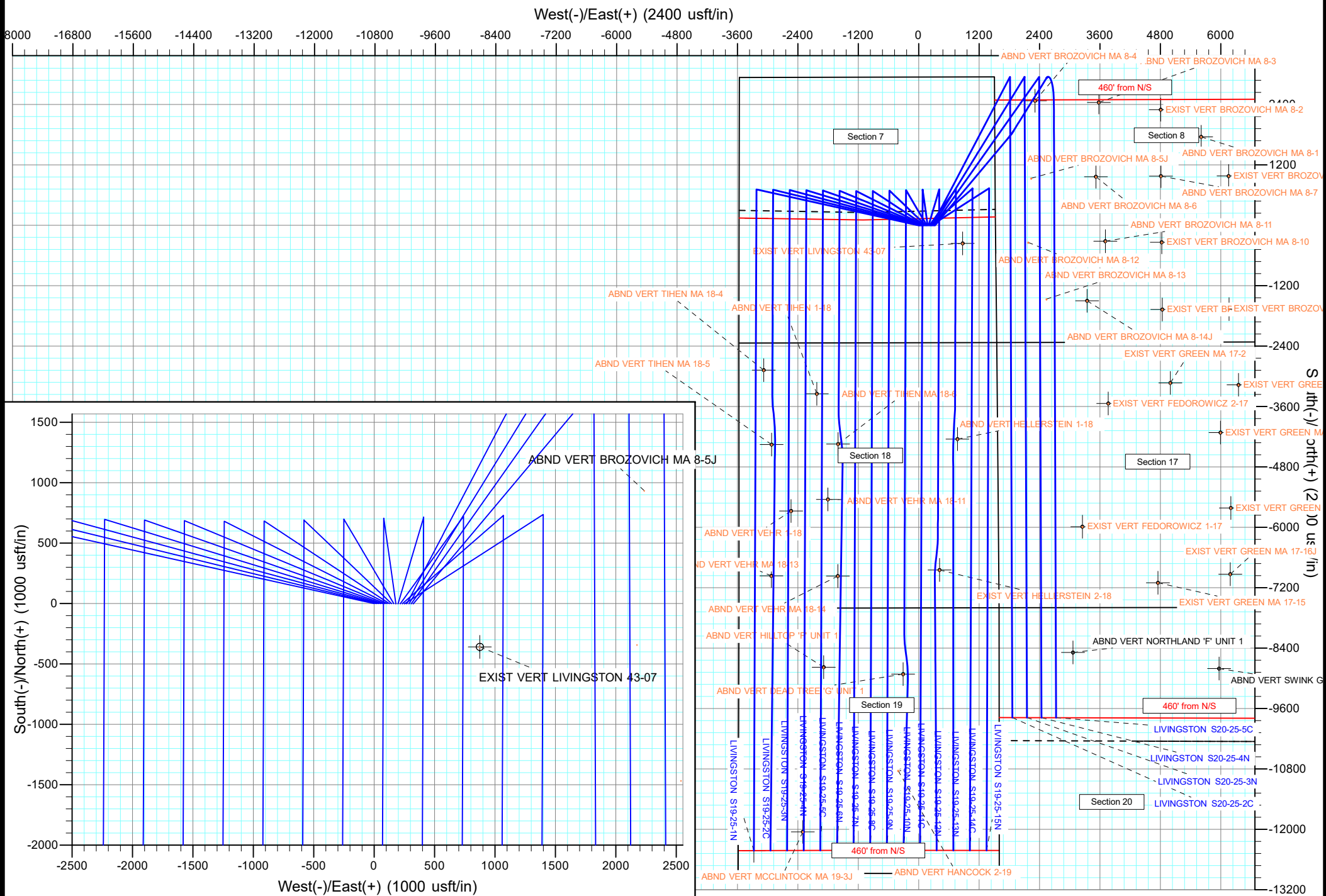
PROPOSAL 1

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 S19-25-12N
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 S19-25-12N	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	20,992.85	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	12,817.01	8,121.97	382.05	134.59	1.544	CC, ES, SF
ABND VERT TIHEN 1-18 - Wellbore #1 - Design #1	11,928.05	8,083.97	2,416.12	2,183.94	10.406	CC, ES
ABND VERT TIHEN 1-18 - Wellbore #1 - Design #1	12,200.00	8,083.97	2,431.38	2,195.43	10.305	SF
ABND VERT TIHEN MA 18-4 - Wellbore #1 - Design #1	11,462.12	8,016.98	3,471.73	3,248.27	15.536	CC
ABND VERT TIHEN MA 18-4 - Wellbore #1 - Design #1	11,500.00	8,016.98	3,471.94	3,247.91	15.498	ES
ABND VERT TIHEN MA 18-4 - Wellbore #1 - Design #1	12,100.00	8,016.97	3,529.84	3,297.61	15.200	SF
ABND VERT TIHEN MA 18-5 - Wellbore #1 - Design #1	12,940.47	8,048.97	3,309.21	3,061.16	13.341	CC
ABND VERT TIHEN MA 18-5 - Wellbore #1 - Design #1	13,000.00	8,048.97	3,309.74	3,060.76	13.293	ES
ABND VERT TIHEN MA 18-5 - Wellbore #1 - Design #1	13,500.00	8,048.96	3,356.18	3,100.35	13.119	SF
ABND VERT TIHEN MA 18-6 - Wellbore #1 - Design #1	12,924.53	8,114.97	1,989.09	1,739.98	7.985	CC, ES
ABND VERT TIHEN MA 18-6 - Wellbore #1 - Design #1	13,100.00	8,114.97	1,996.81	1,745.28	7.939	SF
ABND VERT VEHR 1-18 - Wellbore #1 - Design #1	14,257.67	8,084.96	2,917.42	2,779.90	21.214	CC
ABND VERT VEHR 1-18 - Wellbore #1 - Design #1	14,300.00	8,084.96	2,917.73	2,779.53	21.112	ES
ABND VERT VEHR 1-18 - Wellbore #1 - Design #1	14,900.00	8,084.95	2,982.41	2,837.03	20.514	SF
ABND VERT VEHR MA 18-11 - Wellbore #1 - Design #1	14,025.40	8,107.96	2,186.70	1,919.23	8.175	CC, ES
ABND VERT VEHR MA 18-11 - Wellbore #1 - Design #1	14,200.00	8,107.96	2,193.66	1,923.71	8.126	SF
ABND VERT VEHR MA 18-13 - Wellbore #1 - Design #1	15,555.31	8,139.95	3,247.26	3,087.56	20.333	CC
ABND VERT VEHR MA 18-13 - Wellbore #1 - Design #1	15,589.64	8,139.95	3,247.65	3,087.37	20.263	ES
ABND VERT VEHR MA 18-13 - Wellbore #1 - Design #1	16,100.00	8,139.95	3,298.85	3,131.82	19.750	SF
ABND VERT VEHR MA 18-14 - Wellbore #1 - Design #1	15,553.52	8,119.95	1,926.67	1,633.05	6.562	CC
ABND VERT VEHR MA 18-14 - Wellbore #1 - Design #1	15,589.64	8,119.95	1,927.24	1,633.05	6.551	ES
ABND VERT VEHR MA 18-14 - Wellbore #1 - Design #1	15,700.00	8,119.95	1,933.84	1,638.18	6.541	SF
EXIST VERT HELLERSTEIN 2-18 - Wellbore #1 - Design	15,416.70	8,049.95	89.42	-200.23	0.309	Level 1, CC, ES, SF
Sec 19-T1S-R68W						
ABND VERT DEAD TREE 'G' UNIT 1 - Wellbore #1 - De	17,486.26	8,052.95	642.95	317.11	1.973	CC
ABND VERT DEAD TREE 'G' UNIT 1 - Wellbore #1 - De	17,500.00	8,052.95	643.09	317.06	1.972	ES, SF
ABND VERT HANCOCK 2-19 - Wellbore #1 - Design #1	19,401.61	8,028.95	754.24	395.39	2.102	CC, ES, SF
ABND VERT HILLTOP 'F' UNIT 1 - Wellbore #1 - Design	17,337.68	8,064.95	2,219.16	1,895.68	6.860	CC
ABND VERT HILLTOP 'F' UNIT 1 - Wellbore #1 - Design	17,400.00	8,064.95	2,220.03	1,895.53	6.841	ES
ABND VERT HILLTOP 'F' UNIT 1 - Wellbore #1 - Design	17,500.00	8,064.95	2,225.09	1,899.20	6.828	SF
ABND VERT MCCLINTOCK MA 19-3J - Wellbore #1 - De	20,605.88	8,057.95	2,656.79	2,276.23	6.981	CC, ES
ABND VERT MCCLINTOCK MA 19-3J - Wellbore #1 - De	20,800.00	8,057.95	2,663.88	2,280.48	6.948	SF

Anticollision Report

Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well LIVINGSTON S19-25-12N
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 S19-25-12N	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	8,929.12	8,070.00	469.40	276.16	2.429	CC, ES, SF
LIVINGSTON S19-25-10N - ORIGINAL WELLBORE - PR	1,000.00	1,000.00	35.87	29.15	5.337	CC, ES
LIVINGSTON S19-25-10N - ORIGINAL WELLBORE - PR	20,992.85	20,969.28	660.12	209.15	1.464	Level 3, SF
LIVINGSTON S19-25-11C - ORIGINAL WELLBORE - PR	1,100.00	1,100.00	17.94	10.50	2.411	CC
LIVINGSTON S19-25-11C - ORIGINAL WELLBORE - PR	1,200.00	1,199.87	18.26	10.11	2.240	ES
LIVINGSTON S19-25-11C - ORIGINAL WELLBORE - PR	20,992.85	21,220.45	410.64	26.76	1.070	Level 2, SF
LIVINGSTON S19-25-13N - ORIGINAL WELLBORE - PR	1,337.23	1,337.08	17.67	8.54	1.934	CC
LIVINGSTON S19-25-13N - ORIGINAL WELLBORE - PR	20,992.85	21,020.59	330.01	-121.27	0.731	Level 1, ES, SF
LIVINGSTON S19-25-14C - ORIGINAL WELLBORE - PR	1,420.56	1,420.20	34.75	25.02	3.571	CC, ES
LIVINGSTON S19-25-14C - ORIGINAL WELLBORE - PR	20,992.85	21,308.93	703.94	276.01	1.645	SF
LIVINGSTON S19-25-15N - ORIGINAL WELLBORE - PR	1,493.36	1,492.85	51.96	41.71	5.068	CC
LIVINGSTON S19-25-15N - ORIGINAL WELLBORE - PR	1,500.00	1,499.45	51.97	41.67	5.045	ES
LIVINGSTON S19-25-15N - ORIGINAL WELLBORE - PR	20,992.85	21,136.91	990.31	539.35	2.196	SF
LIVINGSTON S19-25-1N - ORIGINAL WELLBORE - PR	0.00	25.00	197.85			
LIVINGSTON S19-25-1N - ORIGINAL WELLBORE - PR	100.00	123.42	197.95	197.60	558.756	ES
LIVINGSTON S19-25-1N - ORIGINAL WELLBORE - PR	20,992.85	21,726.79	3,631.82	3,179.22	8.024	SF
LIVINGSTON S19-25-2C - ORIGINAL WELLBORE - PR	105.56	130.56	179.92	179.52	451.712	CC
LIVINGSTON S19-25-2C - ORIGINAL WELLBORE - PR	200.00	223.56	180.02	178.95	168.262	ES
LIVINGSTON S19-25-2C - ORIGINAL WELLBORE - PR	20,992.85	21,789.12	3,308.50	2,857.79	7.341	SF
LIVINGSTON S19-25-3N - ORIGINAL WELLBORE - PR	300.00	300.00	161.70	160.00	94.966	CC, ES
LIVINGSTON S19-25-3N - ORIGINAL WELLBORE - PR	20,992.85	21,464.81	2,971.45	2,519.40	6.573	SF
LIVINGSTON S19-25-4N - ORIGINAL WELLBORE - PR	400.00	400.00	143.77	141.35	59.415	CC, ES
LIVINGSTON S19-25-4N - ORIGINAL WELLBORE - PR	20,992.85	21,361.59	2,641.20	2,189.28	5.844	SF
LIVINGSTON S19-25-5C - ORIGINAL WELLBORE - PR	500.00	500.00	125.83	122.69	40.117	CC, ES
LIVINGSTON S19-25-5C - ORIGINAL WELLBORE - PR	20,992.85	21,485.41	2,324.03	1,874.91	5.175	SF
LIVINGSTON S19-25-6N - ORIGINAL WELLBORE - PR	600.00	600.00	107.90	104.04	27.999	CC, ES
LIVINGSTON S19-25-6N - ORIGINAL WELLBORE - PR	20,992.85	21,142.92	1,980.70	1,529.62	4.391	SF
LIVINGSTON S19-25-7N - ORIGINAL WELLBORE - PR	700.00	700.00	89.96	85.39	19.682	CC, ES
LIVINGSTON S19-25-7N - ORIGINAL WELLBORE - PR	20,992.85	21,074.01	1,650.84	1,199.66	3.659	SF
LIVINGSTON S19-25-8C - ORIGINAL WELLBORE - PR	800.00	800.00	71.74	66.46	13.568	CC, ES
LIVINGSTON S19-25-8C - ORIGINAL WELLBORE - PR	20,992.85	21,259.64	1,342.91	898.15	3.019	SF
LIVINGSTON S19-25-9N - ORIGINAL WELLBORE - PR	900.00	900.00	53.81	47.80	8.961	CC, ES
LIVINGSTON S19-25-9N - ORIGINAL WELLBORE - PR	20,992.85	20,991.80	990.57	539.40	2.196	SF
LIVINGSTON S20-25-2C - ORIGINAL WELLBORE - PR	400.00	400.00	72.02	69.60	29.765	CC, ES
LIVINGSTON S20-25-2C - ORIGINAL WELLBORE - PR	18,400.00	21,633.46	1,539.46	1,166.51	4.128	SF
LIVINGSTON S20-25-3N - ORIGINAL WELLBORE - PR	300.00	300.00	90.24	88.54	52.996	CC, ES
LIVINGSTON S20-25-3N - ORIGINAL WELLBORE - PR	18,500.00	21,479.55	1,814.56	1,435.50	4.787	SF
LIVINGSTON S20-25-4N - ORIGINAL WELLBORE - PR	200.00	200.00	108.17	107.19	109.732	CC, ES
LIVINGSTON S20-25-4N - ORIGINAL WELLBORE - PR	18,500.00	21,546.10	2,103.86	1,724.78	5.550	SF
LIVINGSTON S20-25-5C - ORIGINAL WELLBORE - PR	100.00	100.00	126.11	125.84	469.068	CC, ES
LIVINGSTON S20-25-5C - ORIGINAL WELLBORE - PR	18,600.00	21,756.63	2,413.12	2,034.84	6.379	SF

Offset Design Sec 18-T1S-R68W - ABND VERT HELLERSTEIN 1-18 - Wellbore #1 - Design #1												Offset Site Error:	0.00 usft
Survey Program: 0-INC												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)					
0.00	0.00	64.00	64.00	0.00	0.76	172.29	-4,244.87	574.59	4,283.58				
100.00	100.00	164.00	164.00	0.13	2.65	172.29	-4,244.87	574.59	4,283.58	4,280.79	2.79	1,537.205	
200.00	200.00	264.00	264.00	0.49	4.81	172.29	-4,244.87	574.59	4,283.58	4,278.28	5.30	808.118	
300.00	300.00	364.00	364.00	0.85	6.86	172.29	-4,244.87	574.59	4,283.58	4,275.86	7.71	555.265	

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