EXTRACTION OIL & GAS

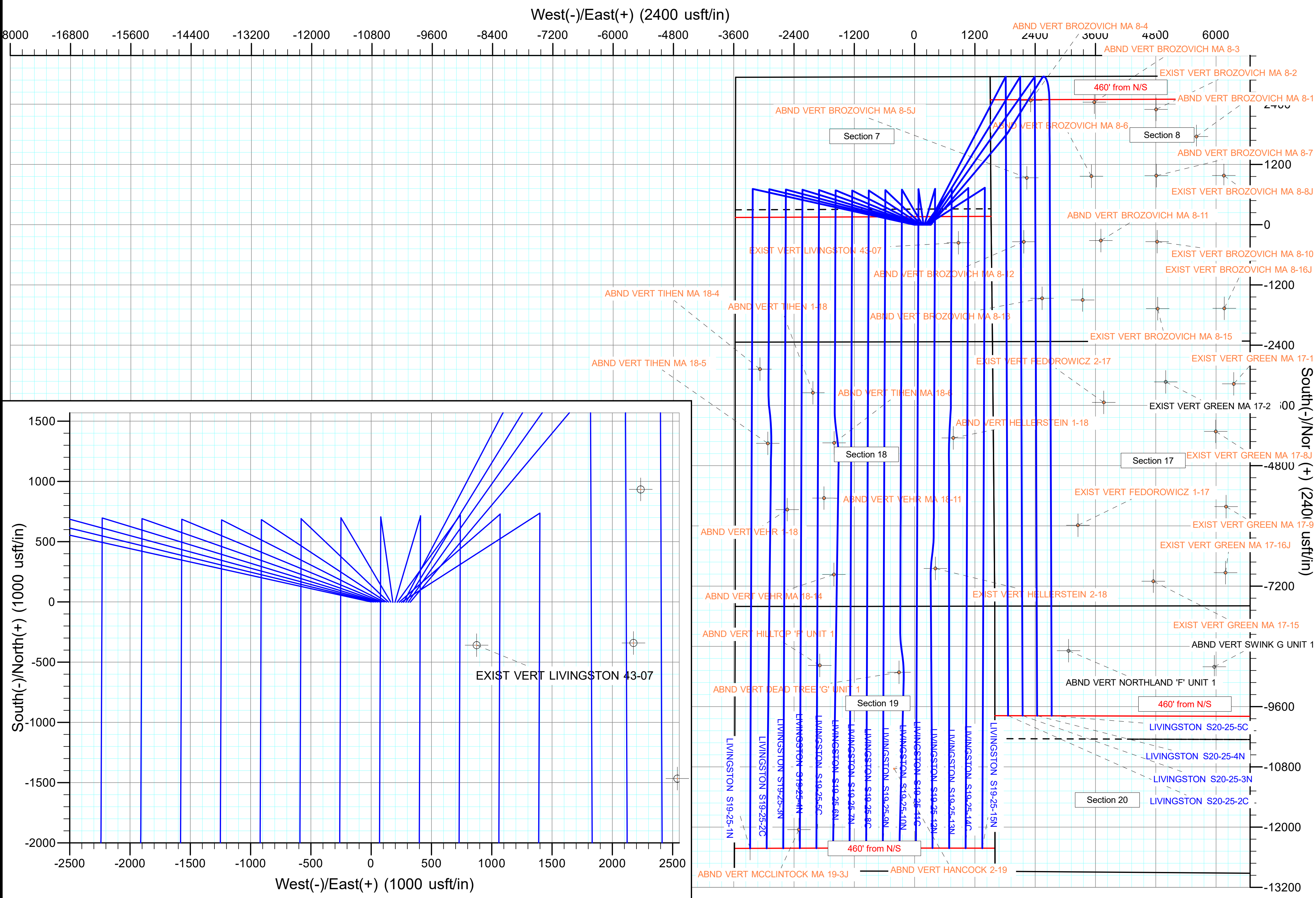
Broomfield County
Sec 7-T1S-R68W
LIVINGSTON S20-25-4N

ORIGINAL WELLBORE
PROPOSAL 1

Anticollision Report

05 December, 2017

Project: Broomfield County
Site: Sec 7-T1S-R68W
Well: LIVINGSTON S19-25-1N
ORIGINAL WELLBORE
PROPOSAL 1



Company:	EXTRACTION OIL & GAS	**Local Co-ordinate Reference:**	Well LIVINGSTON S20-25-4N
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 S20-25-4N	**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** 12/5/2017

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	21,545.99	PROPOSAL 1 (ORIGINAL WELLBORE)	MWD OWSG	OWSG MWD - Standard

Summary

Site Name / Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Sec 17-T1S-R68W						
EXIST VERT FEDOROWICZ 1-17 - Wellbore #1 - Design	17,754.34	8,063.95	825.31	530.94	2.804	CC
EXIST VERT FEDOROWICZ 1-17 - Wellbore #1 - Design	17,800.00	8,063.95	826.57	530.71	2.794	ES, SF
EXIST VERT FEDOROWICZ 2-17 - Wellbore #1 - Design	15,308.22	8,100.04	1,349.51	1,093.22	5.265	CC, ES
EXIST VERT FEDOROWICZ 2-17 - Wellbore #1 - Design	15,400.00	8,100.04	1,352.63	1,094.28	5.236	SF
EXIST VERT GREEN MA 17-1 - Wellbore #1 - Design #1	14,949.09	8,060.96	3,937.73	3,687.60	15.743	CC
EXIST VERT GREEN MA 17-1 - Wellbore #1 - Design #1	15,000.00	8,060.96	3,938.06	3,687.04	15.688	ES
EXIST VERT GREEN MA 17-1 - Wellbore #1 - Design #1	15,800.00	8,060.96	4,028.62	3,764.59	15.258	SF
EXIST VERT GREEN MA 17-15 - Wellbore #1 - Design #	18,874.90	8,025.94	2,323.11	2,010.88	7.440	CC
EXIST VERT GREEN MA 17-15 - Wellbore #1 - Design #	18,900.00	8,025.94	2,323.25	2,010.41	7.426	ES
EXIST VERT GREEN MA 17-15 - Wellbore #1 - Design #	19,200.00	8,025.94	2,345.75	2,026.91	7.357	SF
EXIST VERT GREEN MA 17-16J - Wellbore #1 - Design	18,707.81	8,009.94	3,759.77	3,450.65	12.163	CC
EXIST VERT GREEN MA 17-16J - Wellbore #1 - Design	18,800.00	8,009.94	3,760.90	3,449.84	12.091	ES
EXIST VERT GREEN MA 17-16J - Wellbore #1 - Design	19,400.00	8,009.94	3,822.95	3,501.31	11.886	SF
EXIST VERT GREEN MA 17-2 - Wellbore #1 - Design #1	15,308.23	8,079.96	1,349.51	1,093.65	5.274	CC, ES
EXIST VERT GREEN MA 17-2 - Wellbore #1 - Design #1	15,400.00	8,079.96	1,352.63	1,094.71	5.244	SF
EXIST VERT GREEN MA 17-8J - Wellbore #1 - Design #	15,895.00	8,044.96	3,575.79	3,311.65	13.537	CC
EXIST VERT GREEN MA 17-8J - Wellbore #1 - Design #	16,000.00	8,044.96	3,577.34	3,311.19	13.441	ES
EXIST VERT GREEN MA 17-8J - Wellbore #1 - Design #	16,600.00	8,044.95	3,644.63	3,368.26	13.187	SF
EXIST VERT GREEN MA 17-9 - Wellbore #1 - Design #1	17,393.57	8,020.95	3,776.23	3,488.61	13.129	CC
EXIST VERT GREEN MA 17-9 - Wellbore #1 - Design #1	17,500.00	8,020.95	3,777.73	3,487.95	13.037	ES
EXIST VERT GREEN MA 17-9 - Wellbore #1 - Design #1	18,100.00	8,020.94	3,841.74	3,541.45	12.793	SF
Sec 20-T1S-R68W						
ABND VERT NORTHLAND 'F' UNIT 1 - Wellbore #1 - De	20,253.31	8,023.93	629.93	294.46	1.878	CC
ABND VERT NORTHLAND 'F' UNIT 1 - Wellbore #1 - De	20,300.00	8,023.93	631.66	294.44	1.873	ES, SF
ABND VERT SWINK G UNIT 1 - Wellbore #1 - Design #1	20,583.42	7,989.93	3,530.33	3,189.93	10.371	CC
ABND VERT SWINK G UNIT 1 - Wellbore #1 - Design #1	20,700.00	7,989.93	3,532.26	3,189.32	10.300	ES
ABND VERT SWINK G UNIT 1 - Wellbore #1 - Design #1	21,100.00	7,989.92	3,567.93	3,217.74	10.189	SF

Company:	EXTRACTION OIL & GAS	**Local Co-ordinate Reference:**	Well LIVINGSTON S20-25-4N
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 S20-25-4N	**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 / Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Sec 7-T1S-R68W						
EXIST VERT LIVINGSTON 43-07 - Wellbore #1 - Design	662.91	672.90	670.59	655.25	43.716	CC
EXIST VERT LIVINGSTON 43-07 - Wellbore #1 - Design	1,000.00	1,001.64	674.62	651.08	28.657	ES
EXIST VERT LIVINGSTON 43-07 - Wellbore #1 - Design	12,200.00	8,069.98	1,533.83	1,316.65	7.062	SF
LIVINGSTON S19-25-10N - ORIGINAL WELLBORE - PR	200.00	200.00	144.05	143.06	146.121	CC, ES
LIVINGSTON S19-25-10N - ORIGINAL WELLBORE - PR	21,546.10	18,280.28	2,673.52	2,299.05	7.139	SF
LIVINGSTON S19-25-11C - ORIGINAL WELLBORE - PR	200.00	200.00	126.11	125.12	127.926	CC, ES
LIVINGSTON S19-25-11C - ORIGINAL WELLBORE - PR	21,546.10	18,574.34	2,414.38	2,038.98	6.432	SF
LIVINGSTON S19-25-12N - ORIGINAL WELLBORE - PR	200.00	200.00	108.17	107.19	109.732	CC, ES
LIVINGSTON S19-25-12N - ORIGINAL WELLBORE - PR	21,546.10	18,370.84	2,099.89	1,723.57	5.580	SF
LIVINGSTON S19-25-13N - ORIGINAL WELLBORE - PR	200.00	200.00	89.96	88.97	91.254	CC, ES
LIVINGSTON S19-25-13N - ORIGINAL WELLBORE - PR	21,546.10	18,384.53	1,752.22	1,376.29	4.661	SF
LIVINGSTON S19-25-14C - ORIGINAL WELLBORE - PR	200.00	200.00	72.02	71.04	73.061	CC, ES
LIVINGSTON S19-25-14C - ORIGINAL WELLBORE - PR	21,546.10	18,664.69	1,432.47	1,058.54	3.831	SF
LIVINGSTON S19-25-15N - ORIGINAL WELLBORE - PR	200.00	200.00	54.09	53.10	54.866	CC, ES
LIVINGSTON S19-25-15N - ORIGINAL WELLBORE - PR	21,546.10	18,505.72	1,081.19	705.44	2.877	SF
LIVINGSTON S19-25-1N - ORIGINAL WELLBORE - PR	0.00	25.00	306.03			
LIVINGSTON S19-25-1N - ORIGINAL WELLBORE - PR	100.00	122.64	306.12	305.77	871.217	ES
LIVINGSTON S19-25-1N - ORIGINAL WELLBORE - PR	21,546.10	19,082.13	5,702.87	5,325.62	15.117	SF
LIVINGSTON S19-25-2C - ORIGINAL WELLBORE - PR	105.56	130.56	288.09	287.69	723.300	CC
LIVINGSTON S19-25-2C - ORIGINAL WELLBORE - PR	200.00	222.77	288.19	287.12	270.082	ES
LIVINGSTON S19-25-2C - ORIGINAL WELLBORE - PR	21,546.10	19,129.73	5,358.08	4,981.88	14.243	SF
LIVINGSTON S19-25-3N - ORIGINAL WELLBORE - PR	200.00	200.00	269.88	268.89	273.765	CC, ES
LIVINGSTON S19-25-3N - ORIGINAL WELLBORE - PR	21,546.10	18,820.50	5,042.76	4,666.08	13.387	SF
LIVINGSTON S19-25-4N - ORIGINAL WELLBORE - PR	200.00	200.00	251.94	250.95	255.569	CC, ES
LIVINGSTON S19-25-4N - ORIGINAL WELLBORE - PR	21,546.10	18,706.35	4,712.78	4,336.35	12.520	SF
LIVINGSTON S19-25-5C - ORIGINAL WELLBORE - PR	200.00	200.00	234.00	233.02	237.376	CC, ES
LIVINGSTON S19-25-5C - ORIGINAL WELLBORE - PR	21,546.10	18,834.77	4,389.57	4,013.64	11.677	SF
LIVINGSTON S19-25-6N - ORIGINAL WELLBORE - PR	200.00	200.00	216.07	215.08	219.182	CC, ES
LIVINGSTON S19-25-6N - ORIGINAL WELLBORE - PR	21,546.10	18,477.00	4,024.57	3,649.30	10.725	SF
LIVINGSTON S19-25-7N - ORIGINAL WELLBORE - PR	200.00	200.00	198.13	197.15	200.987	CC, ES
LIVINGSTON S19-25-7N - ORIGINAL WELLBORE - PR	21,546.10	18,438.63	3,722.00	3,346.22	9.905	SF
LIVINGSTON S19-25-8C - ORIGINAL WELLBORE - PR	200.00	200.00	179.92	178.93	182.509	CC, ES
LIVINGSTON S19-25-8C - ORIGINAL WELLBORE - PR	21,546.10	18,624.31	3,400.51	3,025.06	9.057	SF
LIVINGSTON S19-25-9N - ORIGINAL WELLBORE - PR	200.00	200.00	161.98	161.00	164.315	CC, ES
LIVINGSTON S19-25-9N - ORIGINAL WELLBORE - PR	21,546.10	18,352.13	3,061.80	2,686.10	8.150	SF
LIVINGSTON S20-25-2C - ORIGINAL WELLBORE - PR	200.00	200.00	36.15	35.17	36.672	CC, ES
LIVINGSTON S20-25-2C - ORIGINAL WELLBORE - PR	21,546.10	21,633.46	629.54	250.48	1.661	SF
LIVINGSTON S20-25-3N - ORIGINAL WELLBORE - PR	200.00	200.00	17.94	16.95	18.194	CC
LIVINGSTON S20-25-3N - ORIGINAL WELLBORE - PR	21,546.10	21,481.94	290.16	-103.29	0.737	Level 1, ES, SF
LIVINGSTON S20-25-5C - ORIGINAL WELLBORE - PR	100.00	100.00	17.94	17.67	66.725	CC, ES
LIVINGSTON S20-25-5C - ORIGINAL WELLBORE - PR	21,546.10	21,822.06	379.09	55.11	1.170	Level 2, SF

Company:	EXTRACTION OIL & GAS	**Local Co-ordinate Reference:**	Well LIVINGSTON S20-25-4N
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 S20-25-4N	**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 / Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Sec 8-T1S-R68W						
ABND VERT BROZOVICH MA 8-1 - Wellbore #1 - Desig	9,293.31	8,033.00	3,293.63	3,071.13	14.803	SF
ABND VERT BROZOVICH MA 8-1 - Wellbore #1 - Desig	10,000.00	8,033.00	3,212.80	3,000.25	15.116	ES
ABND VERT BROZOVICH MA 8-1 - Wellbore #1 - Desig	10,018.74	8,033.00	3,212.75	3,000.42	15.131	CC
ABND VERT BROZOVICH MA 8-11 - Wellbore #1 - Desi	12,084.22	8,101.98	1,301.78	1,085.05	6.006	CC, ES
ABND VERT BROZOVICH MA 8-11 - Wellbore #1 - Desi	12,100.00	8,101.98	1,301.88	1,085.09	6.005	SF
ABND VERT BROZOVICH MA 8-12 - Wellbore #1 - Desi	12,104.38	8,104.02	231.24	148.07	2.780	CC, ES, SF
ABND VERT BROZOVICH MA 8-13 - Wellbore #1 - Desi	13,231.26	8,187.97	129.14	-100.49	0.562	Level 1, CC, ES, SF
ABND VERT BROZOVICH MA 8-14J - Wellbore #1 - Des	13,266.85	8,144.97	936.16	707.01	4.085	CC, ES
ABND VERT BROZOVICH MA 8-14J - Wellbore #1 - Des	13,300.00	8,144.97	936.75	707.09	4.079	SF
ABND VERT BROZOVICH MA 8-3 - Wellbore #1 - Desig	9,175.00	8,030.42	1,191.88	970.49	5.384	SF
ABND VERT BROZOVICH MA 8-3 - Wellbore #1 - Desig	9,293.31	8,045.00	1,182.86	964.67	5.421	ES
ABND VERT BROZOVICH MA 8-3 - Wellbore #1 - Desig	9,326.24	8,045.00	1,182.40	965.23	5.445	CC
ABND VERT BROZOVICH MA 8-4 - Wellbore #1 - Desig	9,289.78	8,001.99	82.93	-133.68	0.383	Level 1, CC
ABND VERT BROZOVICH MA 8-4 - Wellbore #1 - Desig	9,300.00	8,002.00	83.56	-136.09	0.380	Level 1, ES, SF
ABND VERT BROZOVICH MA 8-5J - Wellbore #1 - Desi	10,830.38	8,048.99	166.80	-43.91	0.792	Level 1, CC, ES, SF
ABND VERT BROZOVICH MA 8-6 - Wellbore #1 - Desig	10,700.00	8,068.99	1,124.21	911.44	5.284	SF
ABND VERT BROZOVICH MA 8-6 - Wellbore #1 - Desig	10,800.00	8,068.99	1,119.57	908.44	5.303	ES
ABND VERT BROZOVICH MA 8-6 - Wellbore #1 - Desig	10,802.07	8,068.99	1,119.57	908.47	5.304	CC
ABND VERT BROZOVICH MA 8-7 - Wellbore #1 - Desig	10,500.00	8,073.99	2,428.31	2,214.46	11.355	SF
ABND VERT BROZOVICH MA 8-7 - Wellbore #1 - Desig	10,794.84	8,073.99	2,410.34	2,199.14	11.413	CC, ES
EXIST VERT BROZOVICH MA 8-10 - Wellbore #1 - Des	12,109.92	8,130.98	2,422.68	2,339.37	29.080	CC, ES
EXIST VERT BROZOVICH MA 8-10 - Wellbore #1 - Des	12,800.00	8,130.98	2,519.04	2,430.19	28.351	SF
EXIST VERT BROZOVICH MA 8-15 - Wellbore #1 - Des	13,445.37	8,104.97	2,429.06	2,198.55	10.538	CC
EXIST VERT BROZOVICH MA 8-15 - Wellbore #1 - Des	13,500.00	8,104.97	2,429.68	2,198.40	10.505	ES
EXIST VERT BROZOVICH MA 8-15 - Wellbore #1 - Des	13,800.00	8,104.97	2,454.81	2,219.32	10.424	SF
EXIST VERT BROZOVICH MA 8-16J - Wellbore #1 - De	13,444.03	8,065.97	3,754.99	3,525.27	16.346	CC
EXIST VERT BROZOVICH MA 8-16J - Wellbore #1 - De	13,500.00	8,065.97	3,755.40	3,524.94	16.295	ES
EXIST VERT BROZOVICH MA 8-16J - Wellbore #1 - De	14,300.00	8,065.97	3,851.31	3,609.71	15.940	SF
EXIST VERT BROZOVICH MA 8-2 - Wellbore #1 - Desig	9,150.00	8,035.66	2,433.70	2,211.82	10.969	SF
EXIST VERT BROZOVICH MA 8-2 - Wellbore #1 - Desig	9,400.00	8,057.00	2,413.24	2,195.60	11.089	ES
EXIST VERT BROZOVICH MA 8-2 - Wellbore #1 - Desig	9,476.17	8,057.00	2,412.03	2,195.83	11.156	CC
EXIST VERT BROZOVICH MA 8-8J - Wellbore #1 - Desi	10,100.00	8,058.99	3,820.01	3,603.61	17.652	SF
EXIST VERT BROZOVICH MA 8-8J - Wellbore #1 - Desi	10,799.39	8,058.99	3,755.44	3,544.55	17.807	CC, ES

Offset Design Sec 17-T1S-R68W - EXIST VERT FEDOROWICZ 1-17 - Wellbore #1 - Design #1

Survey Program: 0-INC

Offset Site Error: 0.00 usft

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	6.00	6.00	0.00	0.07	153.79	-5,984.83	2,946.05	6,670.64				
100.00	100.00	106.00	106.00	0.13	1.30	153.79	-5,984.83	2,946.05	6,670.64	6,669.21	1.43	4,662.750	
200.00	200.00	206.00	206.00	0.49	3.58	153.79	-5,984.83	2,946.05	6,670.64	6,666.56	4.07	1,637.170	
300.00	299.98	305.98	305.98	0.85	5.66	118.50	-5,984.83	2,946.05	6,671.47	6,664.96	6.51	1,025.005	
400.00	399.84	405.84	405.84	1.22	7.70	118.49	-5,984.83	2,946.05	6,673.97	6,665.06	8.91	749.081	
500.00	499.45	505.45	505.45	1.58	9.72	118.48	-5,984.83	2,946.05	6,678.14	6,666.84	11.30	590.903	
600.00	598.70	604.70	604.70	1.97	11.73	118.47	-5,984.83	2,946.05	6,683.98	6,670.29	13.69	488.104	
700.00	697.47	703.47	703.47	2.38	13.72	118.46	-5,984.83	2,946.05	6,691.51	6,675.42	16.09	415.853	
800.00	795.62	801.62	801.62	2.82	15.70	118.44	-5,984.83	2,946.05	6,700.73	6,682.23	18.50	362.266	
900.00	893.06	900.94	899.06	3.29	17.70	118.41	-5,984.83	2,946.05	6,711.65	6,690.70	20.95	320.350	
1,000.00	989.64	1,004.36	995.64	3.80	19.78	118.37	-5,984.83	2,946.05	6,724.29	6,700.78	23.52	285.938	

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