

EXTRACTION OIL & GAS

Broomfield County

Sec 10-T1S-R68W

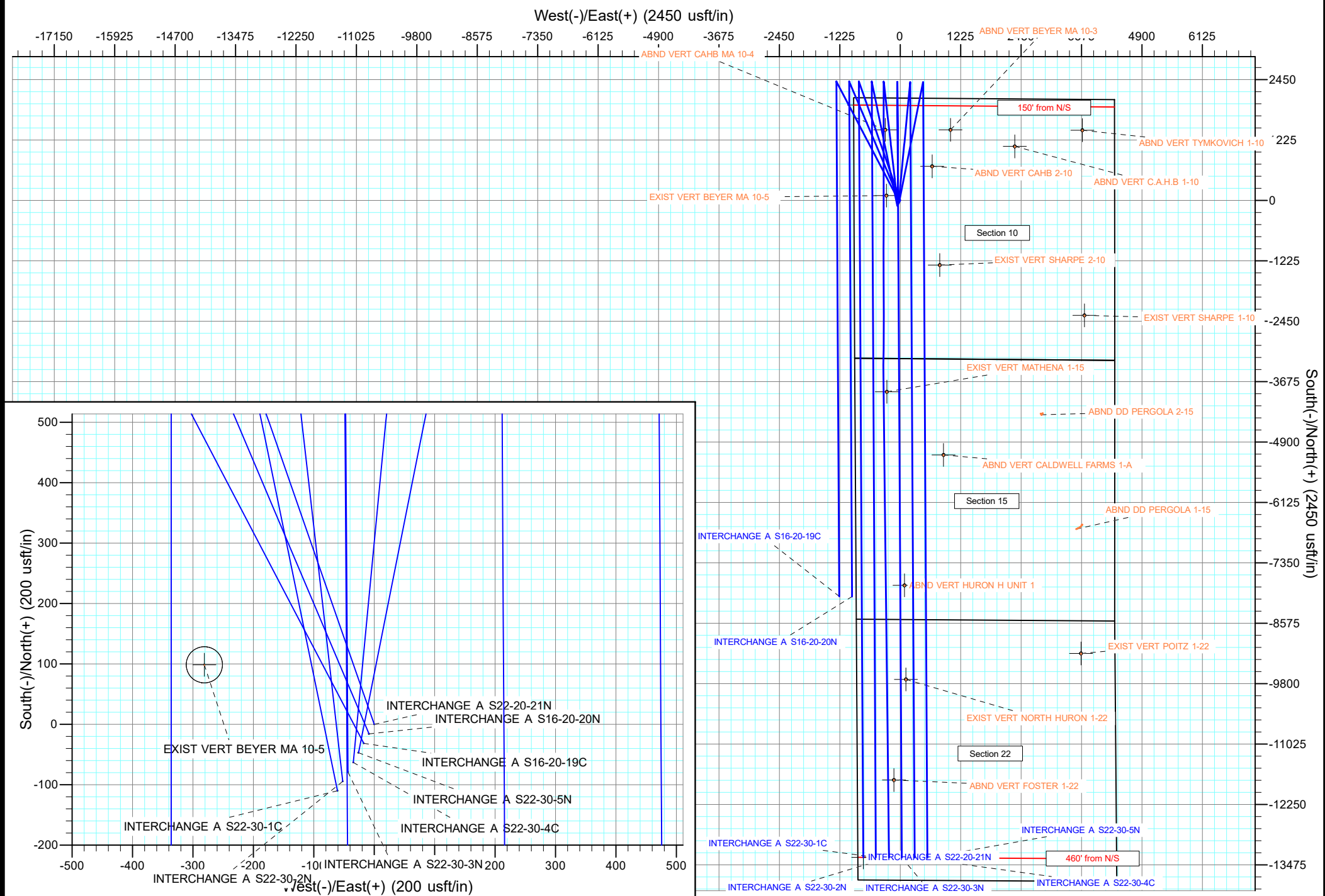
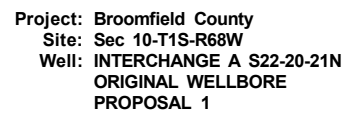
INTERCHANGE A S22-30-3N

ORIGINAL WELLBORE

PROPOSAL 1

Anticollision Report

23 January, 2018



Anticollision Report

Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well INTERCHANGE A S22-30-3N
Project:	Broomfield County	TVD Reference:	KB 25' @ 5261.00usft
Reference Site:	Sec 10-T1S-R68W	MD Reference:	KB 25' @ 5261.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	INTERCHANGE A S22-30-3N	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	1/23/2018		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	23,864.85	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 10-T1S-R68W						
ABND VERT BEYER MA 10-3 - Wellbore #1 - Design #1	4,850.24	4,508.05	1,070.64	950.38	8.903	CC
ABND VERT BEYER MA 10-3 - Wellbore #1 - Design #1	9,100.00	7,802.99	1,071.31	871.37	5.358	SF
ABND VERT BEYER MA 10-3 - Wellbore #1 - Design #1	9,112.54	7,802.99	1,071.23	871.34	5.359	ES
ABND VERT C.A.H.B 1-10 - Wellbore #1 - Design #1	4,016.45	3,709.19	2,371.54	2,273.68	24.233	CC
ABND VERT C.A.H.B 1-10 - Wellbore #1 - Design #1	9,400.00	7,763.99	2,372.98	2,174.72	11.969	SF
ABND VERT C.A.H.B 1-10 - Wellbore #1 - Design #1	9,454.97	7,763.99	2,372.35	2,174.16	11.970	ES
ABND VERT CAHB 2-10 - Wellbore #1 - Design #1	3,059.52	2,874.09	693.34	619.49	9.389	CC
ABND VERT CAHB 2-10 - Wellbore #1 - Design #1	9,849.90	7,800.98	694.38	495.47	3.491	ES, SF
ABND VERT CAHB MA 10-4 - Wellbore #1 - Design #1	9,105.05	7,820.99	251.36	51.08	1.255	Level 3, CC, ES, SF
ABND VERT TYMKOVICH 1-10 - Wellbore #1 - Design #	4,792.37	4,411.32	3,743.80	3,698.66	82.926	CC
ABND VERT TYMKOVICH 1-10 - Wellbore #1 - Design #	5,000.00	4,600.54	3,744.78	3,697.38	79.004	ES
ABND VERT TYMKOVICH 1-10 - Wellbore #1 - Design #	6,500.00	5,180.00	3,889.78	3,830.61	65.738	SF
EXIST VERT BEYER MA 10-5 - Wellbore #1 - Design #1	10,437.67	7,825.98	235.12	33.65	1.167	Level 2, CC, ES, SF
EXIST VERT SHARPE 1-10 - Wellbore #1 - Design #1	12,889.83	7,755.95	3,764.30	3,537.50	16.598	CC
EXIST VERT SHARPE 1-10 - Wellbore #1 - Design #1	12,900.00	7,755.94	3,764.31	3,537.37	16.587	ES
EXIST VERT SHARPE 1-10 - Wellbore #1 - Design #1	13,600.00	7,755.94	3,830.70	3,594.63	16.227	SF
EXIST VERT SHARPE 2-10 - Wellbore #1 - Design #1	11,853.52	7,787.96	838.60	624.91	3.924	CC, ES
EXIST VERT SHARPE 2-10 - Wellbore #1 - Design #1	11,900.00	7,787.96	839.88	625.69	3.921	SF
INTERCHANGE A S16-20-19C - ORIGINAL WELLBORE	100.00	100.00	54.06	53.79	201.064	CC, ES
INTERCHANGE A S16-20-19C - ORIGINAL WELLBORE	18,600.00	18,885.49	1,267.62	944.42	3.922	SF
INTERCHANGE A S16-20-20N - ORIGINAL WELLBORE	200.00	200.00	71.96	70.98	73.001	CC, ES
INTERCHANGE A S16-20-20N - ORIGINAL WELLBORE	18,600.00	18,604.64	979.97	650.86	2.978	SF
INTERCHANGE A S22-20-21N - ORIGINAL WELLBORE	300.00	300.00	89.86	88.16	52.777	CC, ES
INTERCHANGE A S22-20-21N - ORIGINAL WELLBORE	23,856.61	23,874.85	781.03	268.94	1.525	SF
INTERCHANGE A S22-30-1C - ORIGINAL WELLBORE	812.80	814.77	25.37	19.95	4.681	CC, ES
INTERCHANGE A S22-30-1C - ORIGINAL WELLBORE	23,864.85	24,125.78	588.54	117.72	1.250	Level 3, SF
INTERCHANGE A S22-30-2N - ORIGINAL WELLBORE	869.26	870.31	12.20	6.39	2.101	CC
INTERCHANGE A S22-30-2N - ORIGINAL WELLBORE	23,864.85	23,875.22	258.76	-252.26	0.506	Level 1, ES, SF
INTERCHANGE A S22-30-4C - ORIGINAL WELLBORE	1,003.98	1,002.76	10.86	4.10	1.606	CC
INTERCHANGE A S22-30-4C - ORIGINAL WELLBORE	23,864.85	24,108.47	369.74	-32.78	0.919	Level 1, ES, SF
INTERCHANGE A S22-30-5N - ORIGINAL WELLBORE	1,072.14	1,069.54	20.80	13.53	2.863	CC
INTERCHANGE A S22-30-5N - ORIGINAL WELLBORE	23,864.85	23,881.65	518.68	8.47	1.017	Level 2, ES, SF

Anticollision Report

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Project:	Broomfield County	TVD Reference:	KB 25' @ 5261.00usft
Reference Site:	Sec 10-T1S-R68W	MD Reference:	KB 25' @ 5261.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	INTERCHANGE A S22-30-3N	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 15-T1S-R68W						
ABND DD PERGOLA 1-15 - Wellbore #1 - Wellbore #1	17,223.13	7,500.00	3,578.92	3,412.28	21.476	CC
ABND DD PERGOLA 1-15 - Wellbore #1 - Wellbore #1	17,300.00	7,500.00	3,579.75	3,411.82	21.318	ES
ABND DD PERGOLA 1-15 - Wellbore #1 - Wellbore #1	17,900.00	7,500.00	3,642.37	3,466.65	20.729	SF
ABND DD PERGOLA 2-15 - Wellbore #1 - Wellbore #1	14,899.23	7,500.00	2,894.43	2,766.59	22.642	CC
ABND DD PERGOLA 2-15 - Wellbore #1 - Wellbore #1	14,900.00	7,500.00	2,894.43	2,766.58	22.640	ES
ABND DD PERGOLA 2-15 - Wellbore #1 - Wellbore #1	15,500.00	7,500.00	2,956.12	2,820.43	21.787	SF
ABND VERT CALDWELL FARMS 1-A - Wellbore #1 - De	15,704.25	7,784.91	892.55	621.16	3.289	CC, ES, SF
ABND VERT HURON H UNIT 1 - Wellbore #1 - Design #	18,344.71	7,812.87	85.74	-230.67	0.271	Level 1, CC, ES, SF
EXIST VERT MATHENA 1-15 - Wellbore #1 - Design #1	14,416.98	7,807.93	248.78	-2.22	0.991	Level 1, CC, ES, SF
Sec 22-T1S-R68W						
ABND VERT FOSTER 1-22 - Wellbore #1 - Design #1	22,290.69	7,768.82	149.99	-233.74	0.391	Level 1, CC, ES, SF
EXIST VERT NORTH HURON 1-22 - Wellbore #1 - Desi	20,251.09	7,785.85	105.49	-243.16	0.303	Level 1, CC, ES, SF
EXIST VERT POITZ 1-22 - Wellbore #1 - Design #1	19,744.95	7,750.86	3,656.34	3,317.13	10.779	CC
EXIST VERT POITZ 1-22 - Wellbore #1 - Design #1	19,800.00	7,750.86	3,656.76	3,316.61	10.751	ES
EXIST VERT POITZ 1-22 - Wellbore #1 - Design #1	20,200.00	7,750.85	3,684.55	3,338.89	10.660	SF

Offset Design

Survey Program: 0-INC													Offset Site Error: 0.00 usft
Reference													Offset Well Error: 0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	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	0.00	0.00	0.00	0.00	35.10	1,509.94	1,061.18	1,845.91				
100.00	100.00	63.00	63.00	0.13	0.75	35.10	1,509.94	1,061.18	1,845.54	1,844.65	0.88	2,095.011	
200.00	200.00	163.00	163.00	0.49	2.63	35.10	1,509.94	1,061.18	1,845.54	1,842.41	3.12	591.111	
300.00	300.00	263.00	263.00	0.85	4.79	35.10	1,509.94	1,061.18	1,845.54	1,839.90	5.64	327.317	
400.00	400.00	363.00	363.00	1.21	6.84	35.10	1,509.94	1,061.18	1,845.54	1,837.48	8.05	229.187	
500.00	500.00	463.00	463.00	1.57	8.88	35.10	1,509.94	1,061.18	1,845.54	1,835.09	10.44	176.692	
600.00	600.00	563.00	563.00	1.93	10.90	35.10	1,509.94	1,061.18	1,845.54	1,832.71	12.83	143.862	
700.00	699.98	662.98	662.98	2.29	12.92	35.51	1,509.94	1,061.18	1,844.11	1,828.91	15.21	121.264	
800.00	799.84	762.84	762.84	2.65	14.94	35.65	1,509.94	1,061.18	1,839.86	1,822.27	17.58	104.638	
900.00	899.45	862.45	862.45	3.01	16.95	35.89	1,509.94	1,061.18	1,832.78	1,812.82	19.95	91.848	
1,000.00	998.70	961.70	961.70	3.38	18.95	36.23	1,509.94	1,061.18	1,822.90	1,800.58	22.32	81.665	
1,100.00	1,097.47	1,060.47	1,060.47	3.77	20.93	36.68	1,509.94	1,061.18	1,810.26	1,785.58	24.68	73.335	
1,200.00	1,195.62	1,158.62	1,158.62	4.18	22.91	37.23	1,509.94	1,061.18	1,794.91	1,767.87	27.04	66.370	
1,300.00	1,293.06	1,256.06	1,256.06	4.61	24.87	37.89	1,509.94	1,061.18	1,776.91	1,747.51	29.40	60.439	
1,400.00	1,389.64	1,352.64	1,352.64	5.08	26.82	38.66	1,509.94	1,061.18	1,756.32	1,724.57	31.75	55.310	
1,500.00	1,485.27	1,448.27	1,448.27	5.59	28.74	39.55	1,509.94	1,061.18	1,733.24	1,699.13	34.11	50.818	
1,600.00	1,579.82	1,542.82	1,542.82	6.13	30.64	40.58	1,509.94	1,061.18	1,707.75	1,671.29	36.46	46.839	
1,700.00	1,673.17	1,636.17	1,636.17	6.72	32.52	41.73	1,509.94	1,061.18	1,679.99	1,641.17	38.81	43.283	
1,800.00	1,765.21	1,728.21	1,728.21	7.35	34.38	43.03	1,509.94	1,061.18	1,650.07	1,608.89	41.17	40.076	
1,815.40	1,779.26	1,742.26	1,742.26	7.45	34.66	43.24	1,509.94	1,061.18	1,645.28	1,603.74	41.54	39.608	
1,900.00	1,856.37	1,819.37	1,819.37	8.02	36.21	44.05	1,509.94	1,061.18	1,618.99	1,575.45	43.54	37.183	
2,000.00	1,947.50	1,910.50	1,910.50	8.71	38.04	45.04	1,509.94	1,061.18	1,588.35	1,542.42	45.93	34.583	
2,100.00	2,038.64	2,001.64	2,001.64	9.40	39.88	46.06	1,509.94	1,061.18	1,558.19	1,509.85	48.34	32.235	
2,200.00	2,129.77	2,107.23	2,092.77	10.11	42.00	47.12	1,509.94	1,061.18	1,528.54	1,477.48	51.06	29.937	
2,300.00	2,220.90	2,183.90	2,183.90	10.83	43.54	48.22	1,509.94	1,061.18	1,499.44	1,446.22	53.22	28.175	
2,400.00	2,312.04	2,275.04	2,275.04	11.55	45.38	49.35	1,509.94	1,061.18	1,470.91	1,415.22	55.69	26.413	
2,500.00	2,403.17	2,366.17	2,366.17	12.28	47.21	50.53	1,509.94	1,061.18	1,443.00	1,384.82	58.18	24.803	

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