

EXTRACTION OIL & GAS

Broomfield County

Sec 10-T1S-R68W

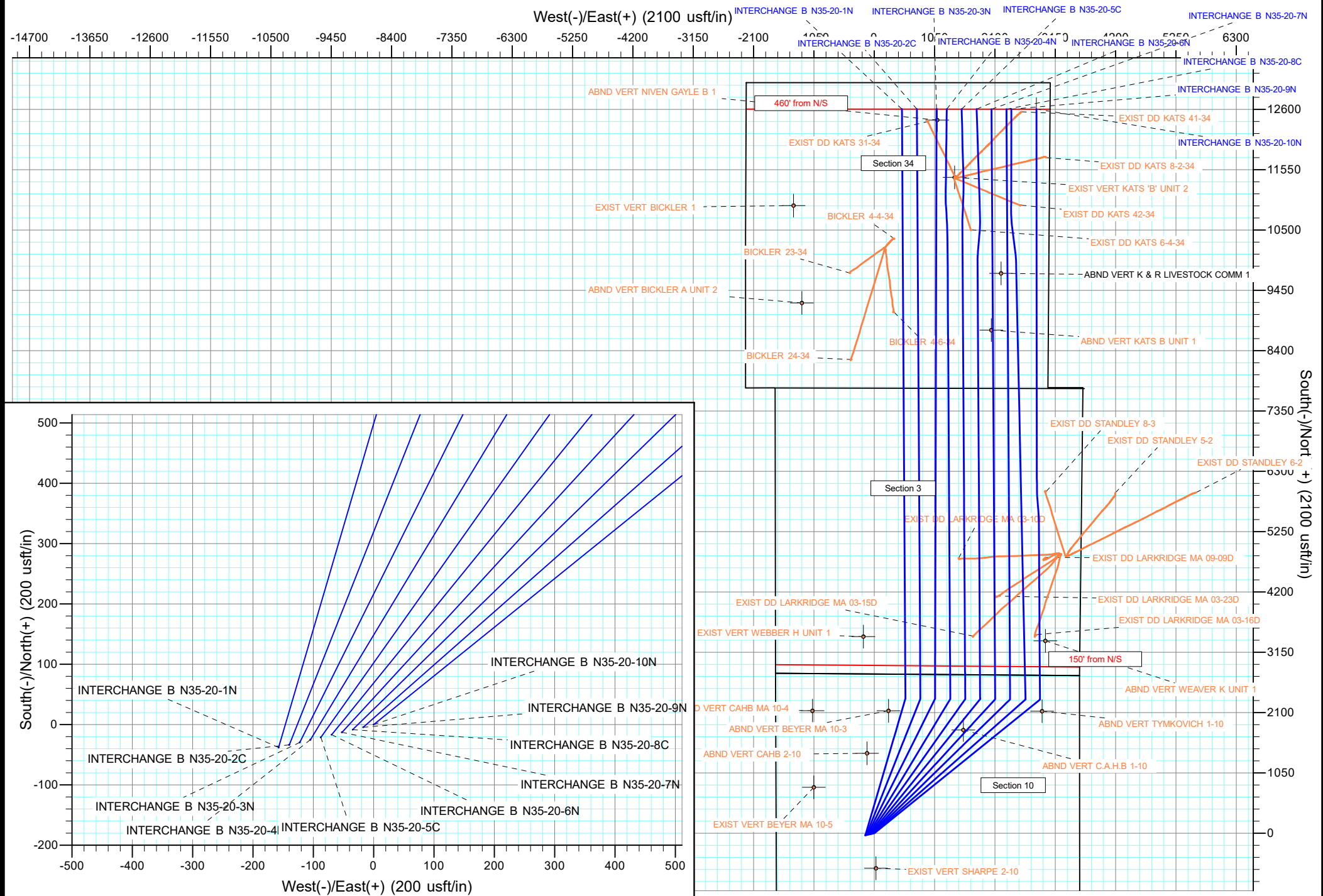
INTERCHANGE B N35-20-6N

ORIGINAL WELLBORE

PROPOSAL 1

Anticollision Report

08 February, 2018



Anticollision Report

Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well INTERCHANGE B N35-20-6N
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 B N35-20-6N	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	2/8/2018		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	18,615.33	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	4,940.27	4,433.75	1,110.80	985.20	8.844	CC
ABND VERT BEYER MA 10-3 - Wellbore #1 - Design #1	5,100.00	4,571.65	1,113.72	983.92	8.580	ES
ABND VERT BEYER MA 10-3 - Wellbore #1 - Design #1	5,800.00	5,175.96	1,192.54	1,046.16	8.147	SF
ABND VERT C.A.H.B 1-10 - Wellbore #1 - Design #1	6,053.55	5,355.85	111.68	-43.08	0.722	Level 1, CC, ES, SF
ABND VERT CAHB 2-10 - Wellbore #1 - Design #1	3,337.51	3,048.09	933.58	851.01	11.308	CC
ABND VERT CAHB 2-10 - Wellbore #1 - Design #1	3,400.00	3,102.04	934.11	849.89	11.091	ES
ABND VERT CAHB 2-10 - Wellbore #1 - Design #1	4,200.00	3,807.32	1,030.07	926.10	9.908	SF
ABND VERT CAHB MA 10-4 - Wellbore #1 - Design #1	3,287.32	3,024.76	2,137.14	2,055.52	26.184	CC
ABND VERT CAHB MA 10-4 - Wellbore #1 - Design #1	3,500.00	3,208.37	2,139.84	2,052.55	24.516	ES
ABND VERT CAHB MA 10-4 - Wellbore #1 - Design #1	8,700.00	7,781.00	2,970.50	2,763.84	14.374	SF
ABND VERT TYMKOVICH 1-10 - Wellbore #1 - Design #	6,470.45	5,180.00	1,429.71	1,371.85	24.712	CC, ES
ABND VERT TYMKOVICH 1-10 - Wellbore #1 - Design #	6,500.00	5,180.00	1,430.12	1,372.19	24.685	SF
EXIST VERT BEYER MA 10-5 - Wellbore #1 - Design #1	787.87	773.39	1,278.22	1,260.47	72.007	CC
EXIST VERT BEYER MA 10-5 - Wellbore #1 - Design #1	1,300.00	1,275.64	1,281.86	1,251.84	42.691	ES
EXIST VERT BEYER MA 10-5 - Wellbore #1 - Design #1	8,400.00	7,609.44	3,335.82	3,144.68	17.452	SF
EXIST VERT SHARPE 1-10 - Wellbore #1 - Design #1	2,548.28	2,321.74	3,368.40	3,307.77	55.558	CC
EXIST VERT SHARPE 1-10 - Wellbore #1 - Design #1	2,900.00	2,625.39	3,373.07	3,303.10	48.206	ES
EXIST VERT SHARPE 1-10 - Wellbore #1 - Design #1	8,300.00	7,456.12	4,185.88	3,983.19	20.651	SF
EXIST VERT SHARPE 2-10 - Wellbore #1 - Design #1	500.00	448.00	600.51	590.37	59.219	CC
EXIST VERT SHARPE 2-10 - Wellbore #1 - Design #1	600.00	547.98	601.67	589.14	48.044	ES
EXIST VERT SHARPE 2-10 - Wellbore #1 - Design #1	8,300.00	7,488.12	3,516.88	3,332.92	19.117	SF
INTERCHANGE B N35-20-10N - ORIGINAL WELLBORE	100.00	100.00	71.76	71.49	266.923	CC, ES
INTERCHANGE B N35-20-10N - ORIGINAL WELLBORE	18,615.79	18,923.37	1,040.00	601.05	2.369	SF
INTERCHANGE B N35-20-1N - ORIGINAL WELLBORE	500.00	500.00	90.22	87.09	28.765	CC, ES
INTERCHANGE B N35-20-1N - ORIGINAL WELLBORE	18,615.79	18,393.86	1,299.91	859.04	2.949	SF
INTERCHANGE B N35-20-2C - ORIGINAL WELLBORE	500.00	500.00	72.04	68.90	22.966	CC, ES
INTERCHANGE B N35-20-2C - ORIGINAL WELLBORE	18,615.79	18,655.05	1,072.96	641.33	2.486	SF
INTERCHANGE B N35-20-3N - ORIGINAL WELLBORE	500.00	500.00	54.21	51.07	17.282	CC, ES
INTERCHANGE B N35-20-3N - ORIGINAL WELLBORE	18,615.79	18,459.40	697.07	256.46	1.582	SF
INTERCHANGE B N35-20-4N - ORIGINAL WELLBORE	500.00	500.00	36.02	32.88	11.483	CC, ES
INTERCHANGE B N35-20-4N - ORIGINAL WELLBORE	18,615.79	18,501.41	519.86	79.82	1.181	Level 2, SF
INTERCHANGE B N35-20-5C - ORIGINAL WELLBORE	500.00	500.00	18.19	15.05	5.799	CC, ES
INTERCHANGE B N35-20-5C - ORIGINAL WELLBORE	18,615.79	18,784.36	370.48	28.21	1.082	Level 2, SF
INTERCHANGE B N35-20-7N - ORIGINAL WELLBORE	400.00	400.00	17.83	15.41	7.369	CC
INTERCHANGE B N35-20-7N - ORIGINAL WELLBORE	16,784.73	16,851.27	211.98	-163.55	0.564	Level 1, SF
INTERCHANGE B N35-20-7N - ORIGINAL WELLBORE	18,615.79	18,681.02	259.93	-179.48	0.592	Level 1, ES
INTERCHANGE B N35-20-8C - ORIGINAL WELLBORE	300.00	300.00	36.02	34.32	21.153	CC, ES

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

Anticollision Report

Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well INTERCHANGE B N35-20-6N
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 B N35-20-6N	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

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						
INTERCHANGE B N35-20-8C - ORIGINAL WELLBORE	18,615.79	18,981.73	583.29	188.82	1.479	Level 3, SF
INTERCHANGE B N35-20-9N - ORIGINAL WELLBORE	200.00	200.00	53.85	52.86	54.624	CC, ES
INTERCHANGE B N35-20-9N - ORIGINAL WELLBORE	18,615.79	18,834.23	780.07	340.86	1.776	SF
Sec 28-T1N-R68W						
COYOTE TRAILS 34S-20-10N - ORIGINAL WELLBORE	18,615.79	8,707.24	3,840.07	3,577.88	14.646	CC, ES, SF
COYOTE TRAILS 34S-20-11C - ORIGINAL WELLBORE	18,615.79	9,065.47	3,466.72	3,202.41	13.116	CC, ES, SF
COYOTE TRAILS 34S-20-12N - ORIGINAL WELLBORE	18,615.79	9,007.39	3,035.25	2,771.54	11.510	CC, ES, SF
COYOTE TRAILS 34S-20-13N - ORIGINAL WELLBORE	15,915.76	11,870.22	2,700.10	2,444.71	10.572	CC
COYOTE TRAILS 34S-20-13N - ORIGINAL WELLBORE	18,615.79	9,172.72	2,700.15	2,435.48	10.202	ES, SF
COYOTE TRAILS 34S-20-14C - ORIGINAL WELLBORE	15,915.76	12,245.77	2,364.98	2,107.42	9.182	CC
COYOTE TRAILS 34S-20-14C - ORIGINAL WELLBORE	18,615.79	9,548.29	2,365.01	2,097.49	8.840	ES, SF
COYOTE TRAILS 34S-20-15N - ORIGINAL WELLBORE	15,915.73	12,260.87	1,940.32	1,684.08	7.572	CC
COYOTE TRAILS 34S-20-15N - ORIGINAL WELLBORE	18,615.79	9,563.31	1,940.35	1,674.14	7.289	ES, SF
COYOTE TRAILS 34S-20-16N - ORIGINAL WELLBORE	8,936.99	19,416.15	1,565.85	1,305.39	6.012	CC, ES
COYOTE TRAILS 34S-20-16N - ORIGINAL WELLBORE	9,000.00	19,360.26	1,566.12	1,305.51	6.010	SF
Sec 34-T1N-R68W						
ABND VERT BICKLER A UNIT 2 - Wellbore #1 - Design	15,257.72	7,787.93	3,061.38	2,743.63	9.635	CC
ABND VERT BICKLER A UNIT 2 - Wellbore #1 - Design	15,300.00	7,787.93	3,061.67	2,743.61	9.626	ES
ABND VERT BICKLER A UNIT 2 - Wellbore #1 - Design	15,400.00	7,787.92	3,064.69	2,746.00	9.617	SF
ABND VERT K & R LIVESTOCK COMM 1 - Wellbore #1	15,751.96	5,503.00	2,303.40	2,205.45	23.518	CC, ES
ABND VERT K & R LIVESTOCK COMM 1 - Wellbore #1	17,100.00	5,503.00	2,662.03	2,527.13	19.733	SF
ABND VERT KATS B UNIT 1 - Wellbore #1 - Design #1	14,765.05	7,743.93	232.94	-75.46	0.755	Level 1, CC, SF
ABND VERT KATS B UNIT 1 - Wellbore #1 - Design #1	14,800.00	7,743.93	235.55	-76.16	0.756	Level 1, ES
ABND VERT NIVEN GAYLE B 1 - Wellbore #1 - Design	17,400.00	5,145.00	2,921.63	2,778.46	20.407	SF
ABND VERT NIVEN GAYLE B 1 - Wellbore #1 - Design	18,448.23	5,145.00	2,727.09	2,600.22	21.496	CC, ES
BICKLER 23-34 - Wellbore #1 - Wellbore #1	15,773.75	7,840.65	2,230.64	2,031.31	11.191	CC, ES
BICKLER 23-34 - Wellbore #1 - Wellbore #1	15,800.00	7,840.36	2,230.79	2,031.39	11.188	SF
BICKLER 24-34 - Wellbore #1 - Wellbore #1	14,267.39	8,143.99	2,208.60	2,020.32	11.730	CC, ES, SF
BICKLER 4-4-34 - Wellbore #1 - Wellbore #1	16,227.05	7,798.31	1,474.22	1,268.38	7.162	CC, ES
BICKLER 4-4-34 - Wellbore #1 - Wellbore #1	16,300.00	7,797.66	1,476.03	1,269.81	7.158	SF
BICKLER 4-6-34 - Wellbore #1 - Wellbore #1	15,087.76	7,885.24	1,471.91	1,279.52	7.651	CC, ES, SF
EXIST DD KATS 31-34 - Wellbore #1 - Wellbore #1	18,400.00	7,890.80	856.78	607.80	3.441	SF
EXIST DD KATS 31-34 - Wellbore #1 - Wellbore #1	18,447.01	7,890.32	855.49	607.06	3.444	CC, ES
EXIST DD KATS 41-34 - Wellbore #1 - Wellbore #1	18,540.17	7,973.32	766.62	514.81	3.044	CC
EXIST DD KATS 41-34 - Wellbore #1 - Wellbore #1	18,600.00	7,973.82	768.95	513.35	3.008	ES
EXIST DD KATS 41-34 - Wellbore #1 - Wellbore #1	18,615.79	7,973.95	770.34	513.96	3.005	SF
EXIST DD KATS 42-34 - Wellbore #1 - Wellbore #1	16,918.16	7,885.74	713.45	493.83	3.249	CC, ES
EXIST DD KATS 42-34 - Wellbore #1 - Wellbore #1	17,000.00	7,885.69	718.13	494.92	3.217	SF
EXIST DD KATS 6-4-34 - Wellbore #1 - Wellbore #1	16,497.09	7,843.79	150.07	-66.25	0.694	Level 1, CC, ES, SF
EXIST DD KATS 8-2-34 - Wellbore #1 - Wellbore #1	17,737.59	7,968.92	1,179.67	946.01	5.049	CC
EXIST DD KATS 8-2-34 - Wellbore #1 - Wellbore #1	17,800.00	7,968.58	1,181.32	944.79	4.994	ES
EXIST DD KATS 8-2-34 - Wellbore #1 - Wellbore #1	17,900.00	7,968.03	1,190.80	950.73	4.960	SF
EXIST VERT BICKLER 1 - Wellbore #1 - Design #1	17,040.76	7,850.92	3,238.47	2,889.52	9.281	CC, ES
EXIST VERT BICKLER 1 - Wellbore #1 - Design #1	17,200.00	7,850.92	3,242.38	2,892.58	9.269	SF
EXIST VERT KATS 'B' UNIT 2 - Wellbore #1 - Design #1	17,400.00	7,764.93	422.46	194.70	1.855	SF
EXIST VERT KATS 'B' UNIT 2 - Wellbore #1 - Design #1	17,440.39	7,764.93	420.52	194.49	1.860	CC, ES

Anticollision Report

Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well INTERCHANGE B N35-20-6N
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 B N35-20-6N	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

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 3-T1S-R68W						
ABND VERT WEAVER K UNIT 1 - Wellbore #1 - Design	9,350.83	7,807.01	1,140.80	1,048.45	12.354	CC
ABND VERT WEAVER K UNIT 1 - Wellbore #1 - Design	9,400.00	7,807.01	1,141.86	1,047.69	12.126	ES
ABND VERT WEAVER K UNIT 1 - Wellbore #1 - Design	9,700.00	7,807.01	1,193.04	1,089.78	11.554	SF
EXIST DD LARKRIDGE MA 03-10D - Wellbore #1 - Well	10,700.00	8,045.96	375.94	254.52	3.096	SF
EXIST DD LARKRIDGE MA 03-10D - Wellbore #1 - Well	10,800.00	8,045.65	361.86	245.39	3.107	ES
EXIST DD LARKRIDGE MA 03-10D - Wellbore #1 - Well	10,801.92	8,045.64	361.86	245.52	3.110	CC
EXIST DD LARKRIDGE MA 03-15D - Wellbore #1 - Well	9,400.00	8,095.81	124.77	11.27	1.099	Level 2, ES, SF
EXIST DD LARKRIDGE MA 03-15D - Wellbore #1 - Well	9,431.26	8,096.19	120.79	15.80	1.150	Level 2, CC
EXIST DD LARKRIDGE MA 03-16D - Wellbore #1 - Well	9,451.81	7,953.78	980.52	877.77	9.543	CC
EXIST DD LARKRIDGE MA 03-16D - Wellbore #1 - Well	9,500.00	7,954.56	981.70	876.78	9.356	ES
EXIST DD LARKRIDGE MA 03-16D - Wellbore #1 - Well	9,700.00	7,957.79	1,011.43	899.18	9.010	SF
EXIST DD LARKRIDGE MA 03-23D - Wellbore #1 - Well	10,123.83	7,985.80	276.96	169.83	2.585	CC, ES
EXIST DD LARKRIDGE MA 03-23D - Wellbore #1 - Well	10,200.00	7,986.08	287.24	171.47	2.481	SF
EXIST DD LARKRIDGE MA 09-09D - Wellbore #1 - Well	10,796.27	7,775.42	1,146.84	1,033.49	10.118	CC
EXIST DD LARKRIDGE MA 09-09D - Wellbore #1 - Well	10,800.00	7,775.45	1,146.85	1,033.35	10.104	ES
EXIST DD LARKRIDGE MA 09-09D - Wellbore #1 - Well	11,100.00	7,778.07	1,186.38	1,063.34	9.642	SF
EXIST DD STANDLEY 5-2 - Wellbore #1 - Wellbore #1	11,897.15	7,964.98	2,369.72	2,233.37	17.380	CC
EXIST DD STANDLEY 5-2 - Wellbore #1 - Wellbore #1	12,000.00	7,968.40	2,371.94	2,232.42	17.000	ES
EXIST DD STANDLEY 5-2 - Wellbore #1 - Wellbore #1	12,600.00	7,987.89	2,471.64	2,317.82	16.068	SF
EXIST DD STANDLEY 6-2 - Wellbore #1 - Wellbore #1	11,808.10	7,289.19	3,634.86	3,499.24	26.803	CC
EXIST DD STANDLEY 6-2 - Wellbore #1 - Wellbore #1	11,900.00	11,900.00	3,635.99	3,477.93	23.004	ES
EXIST DD STANDLEY 6-2 - Wellbore #1 - Wellbore #1	14,200.00	14,200.00	4,336.48	4,125.67	20.570	SF
EXIST DD STANDLEY 8-3 - Wellbore #1 - Wellbore #1	11,958.64	7,919.66	1,161.47	1,023.82	8.438	CC
EXIST DD STANDLEY 8-3 - Wellbore #1 - Wellbore #1	12,000.00	7,919.66	1,162.21	1,023.03	8.351	ES
EXIST DD STANDLEY 8-3 - Wellbore #1 - Wellbore #1	12,200.00	7,919.62	1,186.28	1,041.66	8.203	SF
EXIST VERT WEBBER H UNIT 1 - Wellbore #1 - Design	9,443.35	7,812.99	2,025.26	1,802.62	9.096	CC, ES, 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					
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)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	8.36	2,149.94	316.08	2,173.37				
100.00	100.00	63.00	63.00	0.13	0.75	8.36	2,149.94	316.08	2,173.05	2,172.17	0.88	2,466.802	
200.00	200.00	163.00	163.00	0.49	2.63	8.36	2,149.94	316.08	2,173.05	2,169.93	3.12	696.013	
300.00	300.00	263.00	263.00	0.85	4.79	8.36	2,149.94	316.08	2,173.05	2,167.42	5.64	385.404	
400.00	400.00	363.00	363.00	1.21	6.84	8.36	2,149.94	316.08	2,173.05	2,165.00	8.05	269.860	
500.00	500.00	463.00	463.00	1.57	8.88	8.36	2,149.94	316.08	2,173.05	2,162.61	10.44	208.048	
600.00	599.98	562.98	562.98	1.93	10.90	-30.78	2,149.94	316.08	2,171.55	2,158.73	12.83	169.296	
700.00	699.84	662.84	662.84	2.29	12.92	-30.90	2,149.94	316.08	2,167.06	2,151.85	15.20	142.531	
800.00	799.45	762.45	762.45	2.65	14.93	-31.09	2,149.94	316.08	2,159.58	2,142.00	17.58	122.861	
900.00	898.70	861.70	861.70	3.02	16.93	-31.37	2,149.94	316.08	2,149.14	2,129.19	19.95	107.744	
1,000.00	897.47	860.47	860.47	3.42	18.92	-31.73	2,149.94	316.08	2,135.76	2,113.45	22.31	95.724	
1,100.00	1,095.62	1,058.62	1,058.62	3.83	20.90	-32.17	2,149.94	316.08	2,119.49	2,094.82	24.67	85.905	
1,200.00	1,193.06	1,156.06	1,156.06	4.28	22.86	-32.71	2,149.94	316.08	2,100.37	2,073.34	27.03	77.707	
1,300.00	1,289.64	1,252.64	1,252.64	4.76	24.80	-33.34	2,149.94	316.08	2,078.45	2,049.06	29.38	70.738	
1,400.00	1,385.27	1,348.27	1,348.27	5.28	26.73	-34.06	2,149.94	316.08	2,053.79	2,022.06	31.73	64.723	
1,500.00	1,479.82	1,442.82	1,442.82	5.85	28.63	-34.89	2,149.94	316.08	2,026.49	1,992.41	34.08	59.463	
1,600.00	1,573.17	1,536.17	1,536.17	6.46	30.51	-35.83	2,149.94	316.08	1,996.61	1,960.19	36.43	54.813	
1,700.00	1,665.21	1,628.21	1,628.21	7.12	32.36	-36.89	2,149.94	316.08	1,964.27	1,925.49	38.77	50.661	

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