

# **EXTRACTION OIL & GAS**

**Broomfield County**

**Sec 10-T1S-R68W**

**INTERCHANGE B N35-20-7N**

**ORIGINAL WELLBORE**

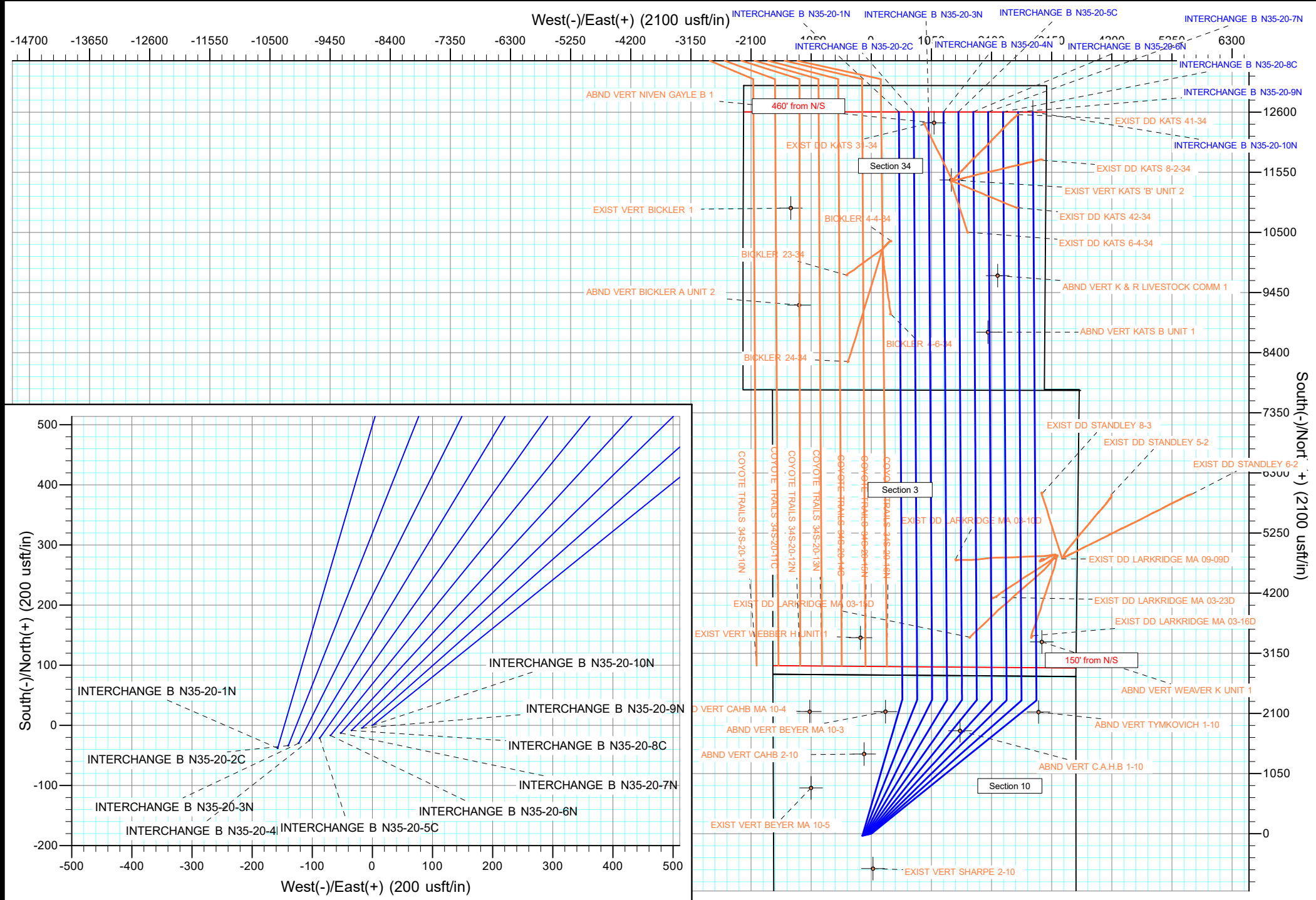
**PROPOSAL 1**

## **Anticollision Report**

**07 December, 2017**



Project: Broomfield County  
 Site: Sec 10-T1S-R68W  
 Well: INTERCHANGE B N35-20-10N  
 ORIGINAL WELLBORE  
 PROPOSAL 1



## Anticollision Report

<b>Company:</b>	EXTRACTION OIL & GAS	<b>Local Co-ordinate Reference:</b>	Well INTERCHANGE B N35-20-7N
<b>Project:</b>	Broomfield County	<b>TVD Reference:</b>	KB 25' @ 5261.00usft
<b>Reference Site:</b>	Sec 10-T1S-R68W	<b>MD Reference:</b>	KB 25' @ 5261.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	INTERCHANGE B N35-20-7N	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	ORIGINAL WELLBORE	<b>Database:</b>	EDT_32Bit_ODBC
<b>Reference Design:</b>	PROPOSAL 1	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	PROPOSAL 1		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	MD + Stations Interval 100.00usft	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	Unlimited	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum center-center distance of 9,999.98 usft	<b>Error Surface:</b>	Pedal Curve
<b>Warning Levels Evaluated at:</b>	2.00 Sigma	<b>Casing Method:</b>	Not applied

<b>Survey Tool Program</b>		<b>Date</b>	12/7/2017	
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.00	18,679.73	PROPOSAL 1 (ORIGINAL WELLBORE)	MWD OWSG	OWSG MWD - Standard

Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
<b>Summary</b>						
Sec 10-T1S-R68W						
ABND VERT BEYER MA 10-3 - Wellbore #1 - Design #1	4,589.79	4,107.14	1,231.53	1,113.99	10.477	CC
ABND VERT BEYER MA 10-3 - Wellbore #1 - Design #1	4,700.00	4,186.98	1,232.87	1,112.67	10.257	ES
ABND VERT BEYER MA 10-3 - Wellbore #1 - Design #1	8,500.00	7,613.11	1,887.54	1,686.88	9.407	SF
<b>ABND VERT C.A.H.B 1-10 - Wellbore #1 - Design #1</b>	<b>5,809.51</b>	<b>5,104.50</b>	<b>45.17</b>	<b>-104.55</b>	<b>0.302</b>	<b>Level 1, CC, ES, SF</b>
ABND VERT CAHB 2-10 - Wellbore #1 - Design #1	3,058.45	2,783.11	1,005.84	930.02	13.267	CC
ABND VERT CAHB 2-10 - Wellbore #1 - Design #1	3,200.00	2,903.99	1,008.53	928.95	12.673	ES
ABND VERT CAHB 2-10 - Wellbore #1 - Design #1	4,100.00	3,672.59	1,142.53	1,041.25	11.282	SF
ABND VERT CAHB MA 10-4 - Wellbore #1 - Design #1	2,870.30	2,642.43	2,205.68	2,134.54	31.001	CC
ABND VERT CAHB MA 10-4 - Wellbore #1 - Design #1	3,100.00	2,838.60	2,208.92	2,131.61	28.574	ES
ABND VERT CAHB MA 10-4 - Wellbore #1 - Design #1	8,800.00	7,807.18	3,231.83	3,024.10	15.557	SF
ABND VERT TYMKOVICH 1-10 - Wellbore #1 - Design #1	6,491.09	5,180.00	1,206.53	1,149.03	20.984	CC, ES
ABND VERT TYMKOVICH 1-10 - Wellbore #1 - Design #1	6,500.00	5,180.00	1,206.57	1,149.06	20.980	SF
EXIST VERT BEYER MA 10-5 - Wellbore #1 - Design #1	400.00	386.00	1,289.18	1,280.66	151.272	CC
EXIST VERT BEYER MA 10-5 - Wellbore #1 - Design #1	1,000.00	981.62	1,294.45	1,271.61	56.685	ES
EXIST VERT BEYER MA 10-5 - Wellbore #1 - Design #1	8,500.00	7,636.11	3,573.59	3,381.39	18.593	SF
EXIST VERT SHARPE 1-10 - Wellbore #1 - Design #1	2,793.08	2,511.49	3,312.33	3,244.56	48.873	CC
EXIST VERT SHARPE 1-10 - Wellbore #1 - Design #1	3,100.00	2,773.60	3,316.18	3,240.15	43.617	ES
EXIST VERT SHARPE 1-10 - Wellbore #1 - Design #1	8,300.00	7,402.72	4,095.04	3,891.10	20.079	SF
EXIST VERT SHARPE 2-10 - Wellbore #1 - Design #1	400.00	348.00	601.87	594.12	77.698	CC
EXIST VERT SHARPE 2-10 - Wellbore #1 - Design #1	500.00	447.98	602.98	592.84	59.473	ES
EXIST VERT SHARPE 2-10 - Wellbore #1 - Design #1	8,400.00	7,518.30	3,670.81	3,485.54	19.813	SF
INTERCHANGE B N35-20-10N - ORIGINAL WELLBORE	100.00	100.00	53.93	53.66	200.605	CC, ES
INTERCHANGE B N35-20-10N - ORIGINAL WELLBORE	18,679.78	18,915.08	780.05	340.85	1.776	SF
INTERCHANGE B N35-20-1N - ORIGINAL WELLBORE	400.00	400.00	108.05	105.63	44.656	CC, ES
INTERCHANGE B N35-20-1N - ORIGINAL WELLBORE	18,679.78	18,391.98	1,559.83	1,119.22	3.540	SF
INTERCHANGE B N35-20-2C - ORIGINAL WELLBORE	400.00	400.00	89.87	87.45	37.140	CC, ES
INTERCHANGE B N35-20-2C - ORIGINAL WELLBORE	18,620.43	24,812.12	1,326.24	799.67	2.519	SF
INTERCHANGE B N35-20-3N - ORIGINAL WELLBORE	400.00	400.00	72.04	69.62	29.771	CC, ES
INTERCHANGE B N35-20-3N - ORIGINAL WELLBORE	18,627.87	20,014.63	1,039.54	576.79	2.246	SF
INTERCHANGE B N35-20-4N - ORIGINAL WELLBORE	400.00	400.00	53.85	51.43	22.254	CC, ES
INTERCHANGE B N35-20-4N - ORIGINAL WELLBORE	18,679.78	18,500.44	779.79	339.98	1.773	SF
INTERCHANGE B N35-20-5C - ORIGINAL WELLBORE	400.00	400.00	36.02	33.60	14.885	CC, ES
INTERCHANGE B N35-20-5C - ORIGINAL WELLBORE	18,679.78	18,782.85	583.05	177.08	1.436	Level 3, SF
INTERCHANGE B N35-20-6N - ORIGINAL WELLBORE	400.00	400.00	17.83	15.41	7.369	CC
INTERCHANGE B N35-20-6N - ORIGINAL WELLBORE	18,679.78	18,613.25	259.93	-179.78	0.591	Level 1, ES, SF
INTERCHANGE B N35-20-8C - ORIGINAL WELLBORE	300.00	300.00	18.19	16.49	10.682	CC
INTERCHANGE B N35-20-8C - ORIGINAL WELLBORE	18,592.44	26,845.55	370.81	-59.46	0.862	Level 1, ES, SF

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

## Anticollision Report

<b>Company:</b>	EXTRACTION OIL & GAS	<b>Local Co-ordinate Reference:</b>	Well INTERCHANGE B N35-20-7N
<b>Project:</b>	Broomfield County	<b>TVD Reference:</b>	KB 25' @ 5261.00usft
<b>Reference Site:</b>	Sec 10-T1S-R68W	<b>MD Reference:</b>	KB 25' @ 5261.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	INTERCHANGE B N35-20-7N	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	ORIGINAL WELLBORE	<b>Database:</b>	EDT_32Bit_ODBC
<b>Reference Design:</b>	PROPOSAL 1	<b>Offset TVD Reference:</b>	Offset Datum

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Sec 10-T1S-R68W						
INTERCHANGE B N35-20-9N - ORIGINAL WELLBORE	200.00	200.00	36.02	35.03	36.537	CC, ES
INTERCHANGE B N35-20-9N - ORIGINAL WELLBORE	18,679.78	18,834.23	520.14	81.16	1.185	Level 2, SF
Sec 28-T1N-R68W						
COYOTE TRAILS 34S-20-10N - ORIGINAL WELLBORE	18,641.42	8,732.99	4,099.77	3,838.19	15.673	CC
COYOTE TRAILS 34S-20-10N - ORIGINAL WELLBORE	18,679.78	8,705.38	4,099.98	3,838.03	15.652	ES, SF
COYOTE TRAILS 34S-20-11C - ORIGINAL WELLBORE	18,641.22	9,105.90	3,725.96	3,462.08	14.120	CC
COYOTE TRAILS 34S-20-11C - ORIGINAL WELLBORE	18,679.78	9,067.34	3,726.16	3,462.02	14.107	ES, SF
COYOTE TRAILS 34S-20-12N - ORIGINAL WELLBORE	18,679.78	9,008.07	3,295.16	3,031.64	12.504	CC, ES, SF
COYOTE TRAILS 34S-20-13N - ORIGINAL WELLBORE	18,633.07	9,221.31	2,959.84	2,695.68	11.205	CC
COYOTE TRAILS 34S-20-13N - ORIGINAL WELLBORE	18,679.78	9,174.60	2,960.05	2,695.56	11.192	ES, SF
COYOTE TRAILS 34S-20-14C - ORIGINAL WELLBORE	18,641.11	9,588.83	2,623.73	2,356.64	9.823	CC
COYOTE TRAILS 34S-20-14C - ORIGINAL WELLBORE	18,679.78	9,550.16	2,623.92	2,356.55	9.814	ES, SF
COYOTE TRAILS 34S-20-15N - ORIGINAL WELLBORE	18,641.12	9,603.84	2,200.02	1,934.24	8.278	CC
COYOTE TRAILS 34S-20-15N - ORIGINAL WELLBORE	18,679.78	9,565.18	2,200.23	1,934.16	8.270	ES, SF
COYOTE TRAILS 34S-20-16N - ORIGINAL WELLBORE	9,005.46	19,416.15	1,826.07	1,564.99	6.994	CC, ES, SF
Sec 34-T1N-R68W						
ABND VERT BICKLER A UNIT 2 - Wellbore #1 - Design	15,326.23	7,787.91	3,321.56	3,003.95	10.458	CC, ES
ABND VERT BICKLER A UNIT 2 - Wellbore #1 - Design	15,500.00	7,787.91	3,326.10	3,007.41	10.437	SF
ABND VERT K & R LIVESTOCK COMM 1 - Wellbore #1	15,820.41	5,503.00	2,271.74	2,189.89	27.756	CC, ES
ABND VERT K & R LIVESTOCK COMM 1 - Wellbore #1	17,200.00	5,503.00	2,657.83	2,529.62	20.731	SF
<b>ABND VERT KATS B UNIT 1 - Wellbore #1 - Design #1</b>	<b>14,833.50</b>	<b>7,743.92</b>	<b>27.25</b>	<b>-281.03</b>	<b>0.088</b>	<b>Level 1, CC, ES, SF</b>
ABND VERT NIVEN GAYLE B 1 - Wellbore #1 - Design	17,800.00	5,145.00	2,887.77	2,737.16	19.173	SF
ABND VERT NIVEN GAYLE B 1 - Wellbore #1 - Design	18,496.42	5,145.00	2,802.54	2,658.58	19.468	CC, ES
BICKLER 23-34 - Wellbore #1 - Wellbore #1	15,842.21	7,844.83	2,490.78	2,291.59	12.504	CC, ES
BICKLER 23-34 - Wellbore #1 - Wellbore #1	15,900.00	7,844.18	2,491.45	2,292.12	12.499	SF
BICKLER 24-34 - Wellbore #1 - Wellbore #1	14,335.88	8,149.37	2,468.72	2,280.50	13.116	CC, ES, SF
BICKLER 4-4-34 - Wellbore #1 - Wellbore #1	16,432.25	7,800.62	1,711.34	1,505.25	8.304	CC, ES, SF
BICKLER 4-6-34 - Wellbore #1 - Wellbore #1	15,156.25	7,888.40	1,732.07	1,539.79	9.008	CC, ES, SF
EXIST DD KATS 31-34 - Wellbore #1 - Wellbore #1	18,490.62	7,896.10	1,110.44	861.85	4.467	CC, ES, SF
EXIST DD KATS 41-34 - Wellbore #1 - Wellbore #1	18,626.11	7,974.90	508.62	255.60	2.010	CC
EXIST DD KATS 41-34 - Wellbore #1 - Wellbore #1	18,679.78	7,975.49	511.23	254.10	1.988	ES, SF
EXIST DD KATS 42-34 - Wellbore #1 - Wellbore #1	17,003.25	7,888.71	497.77	277.24	2.257	CC, ES, SF
EXIST DD KATS 6-4-34 - Wellbore #1 - Wellbore #1	16,574.97	7,843.46	368.57	153.74	1.716	CC, ES, SF
EXIST DD KATS 8-2-34 - Wellbore #1 - Wellbore #1	17,834.54	7,971.91	942.48	707.49	4.011	CC
EXIST DD KATS 8-2-34 - Wellbore #1 - Wellbore #1	17,900.00	7,971.57	944.75	706.48	3.965	ES
EXIST DD KATS 8-2-34 - Wellbore #1 - Wellbore #1	18,000.00	7,971.03	956.89	715.33	3.961	SF
EXIST VERT BICKLER 1 - Wellbore #1 - Design #1	17,022.78	7,850.88	3,456.02	3,107.83	9.926	CC, ES
EXIST VERT BICKLER 1 - Wellbore #1 - Design #1	17,200.00	7,850.88	3,460.56	3,111.21	9.906	SF
EXIST VERT KATS 'B' UNIT 2 - Wellbore #1 - Design #1	17,495.74	7,764.88	649.45	422.93	2.877	CC, ES, SF

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

Anticollision Report

<b>Company:</b>	EXTRACTION OIL & GAS	<b>Local Co-ordinate Reference:</b>	Well INTERCHANGE B N35-20-7N
<b>Project:</b>	Broomfield County	<b>TVD Reference:</b>	KB 25' @ 5261.00usft
<b>Reference Site:</b>	Sec 10-T1S-R68W	<b>MD Reference:</b>	KB 25' @ 5261.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	INTERCHANGE B N35-20-7N	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	ORIGINAL WELLBORE	<b>Database:</b>	EDT_32Bit_ODBC
<b>Reference Design:</b>	PROPOSAL 1	<b>Offset TVD Reference:</b>	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	9,419.26	7,807.01	880.51	787.72	9.490	CC
ABND VERT WEAVER K UNIT 1 - Wellbore #1 - Design	9,500.00	7,807.01	884.20	787.65	9.158	ES
ABND VERT WEAVER K UNIT 1 - Wellbore #1 - Design	9,700.00	7,807.01	924.18	820.21	8.889	SF
EXIST DD LARKRIDGE MA 03-10D - Wellbore #1 - Well	10,800.00	8,044.23	626.08	507.08	5.261	SF
EXIST DD LARKRIDGE MA 03-10D - Wellbore #1 - Well	10,870.38	8,044.01	622.11	505.60	5.339	CC, ES
EXIST DD LARKRIDGE MA 03-15D - Wellbore #1 - Well	9,400.00	8,101.21	393.85	279.80	3.453	SF
EXIST DD LARKRIDGE MA 03-15D - Wellbore #1 - Well	9,499.79	8,102.41	381.00	275.56	3.613	CC, ES
EXIST DD LARKRIDGE MA 03-16D - Wellbore #1 - Well	9,520.33	7,959.55	720.30	617.10	6.980	CC
EXIST DD LARKRIDGE MA 03-16D - Wellbore #1 - Well	9,600.00	7,960.85	724.69	616.82	6.718	ES
EXIST DD LARKRIDGE MA 03-16D - Wellbore #1 - Well	9,700.00	7,962.48	742.36	629.81	6.596	SF
EXIST DD LARKRIDGE MA 03-23D - Wellbore #1 - Well	10,192.28	7,985.24	16.69	-90.73	0.155	Level 1, CC
EXIST DD LARKRIDGE MA 03-23D - Wellbore #1 - Well	10,200.00	7,985.27	18.39	-100.50	0.155	Level 1, ES, SF
EXIST DD LARKRIDGE MA 09-09D - Wellbore #1 - Well	10,864.71	7,777.40	886.59	773.04	7.808	CC
EXIST DD LARKRIDGE MA 09-09D - Wellbore #1 - Well	10,900.00	7,777.71	887.29	771.95	7.693	ES
EXIST DD LARKRIDGE MA 09-09D - Wellbore #1 - Well	11,100.00	7,779.44	917.28	794.13	7.449	SF
EXIST DD STANDLEY 5-2 - Wellbore #1 - Wellbore #1	11,965.61	7,966.44	2,109.48	1,973.06	15.463	CC
EXIST DD STANDLEY 5-2 - Wellbore #1 - Wellbore #1	12,000.00	7,967.58	2,109.76	1,972.14	15.330	ES
EXIST DD STANDLEY 5-2 - Wellbore #1 - Wellbore #1	12,600.00	7,987.15	2,202.71	2,048.85	14.316	SF
EXIST DD STANDLEY 6-2 - Wellbore #1 - Wellbore #1	11,889.26	7,413.92	3,381.17	3,244.31	24.706	CC
EXIST DD STANDLEY 6-2 - Wellbore #1 - Wellbore #1	12,000.00	7,436.66	3,382.95	3,242.71	24.124	ES
EXIST DD STANDLEY 6-2 - Wellbore #1 - Wellbore #1	13,800.00	13,800.00	3,873.86	3,668.33	18.848	SF
EXIST DD STANDLEY 8-3 - Wellbore #1 - Wellbore #1	12,027.07	7,922.44	901.24	763.52	6.544	CC
EXIST DD STANDLEY 8-3 - Wellbore #1 - Wellbore #1	12,100.00	7,922.43	904.19	763.25	6.415	ES
EXIST DD STANDLEY 8-3 - Wellbore #1 - Wellbore #1	12,200.00	7,922.41	917.69	773.47	6.363	SF
EXIST VERT WEBBER H UNIT 1 - Wellbore #1 - Design	9,511.84	7,812.99	2,285.55	2,062.49	10.246	CC, ES, SF

Offset Design													Offset Site Error:	0.00 usft					
Survey Program: 0-INC													Offset Well Error:	0.00 usft					
Reference													Semi Major Axis		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)									
0.00	0.00	0.00	0.00	0.00	0.00	7.92	2,145.94	298.71	2,166.94										
100.00	100.00	63.00	63.00	0.13	0.75	7.92	2,145.94	298.71	2,166.63	2,165.74	0.88	2,459.505							
200.00	200.00	163.00	163.00	0.49	2.63	7.92	2,145.94	298.71	2,166.63	2,163.50	3.12	693.954							
300.00	300.00	263.00	263.00	0.85	4.79	7.92	2,145.94	298.71	2,166.63	2,160.99	5.64	384.264							
400.00	400.00	363.00	363.00	1.21	6.84	7.92	2,145.94	298.71	2,166.63	2,158.57	8.05	269.062							
500.00	499.98	462.98	462.98	1.57	8.88	-34.68	2,145.94	298.71	2,165.19	2,154.75	10.44	207.329							
600.00	599.84	562.84	562.84	1.93	10.90	-34.81	2,145.94	298.71	2,160.89	2,148.06	12.83	168.484							
700.00	699.45	662.45	662.45	2.29	12.91	-35.02	2,145.94	298.71	2,153.73	2,138.53	15.20	141.665							
800.00	798.70	761.70	761.70	2.67	14.91	-35.33	2,145.94	298.71	2,143.75	2,126.17	17.58	121.965							
900.00	897.47	860.47	860.47	3.07	16.91	-35.72	2,145.94	298.71	2,130.96	2,111.01	19.95	106.827							
1,000.00	995.62	958.62	958.62	3.49	18.88	-36.20	2,145.94	298.71	2,115.42	2,093.10	22.32	94.792							
1,100.00	1,093.06	1,056.06	1,056.06	3.95	20.85	-36.79	2,145.94	298.71	2,097.17	2,072.49	24.68	84.961							
1,200.00	1,189.64	1,152.64	1,152.64	4.44	22.79	-37.47	2,145.94	298.71	2,076.28	2,049.23	27.05	76.754							
1,300.00	1,285.27	1,248.27	1,248.27	4.97	24.72	-38.25	2,145.94	298.71	2,052.81	2,023.40	29.42	69.779							
1,400.00	1,379.82	1,342.82	1,342.82	5.55	26.62	-39.15	2,145.94	298.71	2,026.86	1,995.07	31.79	63.761							
1,500.00	1,473.17	1,436.17	1,436.17	6.18	28.50	-40.16	2,145.94	298.71	1,998.52	1,964.36	34.16	58.502							
1,600.00	1,565.21	1,528.21	1,528.21	6.85	30.35	-41.29	2,145.94	298.71	1,967.89	1,931.35	36.54	53.855							
1,700.00	1,655.84	1,618.84	1,618.84	7.58	32.17	-42.55	2,145.94	298.71	1,935.11	1,896.19	38.93	49.711							
1,800.00	1,744.94	1,707.94	1,707.94	8.37	33.97	-43.94	2,145.94	298.71	1,900.32	1,858.99	41.32	45.985							

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