

# **EXTRACTION OIL & GAS**

**Broomfield County**

**Sec 7-T1S-R68W**

**LIVINGSTON S19-25-3N**

**ORIGINAL WELLBORE**

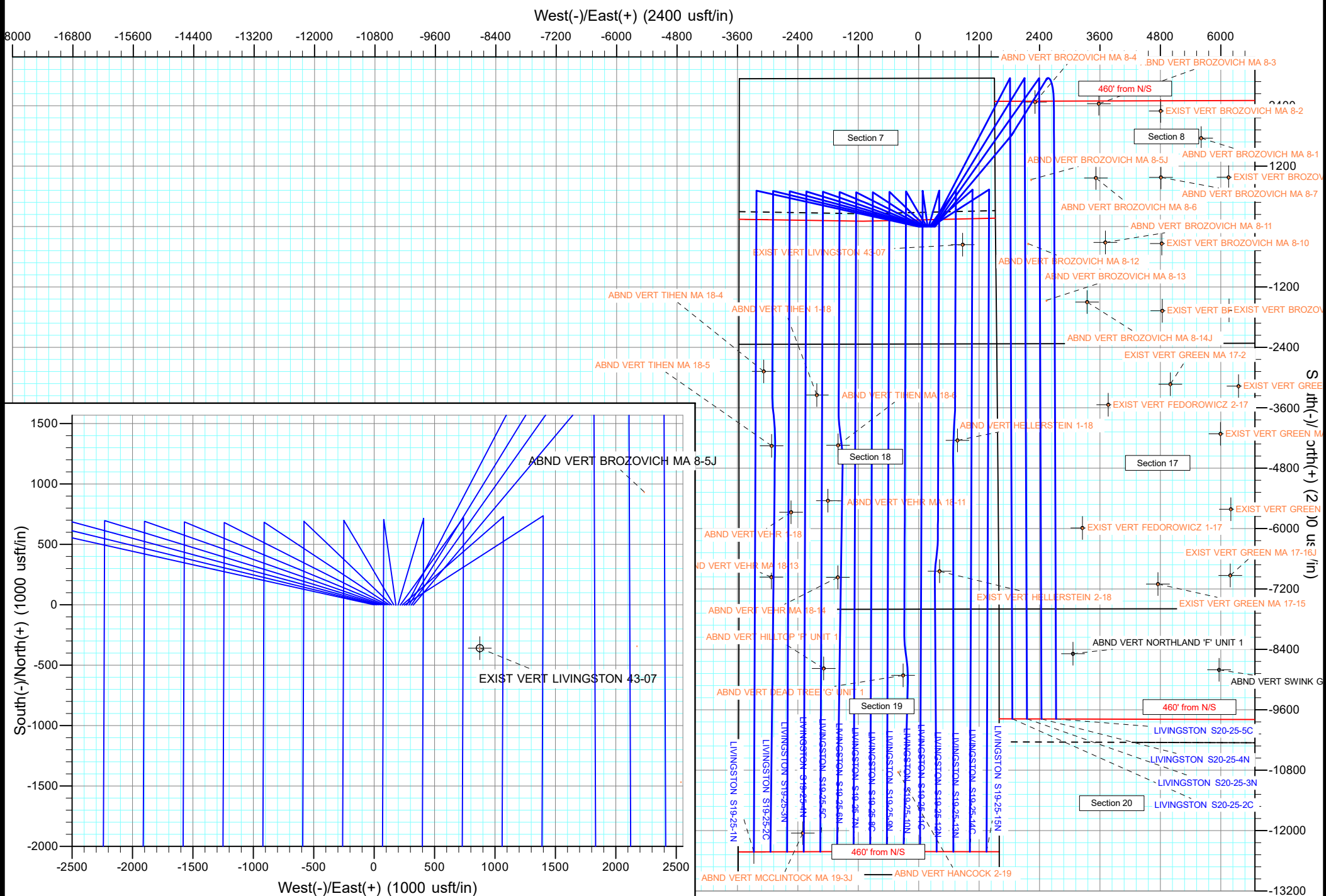
**PROPOSAL 1**

## **Anticollision Report**

**11 January, 2018**



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



# Anticollision Report

<b>Company:</b>	EXTRACTION OIL & GAS	<b>Local Co-ordinate Reference:</b>	Well LIVINGSTON S19-25-3N
<b>Project:</b>	Broomfield County	<b>TVD Reference:</b>	KB 25' @ 5336.00usft
<b>Reference Site:</b>	Sec 7-T1S-R68W	<b>MD Reference:</b>	KB 25' @ 5336.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LIVINGSTON S19-25-3N	<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>	1/11/2018		
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.00	21,479.74	PROPOSAL 1 (ORIGINAL WELLBORE)	MWD OWSG	OWSG MWD - Standard

<b>Summary</b>						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Sec 18-T1S-R68W						
ABND VERT HELLERSTEIN 1-18 - Wellbore #1 - Design	13,292.20	8,121.98	3,352.14	3,102.84	13.446	CC
ABND VERT HELLERSTEIN 1-18 - Wellbore #1 - Design	13,300.00	8,121.98	3,352.15	3,102.78	13.442	ES
ABND VERT HELLERSTEIN 1-18 - Wellbore #1 - Design	13,600.00	8,121.97	3,366.25	3,114.37	13.365	SF
ABND VERT TIHEN 1-18 - Wellbore #1 - Design #1	12,400.00	8,083.98	553.89	319.41	2.362	ES, SF
ABND VERT TIHEN 1-18 - Wellbore #1 - Design #1	12,403.53	8,083.98	553.88	319.48	2.363	CC
ABND VERT TIHEN MA 18-4 - Wellbore #1 - Design #1	11,937.72	8,016.98	501.78	275.84	2.221	CC, ES
ABND VERT TIHEN MA 18-4 - Wellbore #1 - Design #1	12,000.00	8,016.98	505.63	276.43	2.206	SF
ABND VERT TIHEN MA 18-5 - Wellbore #1 - Design #1	13,416.04	8,048.97	339.10	89.24	1.357	Level 3, CC, ES, SF
ABND VERT TIHEN MA 18-6 - Wellbore #1 - Design #1	13,399.97	8,114.97	981.02	730.10	3.910	CC, ES, SF
ABND VERT VEHR 1-18 - Wellbore #1 - Design #1	14,733.21	8,084.97	52.83	-86.14	0.380	Level 1, CC, ES, SF
ABND VERT VEHR MA 18-11 - Wellbore #1 - Design #1	14,500.00	8,107.97	783.52	514.54	2.913	ES, SF
ABND VERT VEHR MA 18-11 - Wellbore #1 - Design #1	14,500.86	8,107.97	783.52	514.55	2.913	CC
ABND VERT VEHR MA 18-13 - Wellbore #1 - Design #1	16,024.24	8,139.96	334.60	173.55	2.078	CC, ES
ABND VERT VEHR MA 18-13 - Wellbore #1 - Design #1	16,100.00	8,139.96	343.07	177.68	2.074	SF
ABND VERT VEHR MA 18-14 - Wellbore #1 - Design #1	16,000.00	8,119.96	986.25	691.09	3.341	SF
ABND VERT VEHR MA 18-14 - Wellbore #1 - Design #1	16,022.74	8,119.96	985.99	691.02	3.343	CC, ES
EXIST VERT HELLERSTEIN 2-18 - Wellbore #1 - Design	15,893.79	8,049.96	3,005.48	2,714.11	10.315	CC
EXIST VERT HELLERSTEIN 2-18 - Wellbore #1 - Design	15,900.00	8,049.96	3,005.48	2,714.07	10.313	ES
EXIST VERT HELLERSTEIN 2-18 - Wellbore #1 - Design	16,100.00	8,049.96	3,012.54	2,719.74	10.289	SF
Sec 19-T1S-R68W						
ABND VERT DEAD TREE 'G' UNIT 1 - Wellbore #1 - De	17,965.73	8,052.95	2,290.49	1,963.44	7.004	CC, ES
ABND VERT DEAD TREE 'G' UNIT 1 - Wellbore #1 - De	18,000.00	8,052.95	2,290.75	1,963.53	7.001	SF
ABND VERT HANCOCK 2-19 - Wellbore #1 - Design #1	19,882.17	8,028.94	2,199.98	1,840.14	6.114	CC
ABND VERT HANCOCK 2-19 - Wellbore #1 - Design #1	19,900.00	8,028.94	2,200.06	1,840.13	6.113	ES, SF
ABND VERT HILLTOP 'F' UNIT 1 - Wellbore #1 - Design	17,800.00	8,064.95	713.58	388.03	2.192	SF
ABND VERT HILLTOP 'F' UNIT 1 - Wellbore #1 - Design	17,834.26	8,064.95	712.76	387.75	2.193	CC, ES
ABND VERT MCCLINTOCK MA 19-3J - Wellbore #1 - De	21,100.00	8,057.93	310.68	-71.58	0.813	Level 1, ES, SF
ABND VERT MCCLINTOCK MA 19-3J - Wellbore #1 - De	21,107.02	8,057.93	310.61	-71.20	0.814	Level 1, CC

# Anticollision Report

<b>Company:</b>	EXTRACTION OIL & GAS	<b>Local Co-ordinate Reference:</b>	Well LIVINGSTON S19-25-3N
<b>Project:</b>	Broomfield County	<b>TVD Reference:</b>	KB 25' @ 5336.00usft
<b>Reference Site:</b>	Sec 7-T1S-R68W	<b>MD Reference:</b>	KB 25' @ 5336.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LIVINGSTON S19-25-3N	<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 7-T1S-R68W						
EXIST VERT LIVINGSTON 43-07 - Wellbore #1 - Design	300.00	312.00	912.15	905.51	137.322	CC
EXIST VERT LIVINGSTON 43-07 - Wellbore #1 - Design	400.00	411.98	913.88	904.84	101.131	ES
EXIST VERT LIVINGSTON 43-07 - Wellbore #1 - Design	9,800.00	8,070.00	3,461.77	3,261.45	17.281	SF
LIVINGSTON S19-25-10N - ORIGINAL WELLBORE - PR	300.00	300.00	125.83	124.13	73.899	CC, ES
LIVINGSTON S19-25-10N - ORIGINAL WELLBORE - PR	21,479.78	20,984.79	2,311.19	1,859.13	5.113	SF
LIVINGSTON S19-25-11C - ORIGINAL WELLBORE - PR	300.00	300.00	143.77	142.07	84.433	CC, ES
LIVINGSTON S19-25-11C - ORIGINAL WELLBORE - PR	21,480.72	21,209.24	2,652.43	2,201.05	5.876	SF
LIVINGSTON S19-25-12N - ORIGINAL WELLBORE - PR	300.00	300.00	161.70	160.00	94.966	CC, ES
LIVINGSTON S19-25-12N - ORIGINAL WELLBORE - PR	21,400.00	48,707.60	2,970.56	2,032.88	3.168	SF
LIVINGSTON S19-25-13N - ORIGINAL WELLBORE - PR	300.00	300.00	179.92	178.22	105.664	CC, ES
LIVINGSTON S19-25-13N - ORIGINAL WELLBORE - PR	21,479.78	21,022.95	3,301.49	2,849.33	7.302	SF
LIVINGSTON S19-25-14C - ORIGINAL WELLBORE - PR	300.00	300.00	197.85	196.15	116.197	CC, ES
LIVINGSTON S19-25-14C - ORIGINAL WELLBORE - PR	21,480.72	21,307.88	3,639.98	3,188.19	8.057	SF
LIVINGSTON S19-25-15N - ORIGINAL WELLBORE - PR	300.00	300.00	215.79	214.09	126.732	CC, ES
LIVINGSTON S19-25-15N - ORIGINAL WELLBORE - PR	21,480.72	21,136.91	3,961.80	3,509.95	8.768	SF
LIVINGSTON S19-25-1N - ORIGINAL WELLBORE - PR	0.00	25.00	36.15			
LIVINGSTON S19-25-1N - ORIGINAL WELLBORE - PR	100.00	124.70	36.26	35.90	100.991	ES
LIVINGSTON S19-25-1N - ORIGINAL WELLBORE - PR	21,480.72	21,742.69	660.76	206.39	1.454	Level 3, SF
LIVINGSTON S19-25-2C - ORIGINAL WELLBORE - PR	105.56	130.56	18.22	17.82	45.731	CC
LIVINGSTON S19-25-2C - ORIGINAL WELLBORE - PR	21,480.72	21,825.92	396.04	8.93	1.023	Level 2, ES, SF
LIVINGSTON S19-25-4N - ORIGINAL WELLBORE - PR	300.00	300.00	17.94	16.24	10.535	CC
LIVINGSTON S19-25-4N - ORIGINAL WELLBORE - PR	21,479.78	21,364.03	330.29	-122.48	0.729	Level 1, ES, SF
LIVINGSTON S19-25-5C - ORIGINAL WELLBORE - PR	300.00	300.00	35.87	34.17	21.068	CC, ES
LIVINGSTON S19-25-5C - ORIGINAL WELLBORE - PR	21,378.73	32,017.27	703.70	93.16	1.153	Level 2, SF
LIVINGSTON S19-25-6N - ORIGINAL WELLBORE - PR	300.00	300.00	53.81	52.10	31.601	CC, ES
LIVINGSTON S19-25-6N - ORIGINAL WELLBORE - PR	21,468.80	21,177.31	990.54	537.85	2.188	SF
LIVINGSTON S19-25-7N - ORIGINAL WELLBORE - PR	300.00	300.00	71.75	70.04	42.135	CC, ES
LIVINGSTON S19-25-7N - ORIGINAL WELLBORE - PR	21,471.02	21,095.86	1,320.53	867.99	2.918	SF
LIVINGSTON S19-25-8C - ORIGINAL WELLBORE - PR	300.00	300.00	89.96	88.26	52.833	CC, ES
LIVINGSTON S19-25-8C - ORIGINAL WELLBORE - PR	21,463.37	21,277.77	1,668.78	1,218.17	3.703	SF
LIVINGSTON S19-25-9N - ORIGINAL WELLBORE - PR	300.00	300.00	107.90	106.19	63.366	CC, ES
LIVINGSTON S19-25-9N - ORIGINAL WELLBORE - PR	21,466.15	21,006.48	1,980.84	1,528.54	4.379	SF
LIVINGSTON S20-25-2C - ORIGINAL WELLBORE - PR	300.00	300.00	233.73	232.02	137.265	CC, ES
LIVINGSTON S20-25-2C - ORIGINAL WELLBORE - PR	19,200.00	21,633.46	4,485.14	4,103.73	11.759	SF
LIVINGSTON S20-25-3N - ORIGINAL WELLBORE - PR	300.00	300.00	251.94	250.24	147.962	CC, ES
LIVINGSTON S20-25-3N - ORIGINAL WELLBORE - PR	19,300.00	21,479.55	4,776.71	4,394.17	12.487	SF
LIVINGSTON S20-25-4N - ORIGINAL WELLBORE - PR	200.00	200.00	269.88	268.89	273.765	CC, ES
LIVINGSTON S20-25-4N - ORIGINAL WELLBORE - PR	19,400.00	21,546.10	5,075.95	4,692.30	13.231	SF
LIVINGSTON S20-25-5C - ORIGINAL WELLBORE - PR	100.00	100.00	287.81	287.55	1,070.521	CC, ES
LIVINGSTON S20-25-5C - ORIGINAL WELLBORE - PR	19,500.00	21,756.63	5,381.64	4,996.71	13.981	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		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)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	64.00	64.00	0.00	0.76	170.16	-4,245.95	736.32	4,309.33				
100.00	100.00	164.00	164.00	0.13	2.65	170.16	-4,245.95	736.32	4,309.33	4,306.54	2.79	1,546.445	
200.00	200.00	264.00	264.00	0.49	4.81	170.16	-4,245.95	736.32	4,309.33	4,304.03	5.30	812.975	
300.00	300.00	364.00	364.00	0.85	6.86	170.16	-4,245.95	736.32	4,309.33	4,301.61	7.71	558.602	
400.00	399.98	463.98	463.98	1.21	8.90	-114.99	-4,245.95	736.32	4,310.06	4,299.96	10.10	426.672	

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