



Project: WELD COUNTY, COLORADO (TRUE)  
Site: NW NW SEC. 1 T3N R66W 6th P.M. (RIDGWAY)  
Well: RIDGWAY 3N  
Wellbore: ORIGINAL WELLBORE  
Design: PROPOSAL #2

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Departure	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	SHL: 520ft FNL & 765ft FWL of Sec 1
1900.00	1900.00	0.00	0.00	0.00	0.00	0.00	0.00	START NUDGE (2°/100ft BUR)
2495.62	2500.00	12.00	8.92	61.85	9.70	-61.75	62.60	EOB TO 12° INC
4309.71	4354.61	12.00	8.92	442.78	69.46	-442.07	448.20	END OF TANGENT
4905.33	4954.61	0.00	8.92	504.63	79.16	-503.82	510.80	EOD TO VERTICAL
6394.81	6444.09	0.00	0.00	504.63	79.16	-503.82	510.80	KOP (8°/100ft BUR)
7111.00	7571.35	90.18	179.90	-213.83	80.41	214.62	1229.26	EP: 737ft FNL & 845ft FWL of Sec 1
7081.00	17163.69	90.18	179.90	-9806.10	97.50	9806.59	10821.55	BHL: 150ft FSL & 845ft FWL of Sec 12

PROPOSED LOCAL COORDINATES:

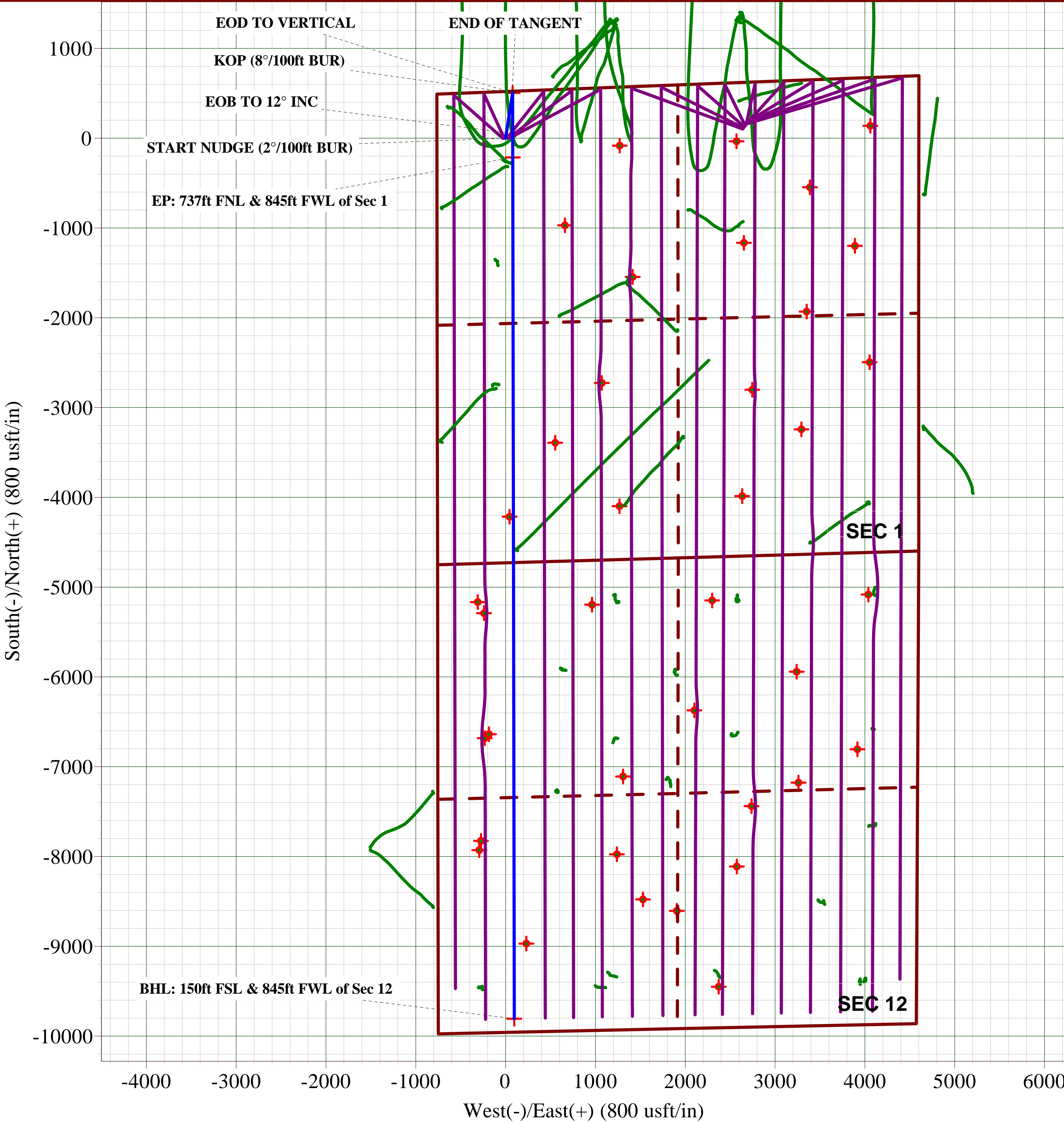
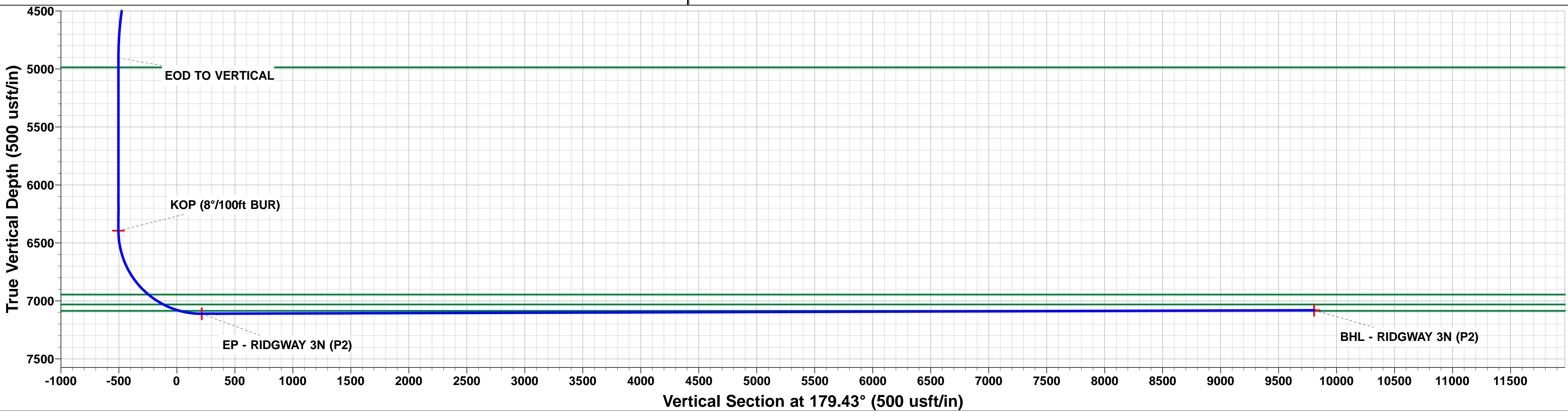
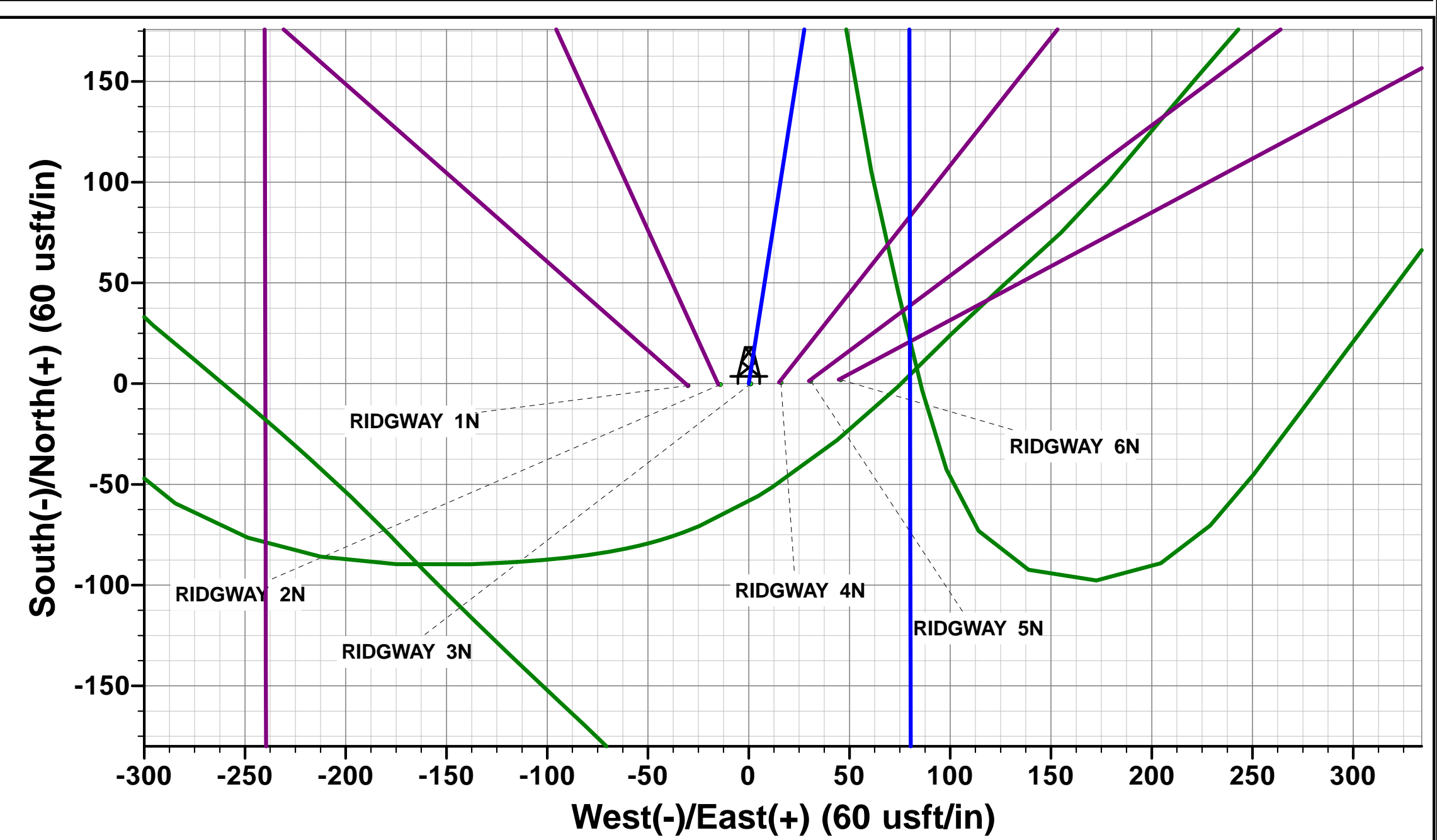
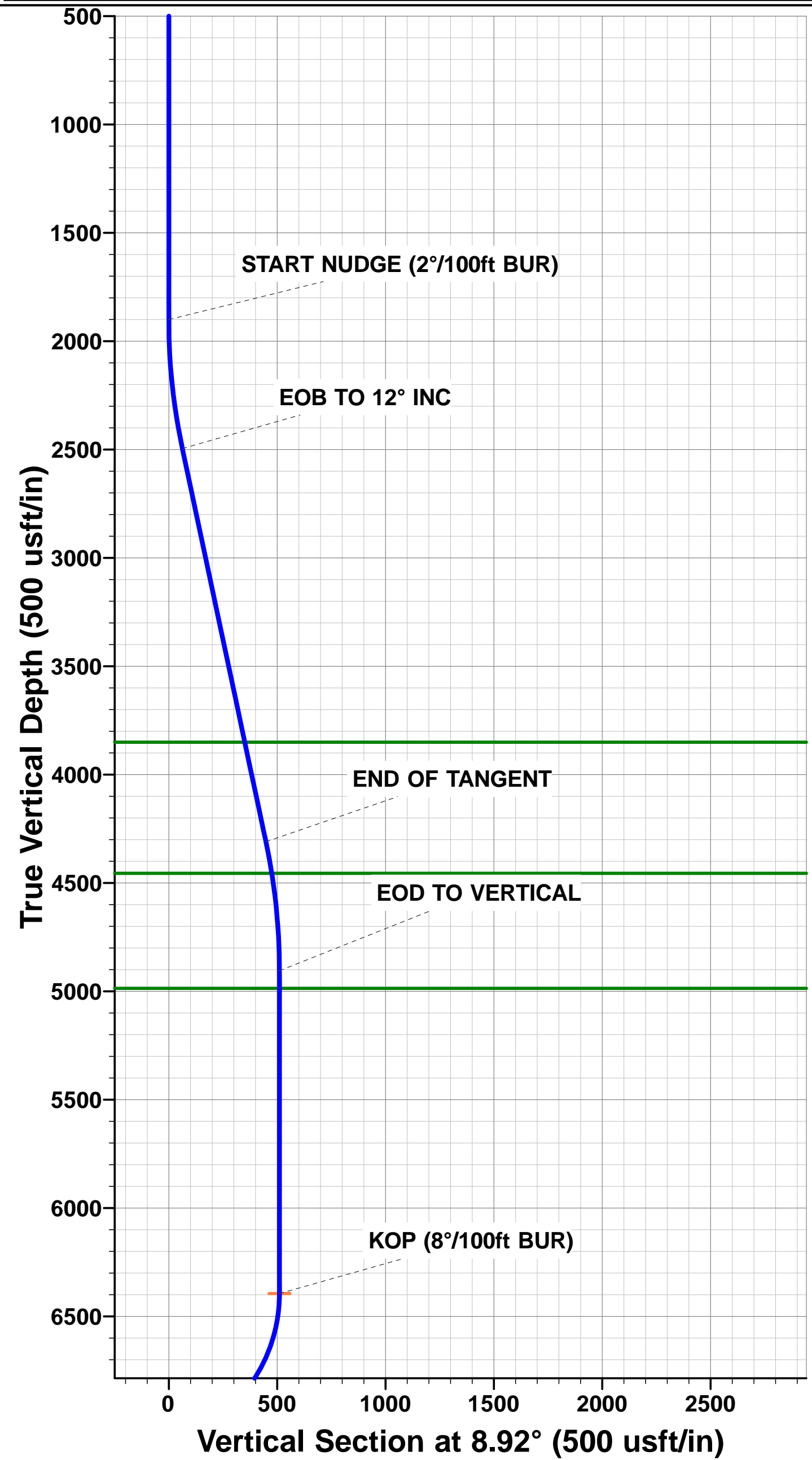
SHL: 520ft FNL & 765ft FWL of Sec 1

EP : 737ft FNL & 845ft FWL of Sec 1

BHL: 150ft FSL & 845ft FWL of Sec 12

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - RIDGWAY 3N (P2)	6394.81	504.63	79.16	40.261115	-104.731857
EP - RIDGWAY 3N (P2)	7111.00	-213.82	80.41	40.259143	-104.731852
BHL - RIDGWAY 3N (P2)	7081.00	-9806.11	97.50	40.232812	-104.731791



# **PDC ENERGY**

**WELD COUNTY, COLORADO (TRUE)  
NW NW SEC. 1 T3N R66W 6th P.M. (RIDGWAY)  
RIDGWAY 3N**

**ORIGINAL WELLBORE  
PROPOSAL #2**

## **Anticollision Report**

**14 February, 2018**



<b>Company:</b>	PDC ENERGY	<b>Local Co-ordinate Reference:</b>	Well RIDGWAY 3N
<b>Project:</b>	WELD COUNTY, COLORADO (TRUE)	<b>TVD Reference:</b>	KB-EST @ 4896.00usft (Original Well Elev)
<b>Reference Site:</b>	NW NW SEC. 1 T3N R66W 6th P.M. (RIDGWAY)	<b>MD Reference:</b>	KB-EST @ 4896.00usft (Original Well Elev)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	RIDGWAY 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>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	PROPOSAL #2	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	PROPOSAL #2		
<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>	Elliptical Conic
<b>Warning Levels Evaluated at:</b>	2.00 Sigma	<b>Casing Method:</b>	Not applied

<b>Survey Tool Program</b>	<b>Date</b>	14/02/2018		
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.00	17,163.69	PROPOSAL #2 (ORIGINAL WELLBORE)	MWD	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						
NW NE SEC. 1 T3N R66W 6th P.M. (RIFLE FALLS)						
RIFLE FALLS 10N - ORIGINAL WELLBORE - PROPOS	658.85	677.85	2,692.44	2,689.71	986.974	CC
RIFLE FALLS 10N - ORIGINAL WELLBORE - PROPOS	700.00	700.00	2,692.51	2,689.64	938.070	ES
RIFLE FALLS 10N - ORIGINAL WELLBORE - PROPOS	17,163.69	17,268.43	4,317.68	3,939.97	11.431	SF
RIFLE FALLS 1N - ORIGINAL WELLBORE - PROPOS	8,911.91	9,127.20	1,299.31	1,227.50	18.093	CC
RIFLE FALLS 1N - ORIGINAL WELLBORE - PROPOS	17,163.69	17,353.62	1,314.93	934.31	3.455	ES, SF
RIFLE FALLS 2N - ORIGINAL WELLBORE - PROPOS	6,444.09	6,518.24	1,655.69	1,621.51	48.447	CC
RIFLE FALLS 2N - ORIGINAL WELLBORE - PROPOS	17,163.69	17,361.24	1,657.36	1,273.84	4.321	ES, SF
RIFLE FALLS 3N - ORIGINAL WELLBORE - PROPOS	17,124.43	17,249.55	2,012.70	1,632.18	5.289	CC
RIFLE FALLS 3N - ORIGINAL WELLBORE - PROPOS	17,163.69	17,249.55	2,013.08	1,631.81	5.280	ES, SF
RIFLE FALLS 4N - ORIGINAL WELLBORE - PROPOS	17,119.26	17,308.25	2,319.42	1,936.93	6.064	CC
RIFLE FALLS 4N - ORIGINAL WELLBORE - PROPOS	17,163.69	17,308.25	2,319.85	1,936.50	6.052	ES, SF
RIFLE FALLS 5N - ORIGINAL WELLBORE - PROPOS	17,112.24	17,246.81	2,652.66	2,273.76	7.001	CC
RIFLE FALLS 5N - ORIGINAL WELLBORE - PROPOS	17,163.69	17,246.81	2,653.16	2,273.27	6.984	ES, SF
RIFLE FALLS 6N - ORIGINAL WELLBORE - PROPOS	258.33	278.33	2,733.07	2,732.14	2,939.474	CC
RIFLE FALLS 6N - ORIGINAL WELLBORE - PROPOS	17,163.69	17,336.40	2,974.57	2,591.44	7.764	ES, SF
RIFLE FALLS 7N - ORIGINAL WELLBORE - PROPOS	358.33	378.33	2,722.80	2,721.42	1,974.022	CC
RIFLE FALLS 7N - ORIGINAL WELLBORE - PROPOS	400.00	400.00	2,722.87	2,721.35	1,789.400	ES
RIFLE FALLS 7N - ORIGINAL WELLBORE - PROPOS	17,163.69	17,287.62	3,298.25	2,916.63	8.643	SF
RIFLE FALLS 8N - ORIGINAL WELLBORE - PROPOS	458.33	478.33	2,712.65	2,710.82	1,483.257	CC
RIFLE FALLS 8N - ORIGINAL WELLBORE - PROPOS	500.00	500.00	2,712.72	2,710.75	1,376.180	ES
RIFLE FALLS 8N - ORIGINAL WELLBORE - PROPOS	17,163.69	17,412.26	3,634.40	3,256.14	9.608	SF
RIFLE FALLS 9N - ORIGINAL WELLBORE - PROPOS	558.85	577.85	2,702.58	2,700.30	1,186.153	CC
RIFLE FALLS 9N - ORIGINAL WELLBORE - PROPOS	600.00	600.00	2,702.65	2,700.23	1,116.460	ES
RIFLE FALLS 9N - ORIGINAL WELLBORE - PROPOS	17,163.69	17,431.60	3,988.32	3,608.21	10.493	SF

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<b>Reference Site:</b>	NW NW SEC. 1 T3N R66W 6th P.M. (RIDGWAY)	<b>MD Reference:</b>	KB-EST @ 4896.00usft (Original Well Elev)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	RIDGWAY 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>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	PROPOSAL #2	<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
NW NW SEC. 1 T3N R66W 6th P.M. (RIDGWAY)						
ABDN VERT BELL # L12-15 - Wellbore #1 - Wellbore #1	16,629.24	7,250.00	2,228.74	2,046.21	12.210	CC
ABDN VERT BELL # L12-15 - Wellbore #1 - Wellbore #1	16,700.00	7,250.00	2,229.86	2,045.98	12.127	ES
ABDN VERT BELL # L12-15 - Wellbore #1 - Wellbore #1	17,163.69	7,250.00	2,291.92	2,099.17	11.890	SF
ABDN VERT BELL #L12-1 - Wellbore #1 - Wellbore #1	12,367.58	7,169.29	4,023.90	3,923.04	39.895	CC
ABDN VERT BELL #L12-1 - Wellbore #1 - Wellbore #1	12,400.00	7,169.27	4,024.03	3,922.56	39.654	ES
ABDN VERT BELL #L12-1 - Wellbore #1 - Wellbore #1	15,400.00	7,166.32	5,038.56	4,879.91	31.761	SF
ABDN VERT BELL #L12-10 - Wellbore #1 - Design #1	15,472.67	7,177.25	2,480.07	2,179.81	8.260	CC
ABDN VERT BELL #L12-10 - Wellbore #1 - Design #1	15,500.00	7,177.16	2,480.22	2,179.44	8.246	ES
ABDN VERT BELL #L12-10 - Wellbore #1 - Design #1	15,900.00	7,175.92	2,516.62	2,208.21	8.160	SF
ABDN VERT BELL #L12-11 - Wellbore #1 - Design #1	15,334.10	7,163.68	1,145.51	848.03	3.851	CC, ES
ABDN VERT BELL #L12-11 - Wellbore #1 - Design #1	15,400.00	7,163.47	1,147.40	848.66	3.841	SF
ABDN VERT BELL #L12-12 - Wellbore #1 - Design #1	15,285.46	7,146.83	386.87	89.48	1.301	Level 3, CC
ABDN VERT BELL #L12-12 - Wellbore #1 - Design #1	15,300.00	7,146.78	387.15	89.48	1.301	Level 3, ES, SF
ABDN VERT BELL #L12-13 - Wellbore #1 - Wellbore #1	16,817.88	7,150.96	396.05	210.15	2.130	CC, ES, SF
ABDN VERT BELL #L12-14 - Wellbore #1 - Wellbore #1	16,801.89	7,182.81	906.07	719.69	4.861	CC, ES
ABDN VERT BELL #L12-14 - Wellbore #1 - Wellbore #1	16,900.00	7,180.37	911.37	723.10	4.841	SF
ABDN VERT BELL #L12-16 - Wellbore #1 - Wellbore #1	16,758.28	7,230.01	3,891.18	3,706.51	21.071	CC
ABDN VERT BELL #L12-16 - Wellbore #1 - Wellbore #1	16,800.00	7,229.89	3,891.40	3,705.93	20.981	ES
ABDN VERT BELL #L12-16 - Wellbore #1 - Wellbore #1	17,163.69	7,228.89	3,912.24	3,719.81	20.331	SF
ABDN VERT BELL #L12-18 - Wellbore #1 - Wellbore #1	13,288.37	7,168.97	1,793.16	1,674.50	15.112	CC
ABDN VERT BELL #L12-18 - Wellbore #1 - Wellbore #1	13,300.00	7,169.65	1,793.20	1,674.32	15.084	ES
ABDN VERT BELL #L12-18 - Wellbore #1 - Wellbore #1	13,800.00	7,198.50	1,864.55	1,736.17	14.524	SF
ABDN VERT BELL #L12-2 - Wellbore #1 - Wellbore #1	12,449.13	7,170.95	2,489.73	2,387.33	24.313	CC
ABDN VERT BELL #L12-2 - Wellbore #1 - Wellbore #1	12,500.00	7,171.17	2,490.25	2,386.88	24.091	ES
ABDN VERT BELL #L12-2 - Wellbore #1 - Wellbore #1	13,600.00	7,176.01	2,742.84	2,618.56	22.069	SF
ABDN VERT BELL #L12-20 - Wellbore #1 - Wellbore #1	14,630.65	7,154.63	464.34	320.38	3.225	CC, ES, SF
ABDN VERT BELL #L12-21 - Wellbore #1 - Wellbore #1	14,501.70	7,156.79	1,695.05	1,553.40	11.966	CC, ES
ABDN VERT BELL #L12-21 - Wellbore #1 - Wellbore #1	14,900.00	7,157.86	1,741.22	1,591.96	11.666	SF
ABDN VERT BELL #L12-24 - Wellbore #1 - Design #1	15,965.52	7,185.71	1,811.67	1,501.92	5.849	CC
ABDN VERT BELL #L12-24 - Wellbore #1 - Design #1	16,000.00	7,185.61	1,812.00	1,501.59	5.837	ES
ABDN VERT BELL #L12-24 - Wellbore #1 - Design #1	16,200.00	7,184.99	1,826.78	1,512.56	5.814	SF
ABDN VERT BELL #L12-7 - Wellbore #1 - Wellbore #1	14,017.93	7,179.16	2,425.43	2,293.00	18.315	CC
ABDN VERT BELL #L12-7 - Wellbore #1 - Wellbore #1	14,100.00	7,178.53	2,426.82	2,292.82	18.111	ES
ABDN VERT BELL #L12-7 - Wellbore #1 - Wellbore #1	14,900.00	7,172.95	2,580.83	2,431.57	17.290	SF
ABDN VERT BELL #L12-8 - Wellbore #1 - Wellbore #1	13,947.91	4,200.00	4,969.67	4,858.59	44.737	CC
ABDN VERT BELL #L12-8 - Wellbore #1 - Wellbore #1	14,000.00	4,200.00	4,969.95	4,858.03	44.409	ES
ABDN VERT BELL #L12-8 - Wellbore #1 - Wellbore #1	17,163.69	4,200.00	5,919.35	5,757.01	36.463	SF
ABDN VERT BELL #L12-9 - Wellbore #1 - Wellbore #1	15,028.39	7,260.64	3,950.26	3,798.18	25.974	CC
ABDN VERT BELL #L12-9 - Wellbore #1 - Wellbore #1	15,100.00	7,261.76	3,950.91	3,797.46	25.747	ES
ABDN VERT BELL #L12-9 - Wellbore #1 - Wellbore #1	17,000.00	7,288.29	4,414.84	4,225.06	23.264	SF
ABDN VERT BELL L #12-6 - Wellbore #1 - Wellbore #1	14,089.82	7,162.59	1,104.19	970.36	8.251	CC
ABDN VERT BELL L #12-6 - Wellbore #1 - Wellbore #1	14,100.00	7,162.98	1,104.24	970.21	8.239	ES
ABDN VERT BELL L #12-6 - Wellbore #1 - Wellbore #1	14,300.00	7,170.76	1,123.98	986.15	8.155	SF
ABDN VERT BRATTAIN #2 - Wellbore #1 - Wellbore #1	15,850.60	7,200.00	3,383.77	3,216.08	20.179	CC
ABDN VERT BRATTAIN #2 - Wellbore #1 - Wellbore #1	15,900.00	7,200.00	3,384.13	3,215.50	20.068	ES
ABDN VERT BRATTAIN #2 - Wellbore #1 - Wellbore #1	17,163.69	7,183.27	3,629.56	3,436.75	18.825	SF
ABDN VERT BRATTAIN #L12-2J - Wellbore #1 - Wellbor	13,262.29	7,157.46	525.91	407.53	4.443	CC, ES
ABDN VERT BRATTAIN #L12-2J - Wellbore #1 - Wellbor	13,300.00	7,158.40	527.26	408.16	4.427	SF
ABDN VERT BRATTAIN #L12-11JI - Wellbore #1 - Desig	15,837.36	7,184.11	1,434.98	1,127.69	4.670	CC, ES
ABDN VERT BRATTAIN L #12-11JI - Wellbore #1 - Desig	16,000.00	7,183.61	1,444.17	1,133.78	4.653	SF
ABDN VERT BRATTAIN L #12-14JI - Wellbore #1 - Wellb	16,647.91	7,171.71	1,039.24	855.96	5.670	CC, ES
ABDN VERT BRATTAIN L #12-14JI - Wellbore #1 - Wellb	16,800.00	7,169.56	1,050.31	864.11	5.641	SF

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

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<b>Reference Site:</b>	NW NW SEC. 1 T3N R66W 6th P.M. (RIDGWAY)	<b>MD Reference:</b>	KB-EST @ 4896.00usft (Original Well Elev)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	RIDGWAY 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>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	PROPOSAL #2	<b>Offset TVD Reference:</b>	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
NW NW SEC. 1 T3N R66W 6th P.M. (RIDGWAY)						
ABDN VERT BRATTAIN L #12-16JI - Wellbore #1 - Wellb	16,785.81	7,245.25	3,852.11	3,666.92	20.800	CC
ABDN VERT BRATTAIN L #12-16JI - Wellbore #1 - Wellb	16,900.00	7,244.25	3,853.81	3,666.43	20.567	ES
ABDN VERT BRATTAIN L #12-16JI - Wellbore #1 - Wellb	17,163.69	7,241.88	3,870.60	3,678.17	20.115	SF
ABDN VERT HSR-EBAUGH #15-36 - Wellbore #1 - Well	6,460.33	6,395.95	2,622.82	2,604.85	145.960	CC, ES
ABDN VERT HSR-EBAUGH #15-36 - Wellbore #1 - Well	15,700.00	7,129.12	9,967.39	9,802.61	60.486	SF
ABDN VERT WENINGER UPRR #42-1 - Wellbore #1 - D	8,563.08	7,148.87	3,807.94	3,635.68	22.105	CC
ABDN VERT WENINGER UPRR #42-1 - Wellbore #1 - D	8,600.00	7,148.75	3,808.12	3,635.26	22.030	ES
ABDN VERT WENINGER UPRR #42-1 - Wellbore #1 - D	10,100.00	7,144.03	4,106.39	3,907.03	20.598	SF
EXIST DD GRAZNAK #39-11 - Wellbore #1 - Wellbore #	15,922.08	7,289.88	901.85	715.47	4.839	CC, ES
EXIST DD GRAZNAK #39-11 - Wellbore #1 - Wellbore #	16,000.00	7,289.93	905.21	717.34	4.818	SF
EXIST DD GRAZNAK #40-11 - Wellbore #1 - Wellbore #	14,633.94	7,258.30	903.38	742.15	5.603	CC, ES
EXIST DD GRAZNAK #40-11 - Wellbore #1 - Wellbore #	14,700.00	7,256.86	905.79	743.31	5.575	SF
EXIST DD LUDWIG #21-1 - Wellbore #1 - Wellbore #1	8,158.88	7,297.00	1,957.32	1,919.02	51.108	CC
EXIST DD LUDWIG #21-1 - Wellbore #1 - Wellbore #1	8,200.00	7,297.00	1,957.75	1,918.87	50.359	ES
EXIST DD LUDWIG #21-1 - Wellbore #1 - Wellbore #1	10,100.00	7,297.00	2,756.62	2,684.97	38.474	SF
EXIST DD LUDWIG #22-1 - Wellbore #1 - Wellbore #1	9,340.50	7,202.53	517.36	457.76	8.681	CC, ES
EXIST DD LUDWIG #22-1 - Wellbore #1 - Wellbore #1	9,400.00	7,202.25	520.77	460.11	8.585	SF
EXIST DD LUDWIG #25-1 - Wellbore #1 - Wellbore #1	9,499.01	7,213.17	1,833.61	1,770.81	29.200	CC
EXIST DD LUDWIG #25-1 - Wellbore #1 - Wellbore #1	9,500.00	7,213.16	1,833.61	1,770.80	29.191	ES
EXIST DD LUDWIG #25-1 - Wellbore #1 - Wellbore #1	10,500.00	7,202.25	2,089.01	2,007.83	25.733	SF
EXIST DD LUDWIG #27-1 - Wellbore #1 - Wellbore #1	1,355.98	1,362.00	2,627.40	2,622.96	592.038	CC, ES
EXIST DD LUDWIG #27-1 - Wellbore #1 - Wellbore #1	16,200.00	6,934.00	9,982.77	9,796.48	53.588	SF
EXIST DD LUDWIG #30-1 - Wellbore #1 - Wellbore #1	1,619.36	1,632.70	179.21	171.06	21.979	CC, ES
EXIST DD LUDWIG #30-1 - Wellbore #1 - Wellbore #1	1,900.00	1,901.15	196.13	185.99	19.341	SF
EXIST DD LUDWIG #31-1 - Wellbore #1 - Wellbore #1	1,575.04	1,561.08	314.73	309.57	61.012	CC
EXIST DD LUDWIG #31-1 - Wellbore #1 - Wellbore #1	1,600.00	1,585.02	314.77	309.50	59.759	ES
EXIST DD LUDWIG #31-1 - Wellbore #1 - Wellbore #1	8,400.00	7,195.03	832.70	789.42	19.242	SF
EXIST DD LUDWIG H #06-31D - Wellbore #1 - Wellbore	7,994.74	7,255.00	4,574.49	4,529.56	101.810	CC
EXIST DD LUDWIG H #06-31D - Wellbore #1 - Wellbore	8,100.00	7,255.44	4,575.70	4,529.38	98.781	ES
EXIST DD LUDWIG H #06-31D - Wellbore #1 - Wellbore	16,800.00	7,291.09	9,922.39	9,714.68	47.771	SF
EXIST DD ROCKY #23-1 - Wellbore #1 - Wellbore #1	10,689.80	7,260.94	1,894.07	1,805.97	21.498	CC
EXIST DD ROCKY #23-1 - Wellbore #1 - Wellbore #1	10,700.00	7,261.17	1,894.10	1,805.80	21.452	ES
EXIST DD ROCKY #23-1 - Wellbore #1 - Wellbore #1	11,500.00	7,278.97	2,060.00	1,956.68	19.937	SF
EXIST DD ROCKY MOUNTAIN #33-1 - Wellbore #1 - We	10,737.91	7,219.48	802.39	716.03	9.292	CC, ES
EXIST DD ROCKY MOUNTAIN #33-1 - Wellbore #1 - We	10,900.00	7,220.88	818.60	729.21	9.158	SF
EXIST DD ROCKY MOUNTAIN #37-1 - Wellbore #1 - We	11,865.52	7,239.34	3,307.89	3,201.95	31.223	CC
EXIST DD ROCKY MOUNTAIN #37-1 - Wellbore #1 - We	11,900.00	7,239.55	3,308.07	3,201.47	31.034	ES
EXIST DD ROCKY MOUNTAIN #37-1 - Wellbore #1 - We	13,800.00	7,251.01	3,831.98	3,689.27	26.850	SF
EXIST DD STEPHENS STATE #35-36 - Wellbore #1 - W	6,527.80	6,581.58	495.05	464.39	16.150	CC, ES
EXIST DD STEPHENS STATE #35-36 - Wellbore #1 - W	6,550.00	6,602.69	495.21	464.51	16.133	SF
EXIST DD WARDELL #33-6 - Wellbore #1 - Wellbore #1	10,597.73	7,254.59	4,566.90	4,481.88	53.715	CC
EXIST DD WARDELL #33-6 - Wellbore #1 - Wellbore #1	10,700.00	7,257.10	4,568.04	4,481.11	52.546	ES
EXIST DD WARDELL #33-6 - Wellbore #1 - Wellbore #1	15,300.00	7,490.00	6,552.25	6,377.85	37.570	SF
EXIST HZ DEJANE STATE #1C-36HZ - Wellbore #1 - W	721.97	715.99	2,937.72	2,934.88	1,033.590	CC
EXIST HZ DEJANE STATE #1C-36HZ - Wellbore #1 - W	1,300.00	1,282.69	2,939.36	2,934.04	551.752	ES
EXIST HZ DEJANE STATE #1C-36HZ - Wellbore #1 - W	16,200.00	6,986.00	9,954.74	9,756.58	50.237	SF
EXIST HZ DEJANE STATE #27N-36HZX - ORIGINAL W	4,382.38	4,393.35	2,637.64	2,607.50	87.515	CC
EXIST HZ DEJANE STATE #27N-36HZX - ORIGINAL W	4,400.00	4,404.47	2,637.68	2,607.39	87.094	ES
EXIST HZ DEJANE STATE #27N-36HZX - ORIGINAL W	11,200.00	6,730.00	4,538.22	4,430.25	42.032	SF
EXIST HZ DEJANE STATE #27N-36HZX - SIDETRACK	4,382.38	4,393.35	2,637.64	2,607.50	87.515	CC
EXIST HZ DEJANE STATE #27N-36HZX - SIDETRACK	4,400.00	4,404.47	2,637.68	2,607.39	87.094	ES
EXIST HZ DEJANE STATE #27N-36HZX - SIDETRACK	11,200.00	6,730.00	4,538.22	4,430.25	42.032	SF

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

<b>Company:</b>	PDC ENERGY	<b>Local Co-ordinate Reference:</b>	Well RIDGWAY 3N
<b>Project:</b>	WELD COUNTY, COLORADO (TRUE)	<b>TVD Reference:</b>	KB-EST @ 4896.00usft (Original Well Elev)
<b>Reference Site:</b>	NW NW SEC. 1 T3N R66W 6th P.M. (RIDGWAY)	<b>MD Reference:</b>	KB-EST @ 4896.00usft (Original Well Elev)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	RIDGWAY 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>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	PROPOSAL #2	<b>Offset TVD Reference:</b>	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
NW NW SEC. 1 T3N R66W 6th P.M. (RIDGWAY)						
EXIST HZ DEJANE STATE 2N-36HZ - Wellbore #1 - We	7,192.73	7,739.00	1,954.29	1,912.37	46.626	CC
EXIST HZ DEJANE STATE 2N-36HZ - Wellbore #1 - We	7,250.00	7,699.61	1,954.63	1,912.16	46.026	ES
EXIST HZ DEJANE STATE 2N-36HZ - Wellbore #1 - We	9,300.00	7,080.00	2,628.34	2,555.01	35.843	SF
EXIST HZ LUDWIG #13-1HZ - Wellbore #1 - Wellbore #1	11,700.00	7,120.59	256.49	166.19	2.840	SF
EXIST HZ LUDWIG #13-1HZ - Wellbore #1 - Wellbore #1	11,788.70	7,080.85	244.54	159.05	2.860	CC, ES
EXIST HZ RISSLER STATE #29C-36HZX - ORIGINAL W	6,450.08	6,401.71	1,345.03	1,316.20	46.668	CC, ES
EXIST HZ RISSLER STATE #29C-36HZX - ORIGINAL W	6,500.00	6,447.35	1,346.12	1,317.18	46.516	SF
EXIST HZ RISSLER STATE #29C-36HZX - SIDETRACK	7,247.52	7,337.82	722.31	681.36	17.637	CC
EXIST HZ RISSLER STATE #29C-36HZX - SIDETRACK	7,250.00	7,337.32	722.32	681.35	17.633	ES
EXIST HZ RISSLER STATE #29C-36HZX - SIDETRACK	7,300.00	7,326.68	724.26	683.05	17.575	SF
EXIST HZ RISSLER STATE #30N-36HZ - Wellbore #1 -	4,862.00	5,068.63	333.45	294.16	8.487	CC
EXIST HZ RISSLER STATE #30N-36HZ - Wellbore #1 -	4,900.00	5,103.88	333.68	294.14	8.440	ES
EXIST HZ RISSLER STATE #30N-36HZ - Wellbore #1 -	4,954.61	5,152.35	334.94	295.15	8.417	SF
EXIST HZ RISSLER STATE #3N-36HZ - Wellbore #1 - W	6,947.04	7,786.27	1,210.76	1,175.32	34.162	CC, ES
EXIST HZ RISSLER STATE #3N-36HZ - Wellbore #1 - W	7,900.00	7,022.41	1,476.62	1,431.62	32.815	SF
EXIST HZ RISSLER STATE #4N-36HZ - Wellbore #1 - W	7,125.45	7,388.26	35.06	-6.06	0.853	Level 1, CC, ES, SF
EXIST VERT BELL #L12-22 - Wellbore #1 - Design #1	14,539.73	7,183.15	3,168.16	2,885.63	11.214	CC
EXIST VERT BELL #L12-22 - Wellbore #1 - Design #1	14,600.00	7,182.96	3,168.74	2,885.06	11.170	ES
EXIST VERT BELL #L12-22 - Wellbore #1 - Design #1	15,200.00	7,181.09	3,236.23	2,941.13	10.967	SF
EXIST VERT BELL #L12-3 - Wellbore #1 - Wellbore #1	12,447.09	7,167.50	1,115.72	1,013.13	10.876	CC, ES
EXIST VERT BELL #L12-3 - Wellbore #1 - Wellbore #1	12,700.00	7,170.79	1,144.02	1,036.64	10.654	SF
EXIST VERT BELL #L12-4 - Wellbore #1 - Design #1	12,646.56	7,139.05	329.34	82.24	1.333	Level 3, CC, ES, SF
EXIST VERT BELL #L12-5 - Wellbore #1 - Design #1	13,994.54	7,143.85	275.93	3.17	1.012	Level 2, CC
EXIST VERT BELL #L12-5 - Wellbore #1 - Design #1	14,000.00	7,143.83	275.99	3.12	1.011	Level 2, ES, SF
EXIST VERT BRATTAIN # L12-1J - Wellbore #1 - Design	13,304.68	7,181.00	3,150.68	2,891.67	12.165	CC
EXIST VERT BRATTAIN # L12-1J - Wellbore #1 - Design	13,400.00	7,180.70	3,152.12	2,891.31	12.086	ES
EXIST VERT BRATTAIN # L12-1J - Wellbore #1 - Design	14,000.00	7,178.83	3,226.49	2,954.28	11.853	SF
EXIST VERT BRATTAIN 1 - Wellbore #1 - Design #1	16,326.86	7,164.59	135.84	-180.60	0.429	Level 1, CC, ES, SF
EXIST VERT BRATTAIN L #12-02JI - Wellbore #1 - Desi	12,508.90	7,209.48	2,211.24	1,967.04	9.055	CC, ES
EXIST VERT BRATTAIN L #12-02JI - Wellbore #1 - Desi	12,900.00	7,208.26	2,245.55	1,993.96	8.925	SF
EXIST VERT BRATTAIN L #12-10JI - Wellbore #1 - Desi	14,801.16	7,192.33	2,645.66	2,358.05	9.199	CC
EXIST VERT BRATTAIN L #12-10JI - Wellbore #1 - Desi	14,900.00	7,192.03	2,647.50	2,358.01	9.145	ES
EXIST VERT BRATTAIN L #12-10JI - Wellbore #1 - Desi	15,300.00	7,190.78	2,692.27	2,395.17	9.062	SF
EXIST VERT BRATTAIN L #12-12JI - Wellbore #1 - Desi	15,182.04	7,163.15	367.42	71.84	1.243	Level 2, CC, ES, SF
EXIST VERT BRATTAIN L #12-15D - Wellbore #1 - Desi	16,811.53	7,203.09	2,276.47	1,950.39	6.981	CC, ES
EXIST VERT BRATTAIN L #12-15D - Wellbore #1 - Desi	17,100.00	7,202.20	2,294.68	1,963.09	6.920	SF
EXIST VERT BRATTAIN L #12-1JI - Wellbore #1 - Desig	12,446.20	7,189.68	3,950.49	3,707.68	16.270	CC
EXIST VERT BRATTAIN L #12-1JI - Wellbore #1 - Desig	12,500.00	7,189.51	3,950.85	3,707.03	16.204	ES
EXIST VERT BRATTAIN L #12-1JI - Wellbore #1 - Desig	13,700.00	7,185.76	4,144.67	3,878.10	15.548	SF
EXIST VERT BRATTAIN L #12-3JI - Wellbore #1 - Desig	12,553.97	7,159.34	873.99	628.45	3.559	CC, ES
EXIST VERT BRATTAIN L #12-3JI - Wellbore #1 - Desig	12,600.00	7,159.20	875.21	628.79	3.552	SF
EXIST VERT BRATTAIN L #12-4JI - Wellbore #1 - Desig	12,522.57	7,150.44	398.91	154.04	1.629	CC, ES, SF
EXIST VERT BRATTAIN L #12-5JI - Wellbore #1 - Desig	14,038.21	7,199.71	323.47	50.33	1.184	Level 2, CC, ES, SF
EXIST VERT BRATTAIN L #12-6JI - Wellbore #1 - Desig	14,467.91	7,174.37	1,215.43	934.35	4.324	CC
EXIST VERT BRATTAIN L #12-6JI - Wellbore #1 - Desig	14,500.00	7,174.27	1,215.85	934.17	4.316	ES
EXIST VERT BRATTAIN L #12-6JI - Wellbore #1 - Desig	14,600.00	7,173.96	1,222.58	939.00	4.311	SF
EXIST VERT BRATTAIN L #12-7JI - Wellbore #1 - Desig	13,732.65	7,175.66	2,010.95	1,743.86	7.529	CC
EXIST VERT BRATTAIN L #12-7JI - Wellbore #1 - Desig	13,800.00	7,175.45	2,012.08	1,743.71	7.497	ES
EXIST VERT BRATTAIN L #12-7JI - Wellbore #1 - Desig	14,000.00	7,174.83	2,028.64	1,756.48	7.454	SF
EXIST VERT BRATTAIN L #12-8JI - Wellbore #1 - Desig	14,169.22	7,204.30	3,824.85	3,549.16	13.874	CC
EXIST VERT BRATTAIN L #12-8JI - Wellbore #1 - Desig	14,200.00	7,204.21	3,824.97	3,548.70	13.845	ES
EXIST VERT BRATTAIN L #12-8JI - Wellbore #1 - Desig	15,200.00	7,201.09	3,961.30	3,666.00	13.415	SF

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

<b>Company:</b>	PDC ENERGY	<b>Local Co-ordinate Reference:</b>	Well RIDGWAY 3N
<b>Project:</b>	WELD COUNTY, COLORADO (TRUE)	<b>TVD Reference:</b>	KB-EST @ 4896.00usft (Original Well Elev)
<b>Reference Site:</b>	NW NW SEC. 1 T3N R66W 6th P.M. (RIDGWAY)	<b>MD Reference:</b>	KB-EST @ 4896.00usft (Original Well Elev)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	RIDGWAY 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>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	PROPOSAL #2	<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
NW NW SEC. 1 T3N R66W 6th P.M. (RIDGWAY)						
EXIST VERT HSR-BAINES #5-1 - Wellbore #1 - Wellbor	8,716.24	7,096.70	193.01	159.33	5.732	CC, ES, SF
EXIST VERT HSR-BAYER #12-1 - Wellbore #1 - Wellbor	10,119.31	6,775.00	398.73	354.49	9.013	CC, ES
EXIST VERT HSR-BAYER #12-1 - Wellbore #1 - Wellbor	10,200.00	6,775.00	406.81	361.61	8.999	SF
EXIST VERT HSR-BROWN #14-1A - Wellbore #1 - Desi	11,457.93	7,141.77	1,181.01	956.34	5.257	CC
EXIST VERT HSR-BROWN #14-1A - Wellbore #1 - Desi	11,500.00	7,141.64	1,181.76	956.30	5.242	ES
EXIST VERT HSR-BROWN #14-1A - Wellbore #1 - Desi	11,600.00	7,141.33	1,189.52	962.19	5.232	SF
EXIST VERT HSR-EASLEY #15-1A - Wellbore #1 - Desi	11,347.31	7,166.12	2,548.17	2,325.34	11.435	CC
EXIST VERT HSR-EASLEY #15-1A - Wellbore #1 - Desi	11,400.00	7,165.95	2,548.71	2,324.89	11.387	ES
EXIST VERT HSR-EASLEY #15-1A - Wellbore #1 - Desi	11,900.00	7,164.39	2,607.41	2,374.19	11.180	SF
EXIST VERT HSR-HAYES #6-1A - Wellbore #1 - Design	8,904.39	7,124.80	1,332.47	1,154.75	7.498	CC, ES
EXIST VERT HSR-HAYES #6-1A - Wellbore #1 - Design	9,100.00	7,124.18	1,346.75	1,165.65	7.436	SF
EXIST VERT HSR-IRWIN #4-1A - Wellbore #1 - Wellbore	7,598.60	7,081.86	109.32	90.16	5.705	CC
EXIST VERT HSR-IRWIN #4-1A - Wellbore #1 - Wellbore	7,600.00	7,081.86	109.33	90.16	5.702	ES, SF
EXIST VERT HSR-JACKSON #10-1 - Wellbore #1 - Des	10,163.49	7,153.83	2,661.78	2,461.16	13.268	CC
EXIST VERT HSR-JACKSON #10-1 - Wellbore #1 - Des	10,200.00	7,153.72	2,662.03	2,460.74	13.224	ES
EXIST VERT HSR-JACKSON #10-1 - Wellbore #1 - Des	10,800.00	7,151.84	2,736.83	2,524.40	12.884	SF
EXIST VERT HSR-KATZEN #16-1A - Wellbore #1 - Well	11,418.05	7,100.00	3,954.24	3,871.42	47.748	CC
EXIST VERT HSR-KATZEN #16-1A - Wellbore #1 - Well	11,500.00	7,100.00	3,955.08	3,870.73	46.884	ES
EXIST VERT HSR-KATZEN #16-1A - Wellbore #1 - Well	15,000.00	7,065.48	5,335.22	5,184.34	35.361	SF
EXIST VERT HSR-KLETTER #3-1A - Wellbore #1 - Desi	7,441.50	7,092.67	1,190.92	1,032.32	7.509	CC
EXIST VERT HSR-KLETTER #3-1A - Wellbore #1 - Desi	7,450.00	7,094.13	1,190.95	1,032.28	7.506	ES
EXIST VERT HSR-KLETTER #3-1A - Wellbore #1 - Desi	7,500.00	7,100.67	1,192.33	1,033.27	7.496	SF
EXIST VERT HSR-PEASLEE #11-1 - Wellbore #1 - Desi	10,749.94	7,129.99	466.80	255.52	2.209	CC, ES, SF
EXIST VERT HSR-PHILLIPS #13-1A - Wellbore #1 - Des	11,572.29	7,137.41	42.69	-184.08	0.188	Level 1, CC, ES, SF
EXIST VERT HSR-PHIPPS #10-1 - Wellbore #1 - Design	10,605.20	7,165.45	3,208.16	2,999.23	15.355	CC
EXIST VERT HSR-PHIPPS #10-1 - Wellbore #1 - Design	10,700.00	7,165.15	3,209.56	2,998.87	15.233	ES
EXIST VERT HSR-PHIPPS #10-1 - Wellbore #1 - Design	11,500.00	7,162.64	3,330.60	3,104.94	14.759	SF
EXIST VERT HSR-SHAPIRO #11-1A - Wellbore #1 - Des	10,084.16	7,128.08	987.14	788.23	4.963	CC
EXIST VERT HSR-SHAPIRO #11-1A - Wellbore #1 - Des	10,100.00	7,128.03	987.26	788.07	4.956	ES
EXIST VERT HSR-SHAPIRO #11-1A - Wellbore #1 - Des	10,200.00	7,127.72	993.91	792.88	4.944	SF
EXIST VERT HSR-SMOLOWE #9-1A - Wellbore #1 - De	9,859.58	7,152.79	3,968.60	3,773.57	20.349	CC
EXIST VERT HSR-SMOLOWE #9-1A - Wellbore #1 - De	9,900.00	7,152.66	3,968.81	3,773.04	20.273	ES
EXIST VERT HSR-SMOLOWE #9-1A - Wellbore #1 - De	11,400.00	7,147.95	4,257.06	4,033.42	19.036	SF
EXIST VERT LUDWIG #17-1 - Wellbore #1 - Design #1	7,909.43	7,125.93	3,307.42	3,144.82	20.340	CC, ES
EXIST VERT LUDWIG #17-1 - Wellbore #1 - Design #1	9,100.00	7,122.18	3,515.17	3,334.09	19.412	SF
EXIST VERT LUDWIG #18-1 - Wellbore #1 - Design #1	8,328.59	7,114.61	579.29	411.06	3.443	CC, ES, SF
EXIST VERT LUDWIG #24-1 - Wellbore #1 - Design #1	9,293.77	7,151.57	3,268.91	3,084.11	17.689	CC
EXIST VERT LUDWIG #24-1 - Wellbore #1 - Design #1	9,400.00	7,151.23	3,270.63	3,083.94	17.519	ES
EXIST VERT LUDWIG #24-1 - Wellbore #1 - Design #1	10,400.00	7,148.09	3,451.01	3,246.07	16.839	SF
EXIST VERT LUDWIG UPRR #41-1A - Wellbore #1 - De	7,210.85	7,027.26	3,981.14	3,824.53	25.421	CC
EXIST VERT LUDWIG UPRR #41-1A - Wellbore #1 - De	7,250.00	7,045.09	3,981.30	3,824.31	25.360	ES
EXIST VERT LUDWIG UPRR #41-1A - Wellbore #1 - De	9,100.00	7,110.18	4,400.32	4,219.35	24.316	SF
EXIST VERT LUDWIG UPRR 32-1 #2A - Wellbore #1 - D	8,526.48	7,145.99	2,571.25	2,399.61	14.980	CC
EXIST VERT LUDWIG UPRR 32-1 #2A - Wellbore #1 - D	8,600.00	7,145.75	2,572.30	2,399.47	14.884	ES
EXIST VERT LUDWIG UPRR 32-1 #2A - Wellbore #1 - D	9,200.00	7,143.86	2,658.00	2,474.94	14.520	SF
EXIST VERT WENINGER UPRR 31-1 #1A - Wellbore #1	7,394.15	7,093.75	2,491.88	2,333.57	15.740	CC
EXIST VERT WENINGER UPRR 31-1 #1A - Wellbore #1	7,400.00	7,095.14	2,491.89	2,333.53	15.735	ES
EXIST VERT WENINGER UPRR 31-1 #1A - Wellbore #1	7,600.00	7,114.91	2,500.23	2,340.33	15.637	SF
RIDGWAY 1N - ORIGINAL WELLBORE - PROPOSAL #	1,600.00	1,599.00	30.16	23.25	4.362	CC, ES
RIDGWAY 1N - ORIGINAL WELLBORE - PROPOSAL #	16,900.00	16,824.48	659.18	293.42	1.802	SF
RIDGWAY 2N - ORIGINAL WELLBORE - PROPOSAL #	1,700.00	1,699.00	15.10	7.74	2.051	CC
RIDGWAY 2N - ORIGINAL WELLBORE - PROPOSAL #	17,163.69	17,271.17	332.36	-33.18	0.909	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>	PDC ENERGY	<b>Local Co-ordinate Reference:</b>	Well RIDGWAY 3N
<b>Project:</b>	WELD COUNTY, COLORADO (TRUE)	<b>TVD Reference:</b>	KB-EST @ 4896.00usft (Original Well Elev)
<b>Reference Site:</b>	NW NW SEC. 1 T3N R66W 6th P.M. (RIDGWAY)	<b>MD Reference:</b>	KB-EST @ 4896.00usft (Original Well Elev)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	RIDGWAY 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>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	PROPOSAL #2	<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						
NW NW SEC. 1 T3N R66W 6th P.M. (RIDGWAY)						
RIDGWAY 4N - ORIGINAL WELLBORE - PROPOSAL #	1,800.00	1,800.00	15.06	7.24	1.927 CC	
RIDGWAY 4N - ORIGINAL WELLBORE - PROPOSAL #	17,163.69	17,296.88	356.53	-13.81	0.963 Level 1, ES, SF	
RIDGWAY 5N - ORIGINAL WELLBORE - PROPOSAL #	1,700.00	1,700.00	29.89	22.53	4.059 CC, ES	
RIDGWAY 5N - ORIGINAL WELLBORE - PROPOSAL #	17,163.69	17,243.24	659.93	279.13	1.733 SF	
RIDGWAY 6N - ORIGINAL WELLBORE - PROPOSAL #	1,600.00	1,600.00	44.73	37.81	6.467 CC, ES	
RIDGWAY 6N - ORIGINAL WELLBORE - PROPOSAL #	17,163.69	17,395.98	984.06	606.57	2.607 SF	

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference														
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
				Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
0.00	0.00	19.00	19.00	0.00	0.02	86.56	161.54	2,687.59	2,692.44					
100.00	100.00	119.00	119.00	0.09	0.13	86.56	161.54	2,687.59	2,692.44	2,692.23	0.22	N/A		
200.00	200.00	219.00	219.00	0.31	0.35	86.56	161.54	2,687.59	2,692.44	2,691.78	0.67	4,046.912		
300.00	300.00	319.00	319.00	0.54	0.58	86.56	161.54	2,687.59	2,692.44	2,691.33	1.11	2,415.093		
400.00	400.00	419.00	419.00	0.76	0.80	86.56	161.54	2,687.59	2,692.44	2,690.88	1.56	1,721.101		
500.00	500.00	519.00	519.00	0.99	1.03	86.56	161.54	2,687.59	2,692.44	2,690.43	2.01	1,336.927		
600.00	600.00	619.00	619.00	1.21	1.25	86.56	161.54	2,687.59	2,692.44	2,689.98	2.46	1,092.962		
658.85	658.85	677.85	677.85	1.34	1.39	86.56	161.54	2,687.59	2,692.44	2,689.71	2.73	986.974 CC		
700.00	700.00	700.00	700.00	1.44	1.44	86.56	161.54	2,687.59	2,692.51	2,689.64	2.87	938.070 ES		
800.00	800.00	762.10	762.10	1.66	1.57	86.56	161.73	2,688.24	2,693.70	2,690.47	3.23	834.235		
900.00	900.00	800.00	799.98	1.88	1.65	86.55	162.04	2,689.26	2,696.77	2,693.23	3.54	762.775		
1,000.00	1,000.00	866.32	866.22	2.11	1.79	86.54	162.91	2,692.22	2,701.47	2,697.57	3.90	692.391		
1,100.00	1,100.00	900.00	899.84	2.33	1.87	86.53	163.52	2,694.29	2,708.13	2,703.93	4.20	645.057		
1,200.00	1,200.00	970.09	969.69	2.56	2.03	86.50	165.14	2,699.80	2,716.31	2,711.73	4.58	593.487		
1,300.00	1,300.00	1,000.00	999.45	2.78	2.10	86.49	165.98	2,702.65	2,726.53	2,721.66	4.87	560.172		
1,400.00	1,400.00	1,073.16	1,072.11	3.01	2.28	86.45	168.40	2,710.87	2,738.16	2,732.90	5.26	520.820		
1,500.00	1,500.00	1,124.35	1,122.80	3.23	2.42	86.41	170.41	2,717.68	2,751.69	2,746.10	5.60	491.492		
1,600.00	1,600.00	1,175.27	1,173.09	3.46	2.57	86.38	172.66	2,725.32	2,766.95	2,761.01	5.94	465.727		
1,700.00	1,700.00	1,225.89	1,222.94	3.68	2.73	86.33	175.14	2,733.76	2,783.92	2,777.64	6.28	442.968		
1,800.00	1,800.00	1,300.00	1,295.62	3.91	2.97	86.27	179.23	2,747.64	2,802.78	2,796.10	6.69	419.242		
1,900.00	1,900.00	1,326.10	1,321.13	4.13	3.07	86.24	180.80	2,752.96	2,822.93	2,815.95	6.97	404.755		
2,000.00	1,999.98	1,400.00	1,393.06	4.36	3.36	76.85	185.59	2,769.22	2,844.76	2,837.38	7.38	385.223		
2,100.00	2,099.84	1,425.09	1,417.37	4.58	3.47	76.41	187.33	2,775.14	2,867.06	2,859.39	7.67	373.827		
2,200.00	2,199.45	1,474.13	1,464.74	4.81	3.69	75.98	190.91	2,787.31	2,890.40	2,882.38	8.02	360.484		
2,300.00	2,298.70	1,500.00	1,489.64	5.04	3.81	75.52	192.90	2,794.05	2,914.72	2,906.41	8.31	350.613		
2,400.00	2,397.47	1,571.10	1,557.73	5.28	4.18	75.15	198.67	2,813.66	2,939.46	2,930.71	8.75	336.024		
2,500.00	2,495.62	1,600.00	1,585.27	5.56	4.33	74.70	201.16	2,822.09	2,965.24	2,956.15	9.09	326.298		
2,600.00	2,593.44	1,666.34	1,648.12	5.85	4.71	74.88	207.15	2,842.46	2,991.94	2,982.38	9.57	312.722		
2,700.00	2,691.25	1,700.00	1,678.82	6.16	4.91	74.97	210.35	2,853.32	3,020.41	3,010.44	9.97	302.938		
2,800.00	2,789.07	1,763.83	1,739.55	6.49	5.32	75.13	216.71	2,874.90	3,050.33	3,039.84	10.48	290.940		
2,900.00	2,886.88	1,850.35	1,820.17	6.83	5.92	75.34	225.58	2,905.02	3,081.20	3,070.13	11.08	278.150		
3,000.00	2,984.70	1,944.73	1,908.12	7.18	6.58	75.57	235.25	2,937.87	3,112.13	3,100.43	11.71	265.818		
3,100.00	3,082.51	2,039.10	1,996.06	7.55	7.25	75.79	244.93	2,970.72	3,143.11	3,130.75	12.35	254.400		
3,200.00	3,180.33	2,133.48	2,084.00	7.92	7.93	76.01	254.60	3,003.57	3,174.13	3,161.11	13.02	243.843		
3,300.00	3,278.14	2,227.85	2,171.94	8.30	8.61	76.22	264.28	3,036.42	3,205.18	3,191.49	13.69	234.087		
3,400.00	3,375.96	2,322.23	2,259.89	8.68	9.31	76.43	273.95	3,069.27	3,236.28	3,221.90	14.38	225.070		

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