



Project: WELD COUNTY, COLORADO
Site: SW SE SEC. 32 T4N R65W 6th P.M. (PAONIA)
Well: PAONIA 2N
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL #1

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: 2434ft FEL & 730ft FSL of Sec 32
1800.00	1800.00	0.00	0.00	0.00	0.00	0.00	0.00	START NUDGE (2°/100ft BUR)
2751.83	2770.27	19.41	236.03	-90.93	-134.98	-76.03	162.75	EOB TO 19.41° INC
5415.97	5594.88	19.41	236.03	-615.26	-913.31	-514.44	1101.22	END OF TANGENT
6367.80	6565.15	0.00	0.00	-706.19	-1048.29	-590.46	1263.97	EOD TO VERTICAL
6467.80	6665.15	0.00	0.00	-706.19	-1048.29	-590.46	1263.97	KOP (8°/100ft BUR)
7184.00	7790.16	90.00	0.09	10.01	-1047.17	121.54	1980.17	EP: 1810ft FWL & 737ft FSL of Sec 32
7183.96	16500.00	90.00	0.09	8719.84	-1033.58	8780.33	10690.01	END OF TANGENT
7183.96	16647.02	90.00	4.50	8866.71	-1027.70	8925.74	10837.03	EOT TO 4.5° AZ
7183.96	16657.02	90.00	4.50	8876.68	-1026.92	8935.57	10847.03	END OF TANGENT
7183.96	16804.02	90.00	0.09	9023.52	-1021.03	9080.95	10994.03	EOT TO 0.9° AZ
7183.96	16972.02	90.00	355.05	9191.32	-1028.15	9248.55	11162.03	EOT TO 355.05° AZ
7183.96	16982.02	90.00	355.05	9201.28	-1029.01	9258.54	11172.03	END OF TANGENT
7183.96	17184.66	90.00	1.13	9403.71	-1035.77	9460.54	11374.67	EOT TO 1.13° AZ
7183.95	17405.08	90.00	1.13	9624.09	-1031.42	9679.21	11595.10	BHL: 1810ft FWL & 200ft FNL of Sec 29

PROPOSED LOCAL COORDINATES:

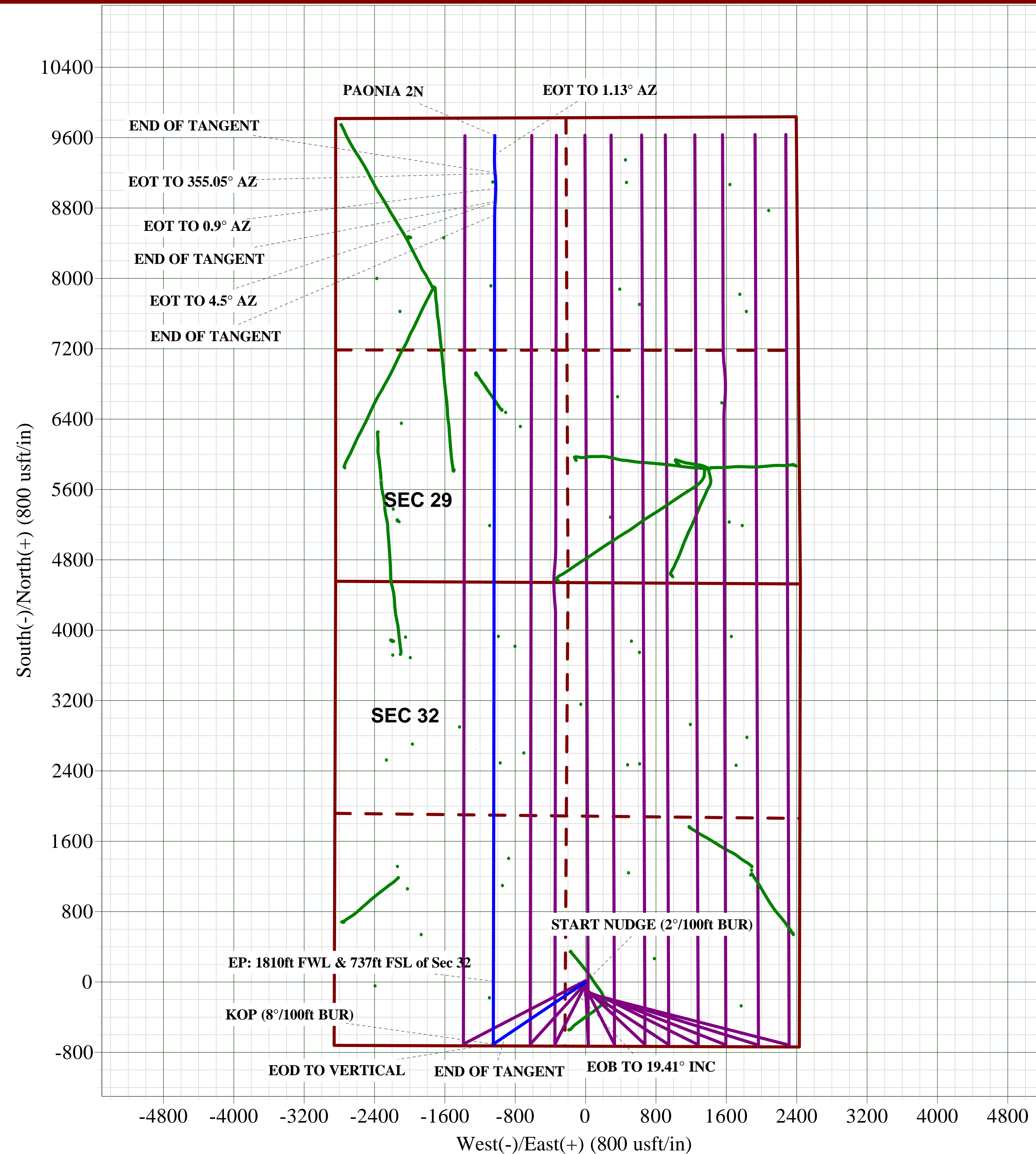
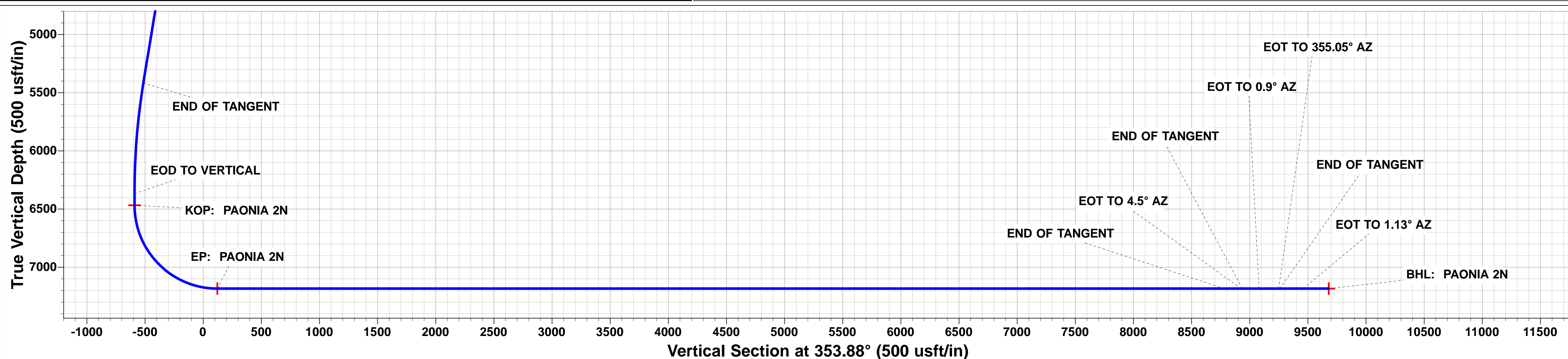
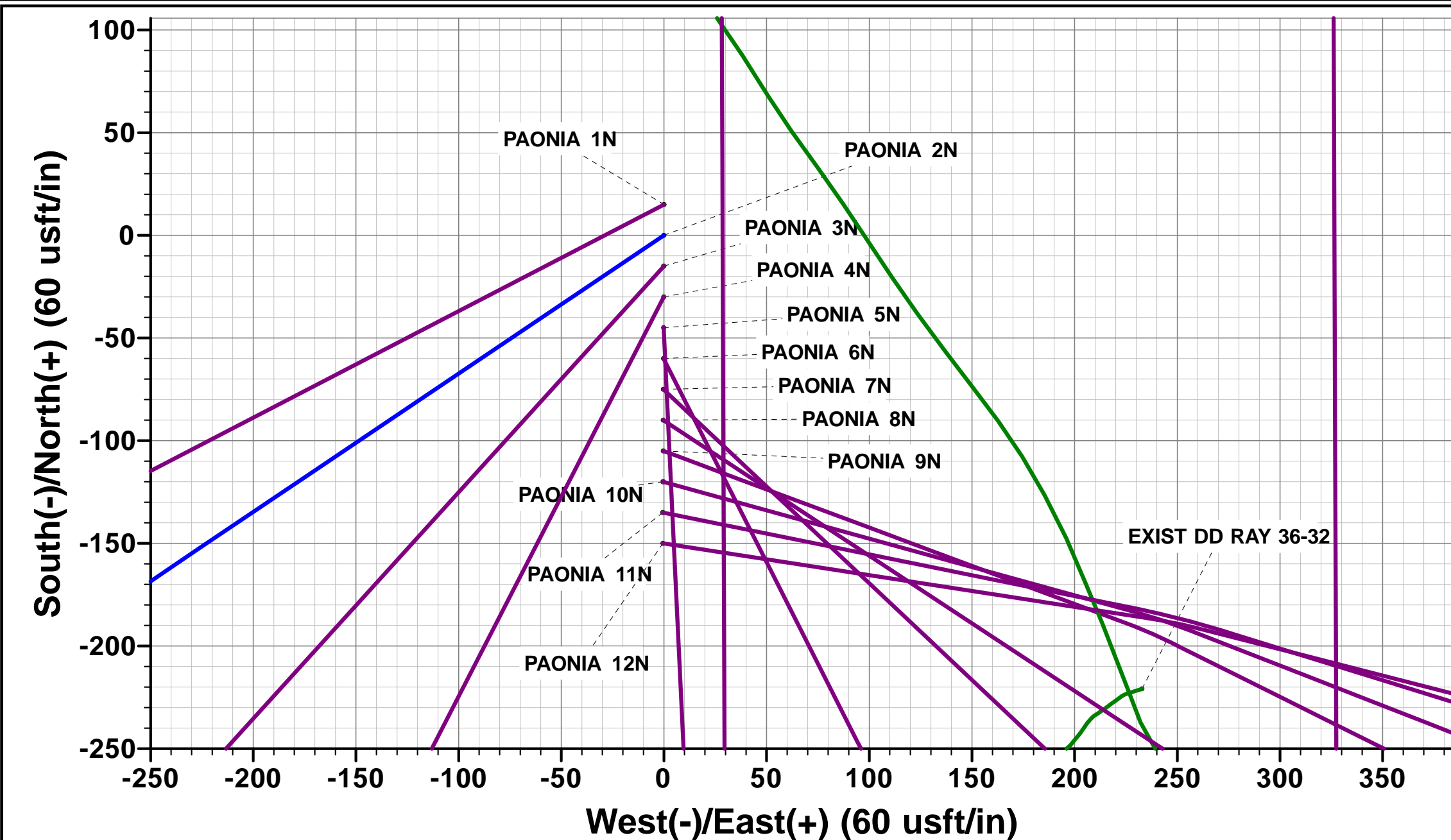
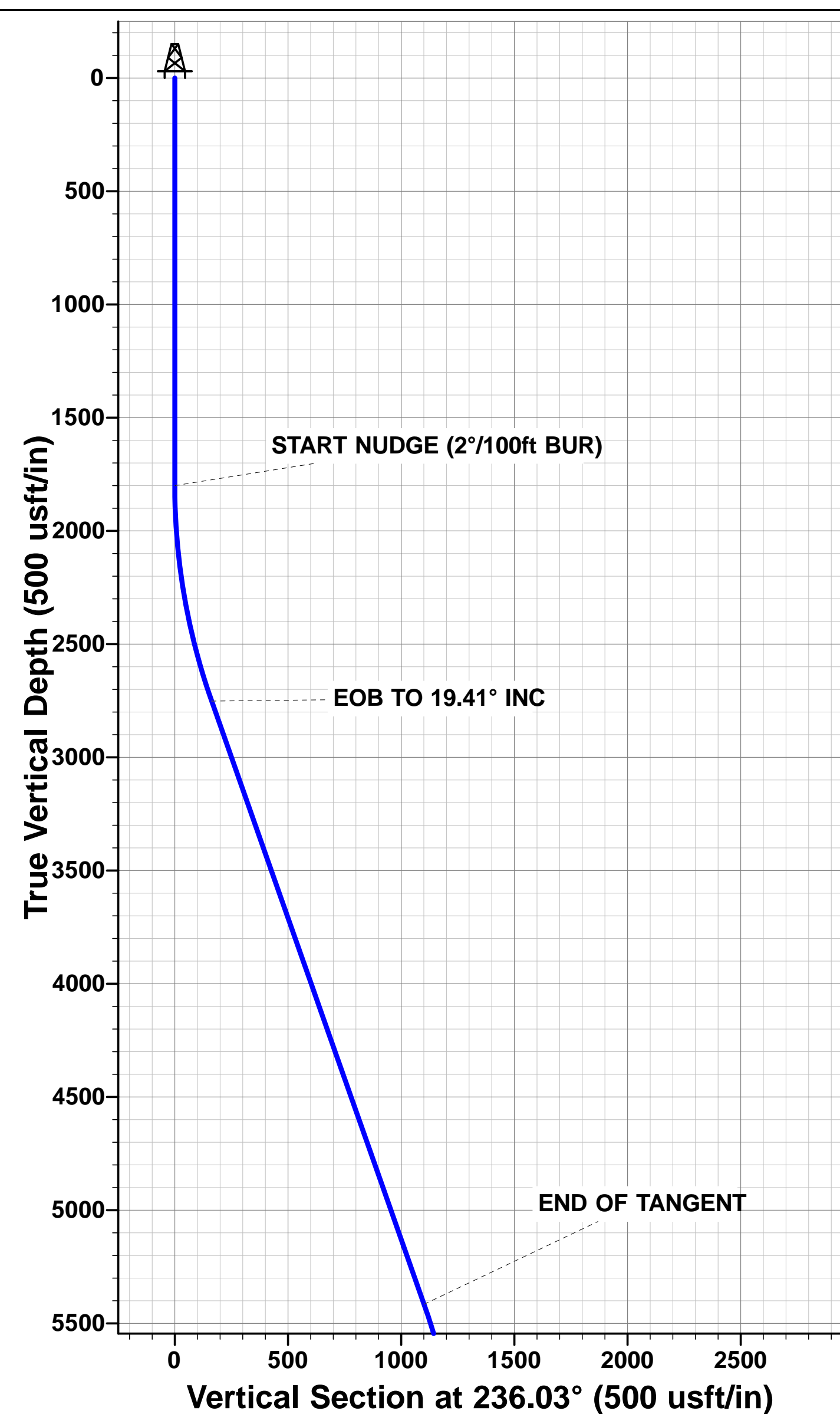
SHL: 2434ft FEL & 730ft FSL of Sec 32

EP: 1810ft FWL & 737ft FSL of Sec 32

BHL: 1810ft FWL & 200ft FNL of Sec 29

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP: PAONIA 2N	6467.80	-706.19	-1048.29	40.261738	-104.690180
EP: PAONIA 2N	7184.00	10.01	-1047.17	40.263704	-104.690176
BHL: PAONIA 2N	7184.00	9624.09	-1031.42	40.290094	-104.690121



PDC ENERGY

WELD COUNTY, COLORADO

SW SE SEC. 32 T4N R65W 6th P.M. (PAONIA)

PAONIA 2N

ORIGINAL WELLBORE

PROPOSAL #1

Anticollision Report

13 December, 2017



Anticollision Report



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well PAONIA 2N
Project:	WELD COUNTY, COLORADO	TVD Reference:	WELL @ 4919.00usft (Original Well Elev)
Reference Site:	SW SE SEC. 32 T4N R65W 6th P.M. (PAONIA)	MD Reference:	WELL @ 4919.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	PAONIA 2N	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	ORIGINAL WELLBORE	Database:	EDM 5000.1 Single User Db
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:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date	13/12/2017		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	17,404.91	PROPOSAL #1 (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
SE SE SEC. 32 T4N R65W 6th P.M. (CRAWFORD)						
EXIST DD RAY 39-32 - Wellbore #1 - Wellbore #1	100.00	66.72	2,235.33	2,235.17	10,000.000	CC, ES
EXIST DD RAY 39-32 - Wellbore #1 - Wellbore #1	14,800.00	7,287.17	7,303.18	7,145.94	46.447	SF
EXIST DD SPAYD 39-29 - Wellbore #1 - Wellbore #1	13,667.33	7,191.00	3,407.28	3,274.49	25.659	CC
EXIST DD SPAYD 39-29 - Wellbore #1 - Wellbore #1	13,700.00	7,191.00	3,407.44	3,274.03	25.541	ES
EXIST DD SPAYD 39-29 - Wellbore #1 - Wellbore #1	15,300.00	7,191.00	3,778.25	3,614.43	23.063	SF
EXIST VERT HSR-KOCH 16-32 - Wellbore #1 - Design #	1,800.00	1,772.00	1,789.47	1,781.71	230.667	CC, ES
EXIST VERT HSR-KOCH 16-32 - Wellbore #1 - Design #	16,500.00	7,155.96	9,415.57	9,228.93	50.450	SF
SW SE SEC. 32 T4N R65W 6th P.M. (PAONIA)						
ABDN VERT BOHLENDER 2 - Wellbore #1 - Design #1	15,606.07	4,856.00	3,632.72	3,500.82	27.542	CC
ABDN VERT BOHLENDER 2 - Wellbore #1 - Design #1	15,700.00	4,856.00	3,633.93	3,500.59	27.253	ES
ABDN VERT BOHLENDER 2 - Wellbore #1 - Design #1	16,800.00	4,856.00	3,814.99	3,665.38	25.500	SF
ABDN VERT BOHLENDER 31-29 #3 - Wellbore #1 - Des	16,844.36	4,736.00	2,863.94	2,748.18	24.740	CC, ES
ABDN VERT BOHLENDER 31-29 #3 - Wellbore #1 - Des	17,405.08	4,736.00	2,917.76	2,795.35	23.835	SF
ABDN VERT HAMBERT R G 32-4 - Wellbore #1 - Design	11,702.10	7,183.98	1,005.37	909.62	10.500	CC, ES
ABDN VERT HAMBERT R G 32-4 - Wellbore #1 - Design	11,900.00	7,183.98	1,024.66	925.21	10.304	SF
ABDN VERT HSR-MAYA 4-29 - Wellbore #1 - Wellbore #	16,230.76	7,000.00	996.09	830.08	6.000	CC, ES
ABDN VERT HSR-MAYA 4-29 - Wellbore #1 - Wellbore #	16,300.00	7,000.00	998.49	831.18	5.968	SF
ABDN VERT MUSICK MCCLINTOCK 3 - Wellbore #1 - W	11,653.89	4,521.19	2,898.33	2,846.61	56.040	CC
ABDN VERT MUSICK MCCLINTOCK 3 - Wellbore #1 - W	11,700.00	4,521.19	2,898.69	2,846.52	55.560	ES
ABDN VERT MUSICK MCCLINTOCK 3 - Wellbore #1 - W	13,300.00	4,521.19	3,333.16	3,265.13	48.995	SF
ABDN VERT NGL C3 - Wellbore #1 - Design #1	11,497.88	7,183.98	1,151.01	1,059.07	12.519	CC
ABDN VERT NGL C3 - Wellbore #1 - Design #1	11,500.00	7,183.98	1,151.01	1,059.03	12.514	ES
ABDN VERT NGL C3 - Wellbore #1 - Design #1	11,800.00	7,183.98	1,190.00	1,092.42	12.196	SF
ABDN VERT UPRR 21 PAN AM A#1 - Wellbore #1 - Wel	13,010.82	7,100.00	1,083.10	976.96	10.204	CC, ES
ABDN VERT UPRR 21 PAN AM A#1 - Wellbore #1 - Wel	13,200.00	7,100.00	1,099.50	989.79	10.022	SF
EXIST DD NGL C3A - Wellbore #1 - Wellbore #1	13,599.67	7,496.57	1,298.79	1,143.25	8.350	CC
EXIST DD NGL C3A - Wellbore #1 - Wellbore #1	13,600.00	7,496.74	1,298.79	1,143.24	8.350	ES
EXIST DD NGL C3A - Wellbore #1 - Wellbore #1	13,800.00	7,579.15	1,311.89	1,152.12	8.212	SF
EXIST DD RAY 23-32 - Wellbore #1 - Wellbore #1	2,482.82	2,530.52	243.65	233.09	23.060	CC
EXIST DD RAY 23-32 - Wellbore #1 - Wellbore #1	2,500.00	2,547.16	243.74	233.07	22.852	ES
EXIST DD RAY 23-32 - Wellbore #1 - Wellbore #1	2,700.00	2,737.39	258.48	246.65	21.852	SF
EXIST DD RAY 24-32 - Wellbore #1 - Wellbore #1	9,541.20	7,274.73	2,224.41	2,166.79	38.606	CC
EXIST DD RAY 24-32 - Wellbore #1 - Wellbore #1	9,600.00	7,274.33	2,225.19	2,166.56	37.958	ES
EXIST DD RAY 24-32 - Wellbore #1 - Wellbore #1	11,200.00	7,263.79	2,774.79	2,687.35	31.734	SF
EXIST DD RAY 36-32 - Wellbore #1 - Wellbore #1	1,712.67	1,707.93	314.00	307.43	47.800	CC

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

Company:	PDC ENERGY	Local Co-ordinate Reference:	Well PAONIA 2N
Project:	WELD COUNTY, COLORADO	TVD Reference:	WELL @ 4919.00usft (Original Well Elev)
Reference Site:	SW SE SEC. 32 T4N R65W 6th P.M. (PAONIA)	MD Reference:	WELL @ 4919.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	PAONIA 2N	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	ORIGINAL WELLBORE	Database:	EDM 5000.1 Single User Db
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
SW SE SEC. 32 T4N R65W 6th P.M. (PAONIA)						
EXIST DD RAY 36-32 - Wellbore #1 - Wellbore #1	1,800.00	1,793.92	314.20	307.26	45.242	ES
EXIST DD RAY 36-32 - Wellbore #1 - Wellbore #1	4,100.00	4,072.24	397.19	372.63	16.172	SF
EXIST DD RURAL LAND G32-33D - Wellbore #1 - Wellb	8,461.49	7,320.02	1,704.75	1,662.92	40.757	CC
EXIST DD RURAL LAND G32-33D - Wellbore #1 - Wellb	8,500.00	7,319.99	1,705.18	1,662.89	40.315	ES
EXIST DD RURAL LAND G32-33D - Wellbore #1 - Wellb	9,700.00	7,319.01	2,107.15	2,046.05	34.490	SF
EXIST DD SPAYD 19-29 - Wellbore #1 - Wellbore #1	13,605.36	7,600.05	458.74	303.53	2.956	CC, ES, SF
EXIST DD SPAYD 20-29 - Wellbore #1 - Wellbore #1	13,683.52	7,103.00	2,081.52	1,949.79	15.801	CC
EXIST DD SPAYD 20-29 - Wellbore #1 - Wellbore #1	13,700.00	7,103.00	2,081.59	1,949.54	15.764	ES
EXIST DD SPAYD 20-29 - Wellbore #1 - Wellbore #1	14,300.00	7,071.72	2,170.53	2,027.33	15.157	SF
EXIST DD SPAYD 22-29 - Wellbore #1 - Wellbore #1	14,694.73	7,193.63	213.31	60.78	1.398	Level 3, CC
EXIST DD SPAYD 22-29 - Wellbore #1 - Wellbore #1	14,700.00	7,193.57	213.37	60.74	1.398	Level 3, ES, SF
EXIST DD SPAYD 23-29 - Wellbore #1 - Wellbore #1	13,712.47	7,430.54	929.17	793.57	6.853	CC, ES
EXIST DD SPAYD 23-29 - Wellbore #1 - Wellbore #1	13,800.00	7,429.89	933.28	796.03	6.800	SF
EXIST DD SPAYD 30-29 - Wellbore #1 - Wellbore #1	17,405.08	7,596.60	1,754.44	1,531.03	7.853	CC, ES, SF
EXIST DD SPAYD 33-29 - Wellbore #1 - Wellbore #1	13,631.39	7,655.73	1,703.13	1,547.01	10.909	CC, ES
EXIST DD SPAYD 33-29 - Wellbore #1 - Wellbore #1	14,000.00	7,651.72	1,742.56	1,579.43	10.682	SF
EXIST DD SPAYD 36-29 - Wellbore #1 - Wellbore #1	12,356.34	7,549.19	714.21	592.72	5.879	CC, ES
EXIST DD SPAYD 36-29 - Wellbore #1 - Wellbore #1	12,400.00	7,548.66	715.55	593.24	5.851	SF
EXIST DD SPAYD 37-29 - Wellbore #1 - Wellbore #1	12,406.08	7,309.85	2,021.24	1,902.30	16.995	CC, ES
EXIST DD SPAYD 37-29 - Wellbore #1 - Wellbore #1	13,100.00	7,290.00	2,136.93	2,005.01	16.199	SF
EXIST VERT BOHLENDER 29-13 - Wellbore #1 - Design	15,489.10	7,183.97	1,647.31	1,479.90	9.840	CC
EXIST VERT BOHLENDER 29-13 - Wellbore #1 - Design	15,500.00	7,183.97	1,647.34	1,479.73	9.828	ES
EXIST VERT BOHLENDER 29-13 - Wellbore #1 - Design	15,800.00	7,183.96	1,676.39	1,503.05	9.671	SF
EXIST VERT BOHLENDER 29-3 - Wellbore #1 - Design	15,410.91	7,180.97	2,863.86	2,697.94	17.261	CC
EXIST VERT BOHLENDER 29-3 - Wellbore #1 - Design	15,500.00	7,180.97	2,865.24	2,697.63	17.094	ES
EXIST VERT BOHLENDER 29-3 - Wellbore #1 - Design	16,400.00	7,180.96	3,029.85	2,845.07	16.397	SF
EXIST VERT BOHLENDER 32-29 #1 - Wellbore #1 - Des	15,662.15	7,183.97	1,423.00	1,252.29	8.336	CC
EXIST VERT BOHLENDER 32-29 #1 - Wellbore #1 - Des	15,700.00	7,183.96	1,423.50	1,252.07	8.304	ES
EXIST VERT BOHLENDER 32-29 #1 - Wellbore #1 - Des	15,900.00	7,183.96	1,442.74	1,267.50	8.233	SF
EXIST VERT CLYDE MARSHALL 1 - Wellbore #1 - Desi	2,790.25	2,770.67	1,438.79	1,425.98	112.299	CC
EXIST VERT CLYDE MARSHALL 1 - Wellbore #1 - Desi	2,900.00	2,874.19	1,439.25	1,425.64	105.699	ES
EXIST VERT CLYDE MARSHALL 1 - Wellbore #1 - Desi	5,200.00	4,765.00	1,669.95	1,638.60	53.268	SF
EXIST VERT CPC BOHLENDER 29-1 - Wellbore #1 - De	16,824.72	7,183.96	2,662.77	2,470.46	13.846	CC, ES
EXIST VERT CPC BOHLENDER 29-1 - Wellbore #1 - De	17,405.08	7,183.95	2,730.02	2,528.01	13.515	SF
EXIST VERT CPC BOHLENDER 29-2 - Wellbore #1 - De	17,071.26	7,183.96	1,488.89	1,292.13	7.567	CC
EXIST VERT CPC BOHLENDER 29-2 - Wellbore #1 - De	17,100.00	7,183.96	1,488.95	1,291.86	7.554	ES
EXIST VERT CPC BOHLENDER 29-2 - Wellbore #1 - De	17,400.00	7,183.95	1,508.90	1,306.99	7.473	SF
EXIST VERT HAMBERT G 32-4X - Wellbore #1 - Design	11,468.67	7,183.98	951.17	859.78	10.407	CC
EXIST VERT HAMBERT G 32-4X - Wellbore #1 - Design	11,500.00	7,183.98	951.69	859.71	10.347	ES
EXIST VERT HAMBERT G 32-4X - Wellbore #1 - Design	11,700.00	7,183.98	978.90	883.19	10.228	SF
EXIST VERT HAMBERT R G 32-1 - Wellbore #1 - Desig	11,715.14	7,183.98	2,699.40	2,603.41	28.122	CC
EXIST VERT HAMBERT R G 32-1 - Wellbore #1 - Desig	11,800.00	7,183.98	2,700.74	2,603.16	27.678	ES
EXIST VERT HAMBERT R G 32-1 - Wellbore #1 - Desig	13,200.00	7,183.98	3,080.84	2,956.92	24.860	SF
EXIST VERT HAMBERT R G 32-2 - Wellbore #1 - Desig	11,532.76	7,183.98	1,653.58	1,560.99	17.860	CC, ES
EXIST VERT HAMBERT R G 32-2 - Wellbore #1 - Desig	12,100.00	7,183.98	1,748.16	1,644.97	16.940	SF
EXIST VERT HAMBERT R G 32-3 - Wellbore #1 - Desig	11,599.78	7,183.98	238.74	144.90	2.544	CC
EXIST VERT HAMBERT R G 32-3 - Wellbore #1 - Desig	11,600.00	7,183.98	238.74	144.90	2.544	ES, SF
EXIST VERT HAMBERT R G 32-6 - Wellbore #1 - Desig	10,273.46	7,183.99	73.33	3.89	1.056	Level 2, CC, ES, SF
EXIST VERT HAMBERT R G 32-7 - Wellbore #1 - Desig	10,253.85	7,183.99	1,521.66	1,452.57	22.025	CC
EXIST VERT HAMBERT R G 32-7 - Wellbore #1 - Desig	10,300.00	7,183.99	1,522.36	1,452.44	21.773	ES
EXIST VERT HAMBERT R G 32-7 - Wellbore #1 - Desig	10,900.00	7,183.99	1,653.17	1,572.30	20.444	SF
EXIST VERT HAMBERT R G 32-8 - Wellbore #1 - Desig	10,569.33	7,183.99	2,877.63	2,802.82	38.468	CC

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

Company:	PDC ENERGY	Local Co-ordinate Reference:	Well PAONIA 2N
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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
SW SE SEC. 32 T4N R65W 6th P.M. (PAONIA)						
EXIST VERT HAMBERT R G 32-8 - Wellbore #1 - Desig	10,600.00	7,183.99	2,877.79	2,802.43	38.185	ES
EXIST VERT HAMBERT R G 32-8 - Wellbore #1 - Desig	12,700.00	7,183.98	3,580.57	3,466.09	31.276	SF
EXIST VERT HSR-CARTER 11-29 - Wellbore #1 - Desig	14,099.00	7,183.97	296.31	155.34	2.102	CC
EXIST VERT HSR-CARTER 11-29 - Wellbore #1 - Desig	14,100.00	7,183.97	296.31	155.32	2.102	ES, SF
EXIST VERT HSR-CROUSE 5-29 - Wellbore #1 - Design	15,405.15	7,183.97	1,074.45	908.64	6.480	CC, ES
EXIST VERT HSR-CROUSE 5-29 - Wellbore #1 - Design	15,500.00	7,183.97	1,078.63	911.01	6.435	SF
EXIST VERT HSR-DICERSON 14-29A - Wellbore #1 - D	12,972.77	7,183.98	50.75	-68.88	0.424	Level 1, CC, ES, SF
EXIST VERT HSR-FRISBIE 16-29A - Wellbore #1 - Desi	13,017.12	7,183.98	2,672.45	2,551.98	22.184	CC
EXIST VERT HSR-FRISBIE 16-29A - Wellbore #1 - Desi	13,100.00	7,183.98	2,673.74	2,551.70	21.909	ES
EXIST VERT HSR-FRISBIE 16-29A - Wellbore #1 - Desi	14,100.00	7,183.97	2,883.51	2,742.53	20.453	SF
EXIST VERT HSR-FROELICH 12-29A - Wellbore #1 - De	14,133.39	7,183.97	1,056.95	915.33	7.463	CC, ES
EXIST VERT HSR-FROELICH 12-29A - Wellbore #1 - De	14,300.00	7,183.97	1,070.00	925.22	7.390	SF
EXIST VERT HSR-HARRISON 9-32 - Wellbore #1 - Des	1,800.00	1,800.00	2,276.69	2,268.87	291.319	CC, ES
EXIST VERT HSR-HARRISON 9-32 - Wellbore #1 - Des	12,600.00	7,183.98	4,598.96	4,486.36	40.844	SF
EXIST VERT HSR-MUNDS 13-29 - Wellbore #1 - Design	13,157.65	7,183.98	1,147.87	1,024.74	9.323	CC
EXIST VERT HSR-MUNDS 13-29 - Wellbore #1 - Design	13,200.00	7,183.98	1,148.65	1,024.72	9.269	ES
EXIST VERT HSR-MUNDS 13-29 - Wellbore #1 - Design	13,400.00	7,183.98	1,173.17	1,045.46	9.186	SF
EXIST VERT HSR-NICHOLS 15-32 - Wellbore #1 - Desig	1,800.00	1,800.00	826.90	819.09	105.808	CC, ES
EXIST VERT HSR-NICHOLS 15-32 - Wellbore #1 - Desig	10,000.00	7,183.99	2,672.09	2,607.54	41.398	SF
EXIST VERT HSR-RAY 3-29 - Wellbore #1 - Design #1	16,879.81	7,183.96	33.24	-160.29	0.172	Level 1, CC, ES, SF
EXIST VERT HSR-SALISBURY 6-29 - Wellbore #1 - Des	15,697.05	7,183.96	41.77	-129.61	0.244	Level 1, CC, ES, SF
EXIST VERT HSR-TEAGLE 10-29A - Wellbore #1 - Desi	14,438.42	7,183.97	1,400.94	1,253.52	9.503	CC, ES
EXIST VERT HSR-TEAGLE 10-29A - Wellbore #1 - Desi	14,700.00	7,183.97	1,425.15	1,272.76	9.352	SF
EXIST VERT HSR-WILLIAM 10-32A - Wellbore #1 - Des	1,800.00	1,800.00	1,335.65	1,327.83	170.906	CC, ES
EXIST VERT HSR-WILLIAM 10-32A - Wellbore #1 - Des	9,900.00	7,183.99	1,765.06	1,702.28	28.117	SF
EXIST VERT HSR-WRIGHT 9-29A - Wellbore #1 - Desig	14,371.47	7,183.97	2,586.27	2,440.13	17.697	CC
EXIST VERT HSR-WRIGHT 9-29A - Wellbore #1 - Desig	14,400.00	7,183.97	2,586.43	2,439.74	17.633	ES
EXIST VERT HSR-WRIGHT 9-29A - Wellbore #1 - Desig	15,200.00	7,183.97	2,715.74	2,553.84	16.774	SF
EXIST VERT MARSHALL 32-11G - Wellbore #1 - Design	9,187.99	7,183.99	169.87	119.23	3.355	CC, ES
EXIST VERT MARSHALL 32-11G - Wellbore #1 - Design	9,200.00	7,183.99	170.29	119.46	3.350	SF
EXIST VERT MARSHALL 32-12G - Wellbore #1 - Design	8,840.17	7,184.00	979.37	934.17	21.666	CC, ES
EXIST VERT MARSHALL 32-12G - Wellbore #1 - Design	9,200.00	7,183.99	1,043.38	992.55	20.527	SF
EXIST VERT MARSHALL 32-14G - Wellbore #1 - Design	7,600.00	7,158.90	45.41	11.01	1.320	Level 3, ES, SF
EXIST VERT MARSHALL 32-14G - Wellbore #1 - Design	7,600.70	7,159.09	45.40	11.03	1.321	Level 3, CC
EXIST VERT MARSHALL G 32-13JI - Wellbore #1 - Des	6,800.00	6,601.85	1,494.49	1,454.33	37.208	SF
EXIST VERT MARSHALL G 32-13JI - Wellbore #1 - Des	7,735.74	7,181.93	1,346.13	1,311.65	39.036	CC, ES
EXIST VERT MEL SMOOKLER GAS UNIT 1 - Wellbore	8,320.18	7,184.00	821.76	783.39	21.417	CC, ES
EXIST VERT MEL SMOOKLER GAS UNIT 1 - Wellbore	8,600.00	7,184.00	868.10	826.31	20.775	SF
EXIST VERT MUSICK 1-32 - Wellbore #1 - Design #1	10,681.52	7,183.99	389.95	313.10	5.074	CC, ES
EXIST VERT MUSICK 1-32 - Wellbore #1 - Design #1	10,700.00	7,183.99	390.39	313.20	5.057	SF
EXIST VERT MUSICK GAS UNIT 1 - Wellbore #1 - Desi	10,714.74	7,183.99	2,233.90	2,156.44	28.839	CC, ES
EXIST VERT MUSICK GAS UNIT 1 - Wellbore #1 - Desi	11,900.00	7,183.98	2,528.87	2,429.42	25.429	SF
EXIST VERT MUSICK MCCLINTOCK 2 - Wellbore #1 - D	10,386.45	4,755.00	2,452.78	2,421.20	77.670	CC
EXIST VERT MUSICK MCCLINTOCK 2 - Wellbore #1 - D	10,400.00	4,755.00	2,452.81	2,421.13	77.426	ES
EXIST VERT MUSICK MCCLINTOCK 2 - Wellbore #1 - D	11,800.00	4,755.00	2,830.94	2,788.78	67.138	SF
EXIST VERT MUSICK MCCLINTOCK 4 - Wellbore #1 - D	1,800.00	1,800.00	3,001.94	2,994.13	384.120	CC, ES
EXIST VERT MUSICK MCCLINTOCK 4 - Wellbore #1 - D	16,647.02	4,750.00	7,375.14	7,224.27	48.884	SF
EXIST VERT MUSICK MCCLINTOCK 6 - Wellbore #1 - D	10,485.46	4,750.00	2,604.08	2,563.30	63.849	CC
EXIST VERT MUSICK MCCLINTOCK 6 - Wellbore #1 - D	10,500.00	4,750.00	2,604.12	2,563.21	63.643	ES
EXIST VERT MUSICK MCCLINTOCK 6 - Wellbore #1 - D	12,100.00	4,750.00	3,063.98	3,008.24	54.963	SF
EXIST VERT MUSICK MCCLINTOCK 7 - Wellbore #1 - D	1,800.00	1,800.00	2,557.90	2,550.08	327.301	CC, ES
EXIST VERT MUSICK MCCLINTOCK 7 - Wellbore #1 - D	16,647.02	4,739.00	7,030.40	6,899.42	53.672	SF

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

Company:	PDC ENERGY	Local Co-ordinate Reference:	Well PAONIA 2N
Project:	WELD COUNTY, COLORADO	TVD Reference:	WELL @ 4919.00usft (Original Well Elev)
Reference Site:	SW SE SEC. 32 T4N R65W 6th P.M. (PAONIA)	MD Reference:	WELL @ 4919.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	PAONIA 2N	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	ORIGINAL WELLBORE	Database:	EDM 5000.1 Single User Db
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
SW SE SEC. 32 T4N R65W 6th P.M. (PAONIA)						
EXIST VERT MUSICK-MCCLINTOCK 1 - Wellbore #1 - D	11,659.41	4,803.00	2,848.15	2,790.83	49.687	CC
EXIST VERT MUSICK-MCCLINTOCK 1 - Wellbore #1 - D	11,700.00	4,803.00	2,848.44	2,790.63	49.276	ES
EXIST VERT MUSICK-MCCLINTOCK 1 - Wellbore #1 - D	13,400.00	4,803.00	3,337.90	3,259.68	42.670	SF
EXIST VERT MUSICK-MCCLINTOCK 5 - Wellbore #1 - D	11,712.80	4,752.00	2,432.48	2,391.56	59.453	CC, ES
EXIST VERT MUSICK-MCCLINTOCK 5 - Wellbore #1 - D	12,800.00	4,752.00	2,664.39	2,615.65	54.665	SF
EXIST VERT NGL C3B - Wellbore #1 - Design #1	16,710.85	7,183.96	3,109.75	2,920.40	16.423	CC, ES
EXIST VERT NGL C3B - Wellbore #1 - Design #1	17,405.08	7,183.95	3,227.78	3,025.77	15.979	SF
EXIST VERT R G 32-5 - Wellbore #1 - Design #1	10,304.32	7,183.99	1,221.52	1,151.53	17.451	CC, ES
EXIST VERT R G 32-5 - Wellbore #1 - Design #1	10,700.00	7,183.99	1,284.01	1,206.82	16.634	SF
EXIST VERT SPAYD 5-29 - Wellbore #1 - Design #1	15,779.63	7,183.96	1,338.37	1,165.42	7.739	CC
EXIST VERT SPAYD 5-29 - Wellbore #1 - Design #1	15,800.00	7,183.96	1,338.53	1,165.19	7.722	ES
EXIST VERT SPAYD 5-29 - Wellbore #1 - Design #1	16,000.00	7,183.96	1,356.39	1,179.24	7.657	SF
EXIST VERT UPRR 21 PAN AM D #1 - Wellbore #1 - De	14,259.04	4,730.00	2,457.34	2,397.99	41.400	CC, ES
EXIST VERT UPRR 21 PAN AM D #1 - Wellbore #1 - De	15,000.00	4,730.00	2,566.62	2,501.84	39.619	SF
EXIST VERT UPRR 21 PAN AM D #2 - Wellbore #1 - De	12,977.29	7,183.98	2,820.40	2,700.68	23.559	CC
EXIST VERT UPRR 21 PAN AM D #2 - Wellbore #1 - De	13,000.00	7,183.98	2,820.49	2,700.35	23.475	ES
EXIST VERT UPRR 21 PAN AM D #2 - Wellbore #1 - De	14,200.00	7,183.97	3,074.03	2,931.15	21.514	SF
EXIST VERT UPRR 21 PAN AM G #1 - Wellbore #1 - De	16,243.80	4,660.00	2,589.17	2,505.82	31.065	CC, ES
EXIST VERT UPRR 21 PAN AM G #1 - Wellbore #1 - De	16,972.02	4,660.00	2,690.50	2,599.11	29.442	SF
EXIST VERT UPRR PAN AM "J"1 - Wellbore #1 - Design	13,069.61	7,183.98	1,321.90	1,200.43	10.883	CC
EXIST VERT UPRR PAN AM "J"1 - Wellbore #1 - Design	13,100.00	7,183.98	1,322.24	1,200.21	10.835	ES
EXIST VERT UPRR PAN AM "J"1 - Wellbore #1 - Design	13,300.00	7,183.98	1,341.82	1,216.00	10.665	SF
EXIST VERT VERN MARSHALL 1 - Wellbore #1 - Desig	4,978.97	4,785.00	2,292.12	2,260.79	73.147	CC
EXIST VERT VERN MARSHALL 1 - Wellbore #1 - Desig	5,000.00	4,785.00	2,292.22	2,260.74	72.815	ES
EXIST VERT VERN MARSHALL 1 - Wellbore #1 - Desig	16,972.02	4,785.00	8,306.70	8,174.52	62.842	SF
EXIST VERT WEINMASTER G 32-18 - Wellbore #1 - De	10,941.54	7,183.99	987.59	905.96	12.099	CC, ES
EXIST VERT WEINMASTER G 32-18 - Wellbore #1 - De	11,200.00	7,183.98	1,020.85	934.45	11.815	SF
PAONIA 10N - ORIGINAL WELLBORE - PROPOSAL #1	300.00	300.00	120.00	118.93	111.928	CC, ES
PAONIA 10N - ORIGINAL WELLBORE - PROPOSAL #1	17,405.08	17,485.59	2,588.81	2,213.88	6.905	SF
PAONIA 11N - ORIGINAL WELLBORE - PROPOSAL #1	200.00	200.00	135.01	134.39	216.850	CC
PAONIA 11N - ORIGINAL WELLBORE - PROPOSAL #1	300.00	299.05	135.36	134.30	127.839	ES
PAONIA 11N - ORIGINAL WELLBORE - PROPOSAL #1	17,405.08	17,517.55	2,960.10	2,581.82	7.825	SF
PAONIA 12N - ORIGINAL WELLBORE - PROPOSAL #1	100.00	100.00	149.98	149.81	866.610	CC
PAONIA 12N - ORIGINAL WELLBORE - PROPOSAL #1	200.00	198.75	150.39	149.77	242.772	ES
PAONIA 12N - ORIGINAL WELLBORE - PROPOSAL #1	17,405.08	17,704.93	3,308.65	2,929.62	8.729	SF
PAONIA 1N - ORIGINAL WELLBORE - PROPOSAL #1	1,800.00	1,800.00	14.98	7.17	1.917	CC
PAONIA 1N - ORIGINAL WELLBORE - PROPOSAL #1	17,405.08	17,446.39	351.63	-11.17	0.969	Level 1, ES, SF
PAONIA 3N - ORIGINAL WELLBORE - PROPOSAL #1	1,700.00	1,700.00	15.01	7.64	2.038	CC, ES
PAONIA 3N - ORIGINAL WELLBORE - PROPOSAL #1	17,405.08	17,221.86	429.43	65.08	1.179	Level 2, SF
PAONIA 4N - ORIGINAL WELLBORE - PROPOSAL #1	1,600.00	1,600.00	30.02	23.10	4.340	CC, ES
PAONIA 4N - ORIGINAL WELLBORE - PROPOSAL #1	17,405.08	17,301.28	699.84	333.40	1.910	SF
PAONIA 5N - ORIGINAL WELLBORE - PROPOSAL #1	1,500.00	1,500.00	44.99	38.53	6.958	CC, ES
PAONIA 5N - ORIGINAL WELLBORE - PROPOSAL #1	17,405.08	17,189.96	1,028.06	656.36	2.766	SF
PAONIA 6N - ORIGINAL WELLBORE - PROPOSAL #1	1,200.00	1,200.00	60.00	54.88	11.724	CC, ES
PAONIA 6N - ORIGINAL WELLBORE - PROPOSAL #1	17,405.08	17,288.80	1,322.07	947.36	3.528	SF
PAONIA 7N - ORIGINAL WELLBORE - PROPOSAL #1	1,000.00	1,000.00	75.01	70.79	17.780	CC, ES
PAONIA 7N - ORIGINAL WELLBORE - PROPOSAL #1	17,405.08	17,222.21	1,671.42	1,296.31	4.456	SF
PAONIA 8N - ORIGINAL WELLBORE - PROPOSAL #1	900.00	900.00	90.02	86.25	23.882	CC, ES
PAONIA 8N - ORIGINAL WELLBORE - PROPOSAL #1	17,405.08	17,346.82	1,938.94	1,562.87	5.156	SF
PAONIA 9N - ORIGINAL WELLBORE - PROPOSAL #1	400.00	400.00	104.99	103.47	68.998	CC, ES
PAONIA 9N - ORIGINAL WELLBORE - PROPOSAL #1	17,405.08	17,317.59	2,275.65	1,899.00	6.042	SF

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