



Project: WELD COUNTY, COLORADO (TRUE)
Site: NE NW SEC. 18 T7N R66W 6th P.M. (STOUT - OPT 1)
Well: STOUT 9C
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL #1

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Dep	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	SHL: 288ft FNL & 2527ft FWL of Sec 18
2100.00	2100.00	0.00	0.00	0.00	0.00	0.00	0.00	START NUDGE (2°/100ft BUR)
2695.62	2700.00	12.00	77.69	13.35	61.16	-11.11	62.60	EOB TO 12° INC
4072.27	4107.40	12.00	77.69	75.75	347.05	-63.05	355.22	END OF TANGENT
4667.90	4707.40	0.00	0.00	89.10	408.21	-74.16	417.82	EOD TO VERTICAL
6791.81	6831.32	0.00	0.00	89.10	408.21	-74.16	417.82	KOP (8°/100ft BUR)
7483.60	7768.82	75.00	180.22	-441.73	406.17	456.24	948.65	EP: 737ft FNL & 2670ft FEL of Sec 18
7508.00	7956.31	90.00	180.22	-627.09	405.46	641.45	1134.01	HZ LANDING POINT
7508.00	17440.77	90.00	180.22	-10111.48	368.73	10118.20	10618.47	BHL: 150ft FSL & 2550ft FEL of Sec 19

PROPOSED LOCAL COORDINATES:

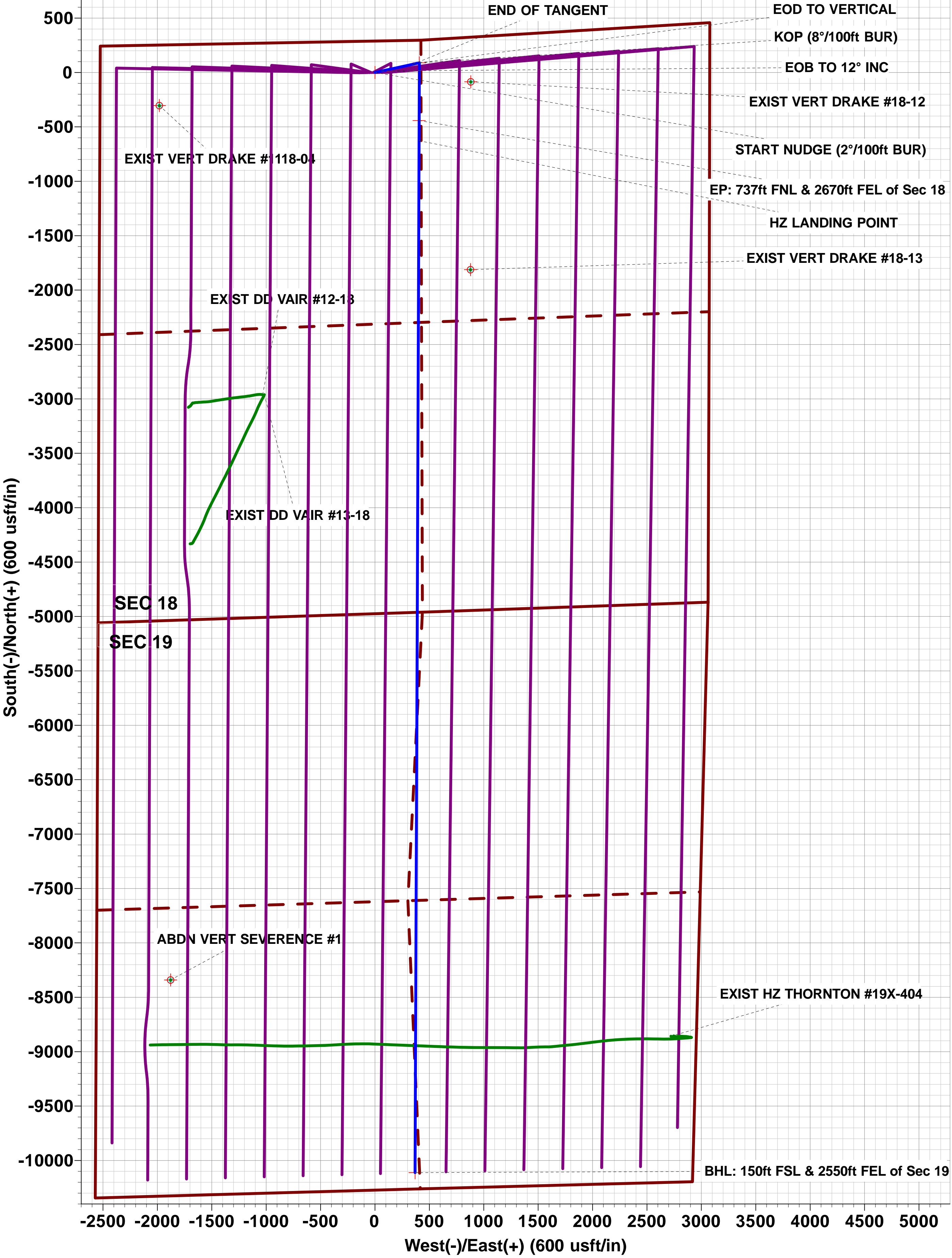
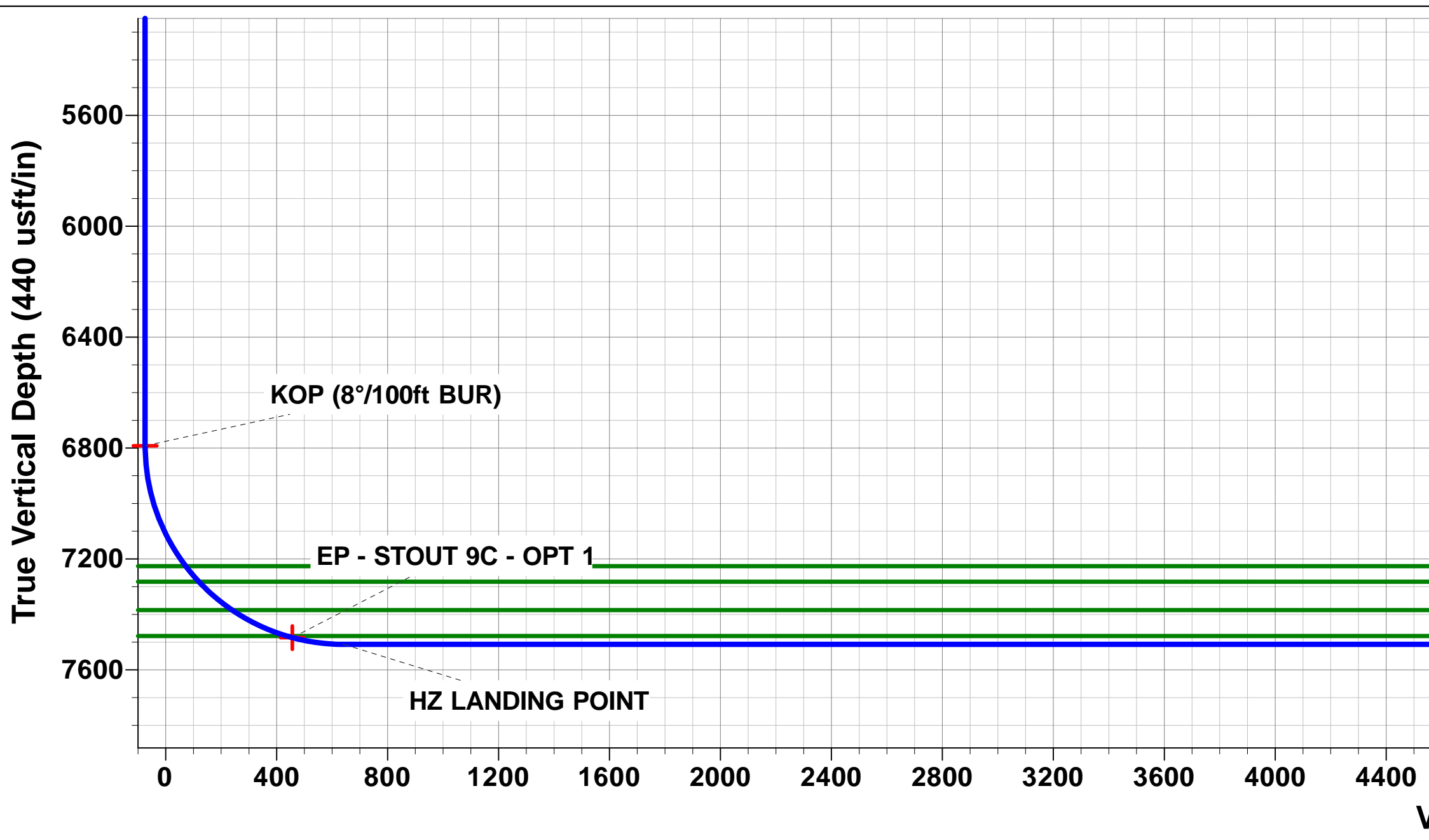
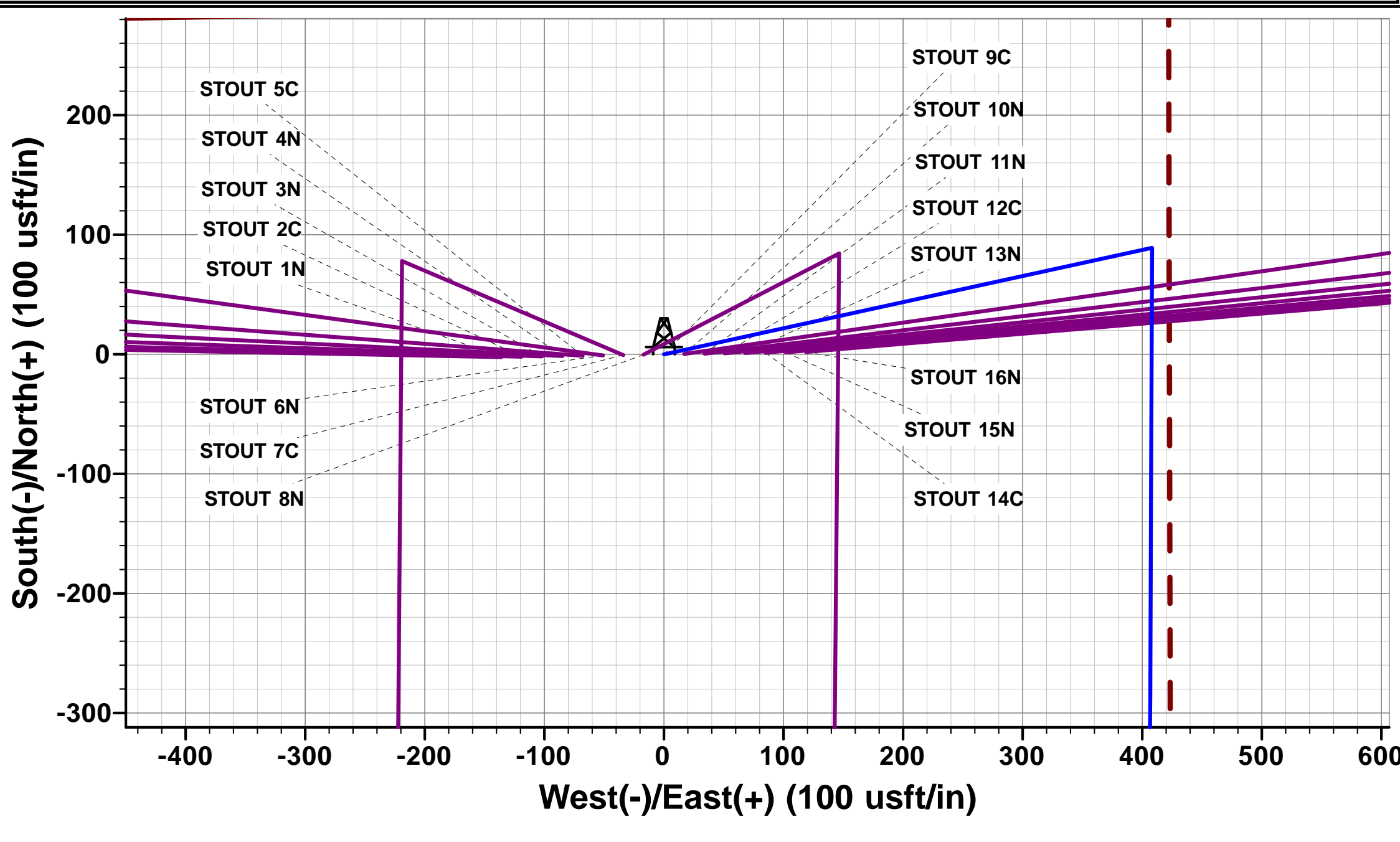
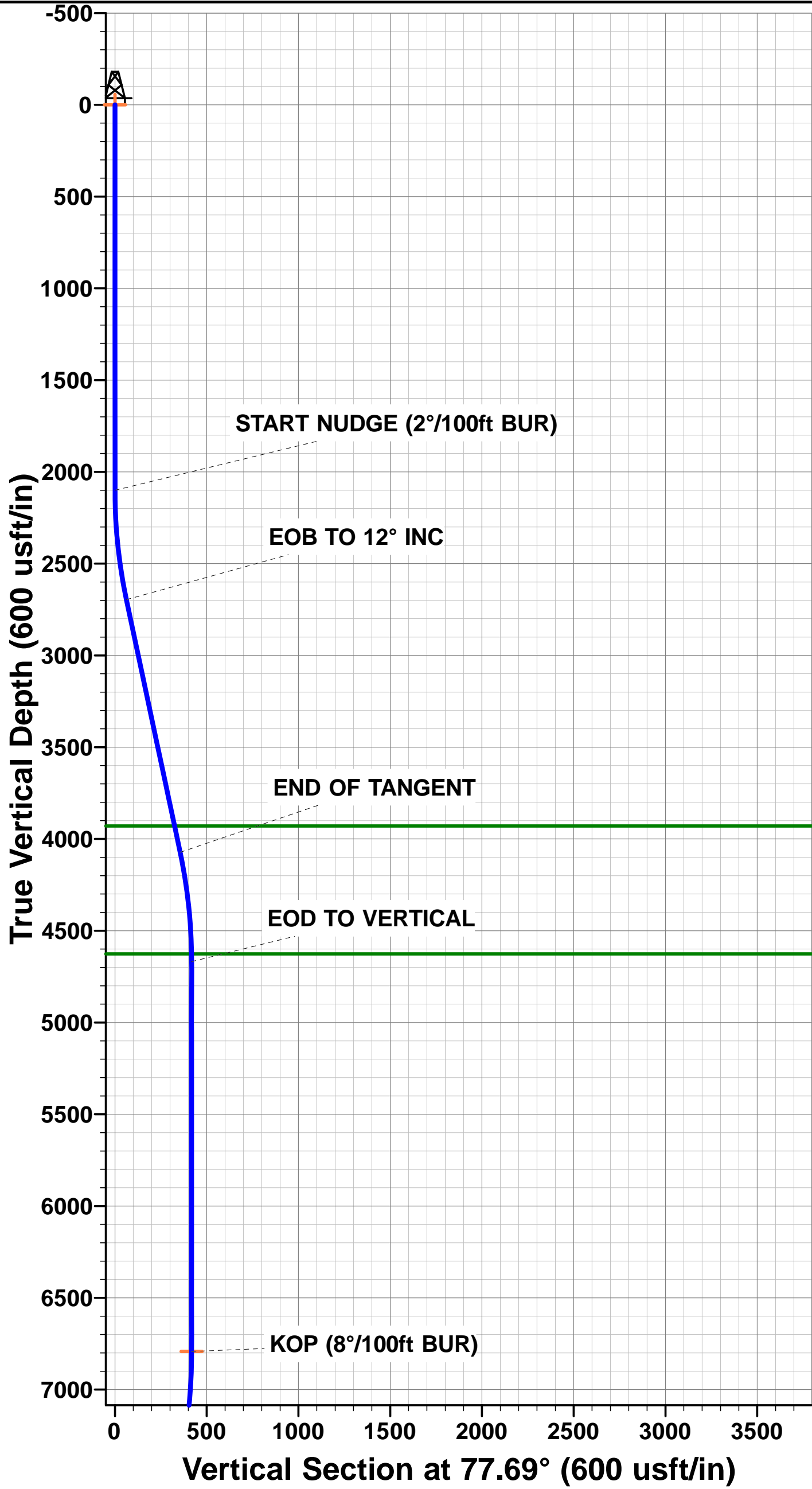
SHL: 288ft FNL & 2527ft FWL Sec 18

EP : 737ft FNL & 2670ft FEL Sec 18

BHL: 150ft FSL & 2550ft FEL of Sec 19

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - STOUT 9C - OPT 1	6791.81	89.10	408.21	40.581139	-104.821240
EP - STOUT 9C - OPT 1	7483.60	-441.73	406.17	40.579681	-104.821248
BHL - STOUT 9C - OPT 1	7508.00	-10111.48	368.73	40.553140	-104.821383
SHL - STOUT 9C - OPT 1	0.00	0.00	0.00	40.580894	-104.822710



PDC ENERGY

WELD COUNTY, COLORADO (TRUE)

NE NW SEC. 18 T7N R66W 6th P.M. (STOUT - OPT 1)

STOUT 9C

ORIGINAL WELLBORE

PROPOSAL #1

Anticollision Report

28 February, 2019



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well STOUT 9C
Project:	WELD COUNTY, COLORADO (TRUE)	TVD Reference:	KB 23' @ 5103.00usft (Original Well Elev)
Reference Site:	NE NW SEC. 18 T7N R66W 6th P.M. (STOUT - OPT 1)	MD Reference:	KB 23' @ 5103.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	STOUT 9C	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	ORIGINAL WELLBORE	Database:	Database 1
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	28/02/2019		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	17,440.77	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
Offset Well - Wellbore - Design						
NE NW SEC. 18 T7N R66W 6th P.M. (STOUT - OPT 1)						
ABDN VERT SEVERENCE #1 - Wellbore #1 - Design #1	15,678.76	7,419.00	2,254.03	1,944.17	7.274	CC
ABDN VERT SEVERENCE #1 - Wellbore #1 - Design #1	15,700.00	7,419.00	2,254.13	1,943.86	7.265	ES
ABDN VERT SEVERENCE #1 - Wellbore #1 - Design #1	16,000.00	7,419.00	2,276.81	1,960.79	7.205	SF
EXIST DD VAIR #12-18 - Wellbore #1 - Wellbore #1	10,412.72	7,526.88	2,109.14	2,031.82	27.276	CC, ES
EXIST DD VAIR #12-18 - Wellbore #1 - Wellbore #1	11,500.00	7,535.73	2,372.88	2,275.17	24.285	SF
EXIST DD VAIR #13-18 - Wellbore #1 - Wellbore #1	11,669.16	7,727.76	2,089.45	1,975.50	18.336	CC
EXIST DD VAIR #13-18 - Wellbore #1 - Wellbore #1	11,700.00	7,727.82	2,089.67	1,975.14	18.245	ES
EXIST DD VAIR #13-18 - Wellbore #1 - Wellbore #1	12,400.00	7,729.30	2,213.57	2,085.78	17.322	SF
EXIST HZ THORNTON #19X-404 - Wellbore #1 - Wellbo	16,273.92	9,593.06	51.22	-34.38	0.598	Level 1, CC, ES, SF
EXIST VERT DRAKE #1118-04 - ORIGINAL WELLBORE	2,100.00	2,122.00	2,005.39	1,958.65	42.906	CC
EXIST VERT DRAKE #1118-04 - ORIGINAL WELLBORE	2,200.00	2,221.98	2,007.13	1,958.20	41.017	ES
EXIST VERT DRAKE #1118-04 - ORIGINAL WELLBORE	8,100.00	7,530.00	2,432.41	2,259.66	14.081	SF
EXIST VERT DRAKE #18-12 - Wellbore #1 - Design #1	7,338.99	7,238.02	472.98	312.79	2.953	CC
EXIST VERT DRAKE #18-12 - Wellbore #1 - Design #1	7,350.00	7,246.32	473.03	312.66	2.950	ES
EXIST VERT DRAKE #18-12 - Wellbore #1 - Design #1	7,400.00	7,282.59	474.81	313.70	2.947	SF
EXIST VERT DRAKE #18-13 - Wellbore #1 - Design #1	9,139.52	7,483.00	476.90	289.41	2.544	CC, ES, SF
STOUT 10N - ORIGINAL WELLBORE - PROPOSAL #1	2,000.00	2,000.00	16.97	8.26	1.948	CC
STOUT 10N - ORIGINAL WELLBORE - PROPOSAL #1	17,440.77	17,385.80	303.12	-67.10	0.819	Level 1, ES, SF
STOUT 11N - ORIGINAL WELLBORE - PROPOSAL #1	800.00	800.00	33.98	30.66	10.234	CC, ES
STOUT 11N - ORIGINAL WELLBORE - PROPOSAL #1	17,440.77	17,370.50	665.22	288.06	1.764	SF
STOUT 12C - ORIGINAL WELLBORE - PROPOSAL #1	700.00	700.00	50.98	48.11	17.761	CC, ES
STOUT 12C - ORIGINAL WELLBORE - PROPOSAL #1	17,440.77	17,655.17	1,000.43	611.17	2.570	SF
STOUT 13N - ORIGINAL WELLBORE - PROPOSAL #1	600.00	600.00	67.98	65.56	28.083	CC, ES
STOUT 13N - ORIGINAL WELLBORE - PROPOSAL #1	17,440.77	17,671.92	1,360.32	972.95	3.512	SF
STOUT 14C - ORIGINAL WELLBORE - PROPOSAL #1	500.00	500.00	84.98	83.01	43.112	CC, ES
STOUT 14C - ORIGINAL WELLBORE - PROPOSAL #1	17,440.77	17,914.93	1,715.36	1,325.97	4.405	SF
STOUT 15N - ORIGINAL WELLBORE - PROPOSAL #1	400.00	400.00	101.96	100.44	67.004	CC, ES
STOUT 15N - ORIGINAL WELLBORE - PROPOSAL #1	17,440.77	17,905.58	2,078.32	1,691.15	5.368	SF
STOUT 16N - ORIGINAL WELLBORE - PROPOSAL #1	300.00	300.00	118.96	117.89	110.956	CC, ES
STOUT 16N - ORIGINAL WELLBORE - PROPOSAL #1	17,300.00	17,771.74	2,427.49	2,049.42	6.421	SF
STOUT 1N - ORIGINAL WELLBORE - PROPOSAL #1	300.00	300.00	135.99	134.92	126.840	CC, ES
STOUT 1N - ORIGINAL WELLBORE - PROPOSAL #1	17,440.77	17,316.07	2,807.91	2,423.07	7.296	SF
STOUT 2C - ORIGINAL WELLBORE - PROPOSAL #1	400.00	400.00	118.99	117.47	78.195	CC, ES
STOUT 2C - ORIGINAL WELLBORE - PROPOSAL #1	17,440.77	17,644.30	2,457.59	2,069.44	6.332	SF
STOUT 3N - ORIGINAL WELLBORE - PROPOSAL #1	500.00	500.00	101.98	100.01	51.737	CC, ES
STOUT 3N - ORIGINAL WELLBORE - PROPOSAL #1	17,440.77	17,460.12	2,104.07	1,717.11	5.437	SF

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

Anticollision Report



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well STOUT 9C
Project:	WELD COUNTY, COLORADO (TRUE)	TVD Reference:	KB 23' @ 5103.00usft (Original Well Elev)
Reference Site:	NE NW SEC. 18 T7N R66W 6th P.M. (STOUT - OPT 1)	MD Reference:	KB 23' @ 5103.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	STOUT 9C	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	ORIGINAL WELLBORE	Database:	Database 1
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
NE NW SEC. 18 T7N R66W 6th P.M. (STOUT - OPT 1)						
STOUT 4N - ORIGINAL WELLBORE - PROPOSAL #1	600.00	600.00	84.98	82.56	35.106	CC, ES
STOUT 4N - ORIGINAL WELLBORE - PROPOSAL #1	17,440.77	17,291.23	1,756.02	1,370.11	4.550	SF
STOUT 5C - ORIGINAL WELLBORE - PROPOSAL #1	700.00	700.00	67.98	65.11	23.685	CC, ES
STOUT 5C - ORIGINAL WELLBORE - PROPOSAL #1	17,440.77	17,431.75	1,386.68	997.09	3.559	SF
STOUT 6N - ORIGINAL WELLBORE - PROPOSAL #1	2,000.00	2,000.00	51.01	42.29	5.853	CC, ES
STOUT 6N - ORIGINAL WELLBORE - PROPOSAL #1	17,440.77	17,313.47	1,034.97	649.12	2.682	SF
STOUT 7C - ORIGINAL WELLBORE - PROPOSAL #1	2,100.00	2,100.00	34.00	24.84	3.711	CC, ES
STOUT 7C - ORIGINAL WELLBORE - PROPOSAL #1	17,440.77	17,391.63	671.72	282.40	1.725	SF
STOUT 8N - ORIGINAL WELLBORE - PROPOSAL #1	2,100.00	2,100.00	17.00	7.84	1.855	CC, ES
STOUT 8N - ORIGINAL WELLBORE - PROPOSAL #1	17,440.77	17,233.98	362.76	16.31	1.047	Level 2, SF

Offset Design NE NW SEC. 18 T7N R66W 6th P.M. (STOUT - OPT 1) - ABDN VERT SEVERENCE #1 - Wellbore #1													Offset Site Error:	0.00 usft
Survey Program: 0-INC													Offset Well Error:	0.00 usft
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance				Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-167.31	-8,340.71	-1,878.42	8,550.08					
100.00	100.00	11.00	11.00	0.09	0.13	-167.31	-8,340.71	-1,878.42	8,549.61	8,549.40	0.21	N/A		
200.00	200.00	111.00	111.00	0.31	1.40	-167.31	-8,340.71	-1,878.42	8,549.61	8,547.90	1.71	5,001.403		
300.00	300.00	211.00	211.00	0.54	3.68	-167.31	-8,340.71	-1,878.42	8,549.61	8,545.40	4.21	2,030.144		
400.00	400.00	311.00	311.00	0.76	5.75	-167.31	-8,340.71	-1,878.42	8,549.61	8,543.10	6.51	1,313.047		
500.00	500.00	411.00	411.00	0.99	7.79	-167.31	-8,340.71	-1,878.42	8,549.61	8,540.84	8.78	974.094		
600.00	600.00	511.00	511.00	1.21	9.82	-167.31	-8,340.71	-1,878.42	8,549.61	8,538.58	11.03	775.111		
700.00	700.00	611.00	611.00	1.44	11.84	-167.31	-8,340.71	-1,878.42	8,549.61	8,536.34	13.28	643.924		
800.00	800.00	711.00	711.00	1.66	13.86	-167.31	-8,340.71	-1,878.42	8,549.61	8,534.09	15.52	550.835		
900.00	900.00	811.00	811.00	1.88	15.88	-167.31	-8,340.71	-1,878.42	8,549.61	8,531.85	17.76	481.317		
1,000.00	1,000.00	911.00	911.00	2.11	17.89	-167.31	-8,340.71	-1,878.42	8,549.61	8,529.61	20.00	427.409		
1,100.00	1,100.00	1,011.00	1,011.00	2.33	19.91	-167.31	-8,340.71	-1,878.42	8,549.61	8,527.37	22.24	384.377		
1,200.00	1,200.00	1,111.00	1,111.00	2.56	21.92	-167.31	-8,340.71	-1,878.42	8,549.61	8,525.13	24.48	349.227		
1,300.00	1,300.00	1,211.00	1,211.00	2.78	23.94	-167.31	-8,340.71	-1,878.42	8,549.61	8,522.89	26.72	319.973		
1,400.00	1,400.00	1,311.00	1,311.00	3.01	25.95	-167.31	-8,340.71	-1,878.42	8,549.61	8,520.66	28.96	295.246		
1,500.00	1,500.00	1,411.00	1,411.00	3.23	27.96	-167.31	-8,340.71	-1,878.42	8,549.61	8,518.42	31.20	274.069		
1,600.00	1,600.00	1,511.00	1,511.00	3.46	29.97	-167.31	-8,340.71	-1,878.42	8,549.61	8,516.18	33.43	255.728		
1,700.00	1,700.00	1,611.00	1,611.00	3.68	31.99	-167.31	-8,340.71	-1,878.42	8,549.61	8,513.94	35.67	239.690		
1,800.00	1,800.00	1,711.00	1,711.00	3.91	34.00	-167.31	-8,340.71	-1,878.42	8,549.61	8,511.71	37.91	225.545		
1,900.00	1,900.00	1,811.00	1,811.00	4.13	36.01	-167.31	-8,340.71	-1,878.42	8,549.61	8,509.47	40.14	212.978		
2,000.00	2,000.00	1,911.00	1,911.00	4.36	38.02	-167.31	-8,340.71	-1,878.42	8,549.61	8,507.23	42.38	201.737		
2,100.00	2,100.00	2,011.00	2,011.00	4.58	40.03	-167.31	-8,340.71	-1,878.42	8,549.61	8,505.00	44.62	191.625		
2,200.00	2,199.98	2,110.98	2,110.98	4.80	42.05	115.00	-8,340.71	-1,878.42	8,550.35	8,503.51	46.84	182.554		
2,300.00	2,299.84	2,210.84	2,210.84	5.00	44.05	114.99	-8,340.71	-1,878.42	8,552.57	8,503.53	49.04	174.407		
2,400.00	2,399.45	2,310.45	2,310.45	5.22	46.06	114.98	-8,340.71	-1,878.42	8,556.26	8,505.03	51.23	167.021		
2,500.00	2,498.70	2,409.70	2,409.70	5.45	48.05	114.96	-8,340.71	-1,878.42	8,561.44	8,508.02	53.41	160.295		
2,600.00	2,597.47	2,508.47	2,508.47	5.70	50.04	114.93	-8,340.71	-1,878.42	8,568.10	8,512.52	55.59	154.144		
2,700.00	2,695.62	2,606.62	2,606.62	5.97	52.02	114.90	-8,340.71	-1,878.42	8,576.26	8,518.51	57.76	148.491		
2,800.00	2,793.44	2,704.44	2,704.44	6.27	53.98	115.02	-8,340.71	-1,878.42	8,585.20	8,525.19	60.00	143.078		
2,900.00	2,891.25	2,802.25	2,802.25	6.59	55.95	115.14	-8,340.71	-1,878.42	8,594.17	8,531.90	62.27	138.022		
3,000.00	2,989.07	2,900.07	2,900.07	6.92	57.92	115.27	-8,340.71	-1,878.42	8,603.19	8,538.64	64.54	133.294		
3,100.00	3,086.88	2,997.88	2,997.88	7.27	59.89	115.39	-8,340.71	-1,878.42	8,612.24	8,545.41	66.83	128.866		

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