



Project: WELD COUNTY, COLORADO (TRUE)
Site: NE NW SEC. 18 T7N R66W 6th P.M. (STOUT - OPT 1)
Well: STOUT 4N
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 & 2442ft FWL of Sec 18
600.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	START NUDGE (2°/100ft BUR)
1272.47	1278.81	13.58	272.80	3.92	-79.95	6.19	80.05	EOB TO 13.58° INC
5709.34	5843.21	13.58	272.80	56.34	-1150.10	88.99	1151.48	END OF TANGENT
6381.81	6522.01	0.00	0.00	60.26	-1230.05	95.18	1231.53	EOD TO VERTICAL
6581.81	6722.01	0.00	0.00	60.26	-1230.05	95.18	1231.53	KOP (8°/100ft BUR)
7273.60	7659.51	75.00	180.34	-470.56	-1233.20	622.16	1762.35	EP: 737ft FNL & 1210ft FWL of Sec 18
7298.00	7847.01	90.00	180.34	-655.92	-1234.31	806.19	1947.72	HZ LANDING POINT
7298.00	17349.62	90.00	180.33	-10158.37	-1289.99	10239.95	11450.33	BHL: 150ft FSL & 1194ft FWL of Sec 19

PROPOSED LOCAL COORDINATES:

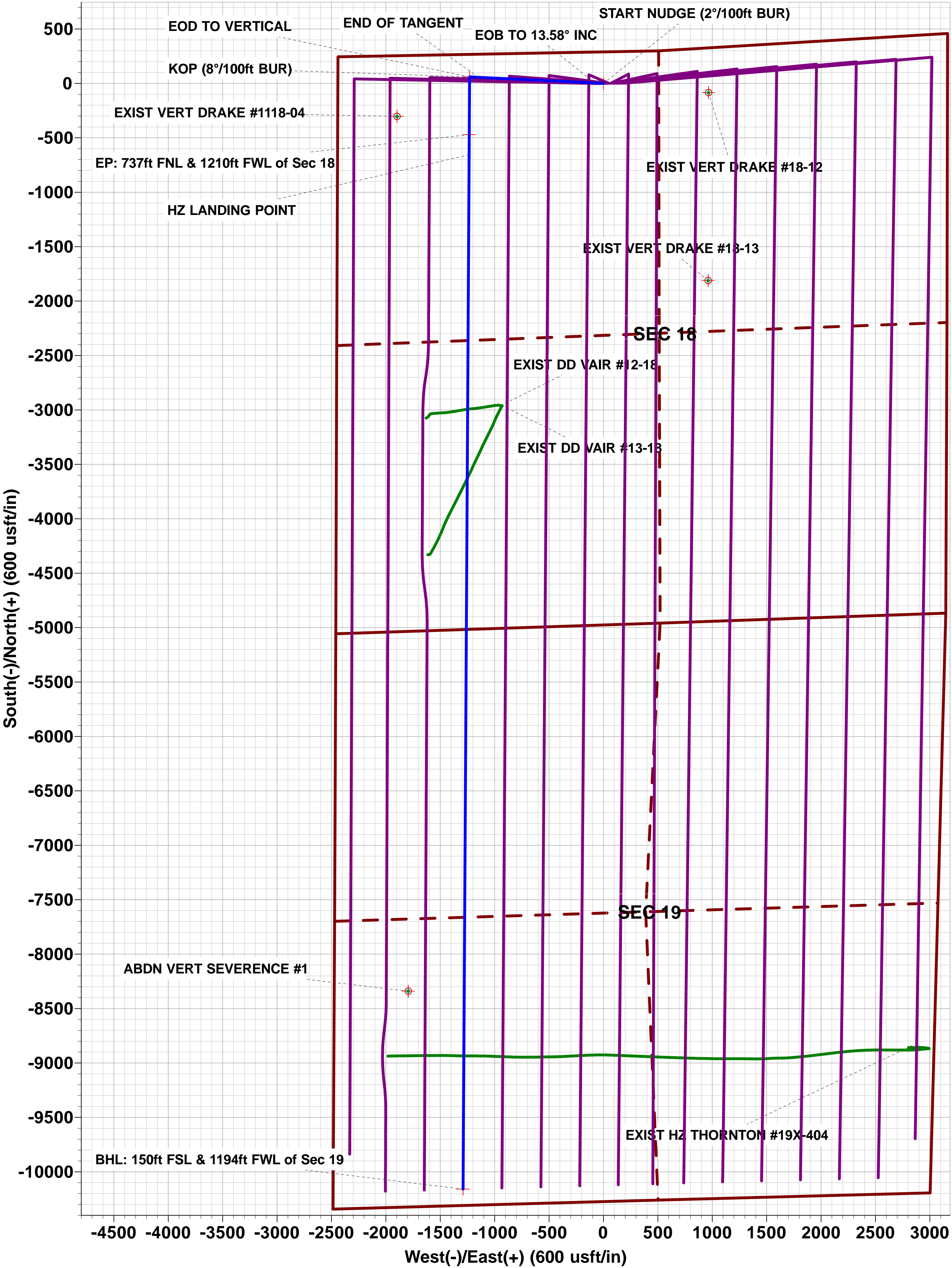
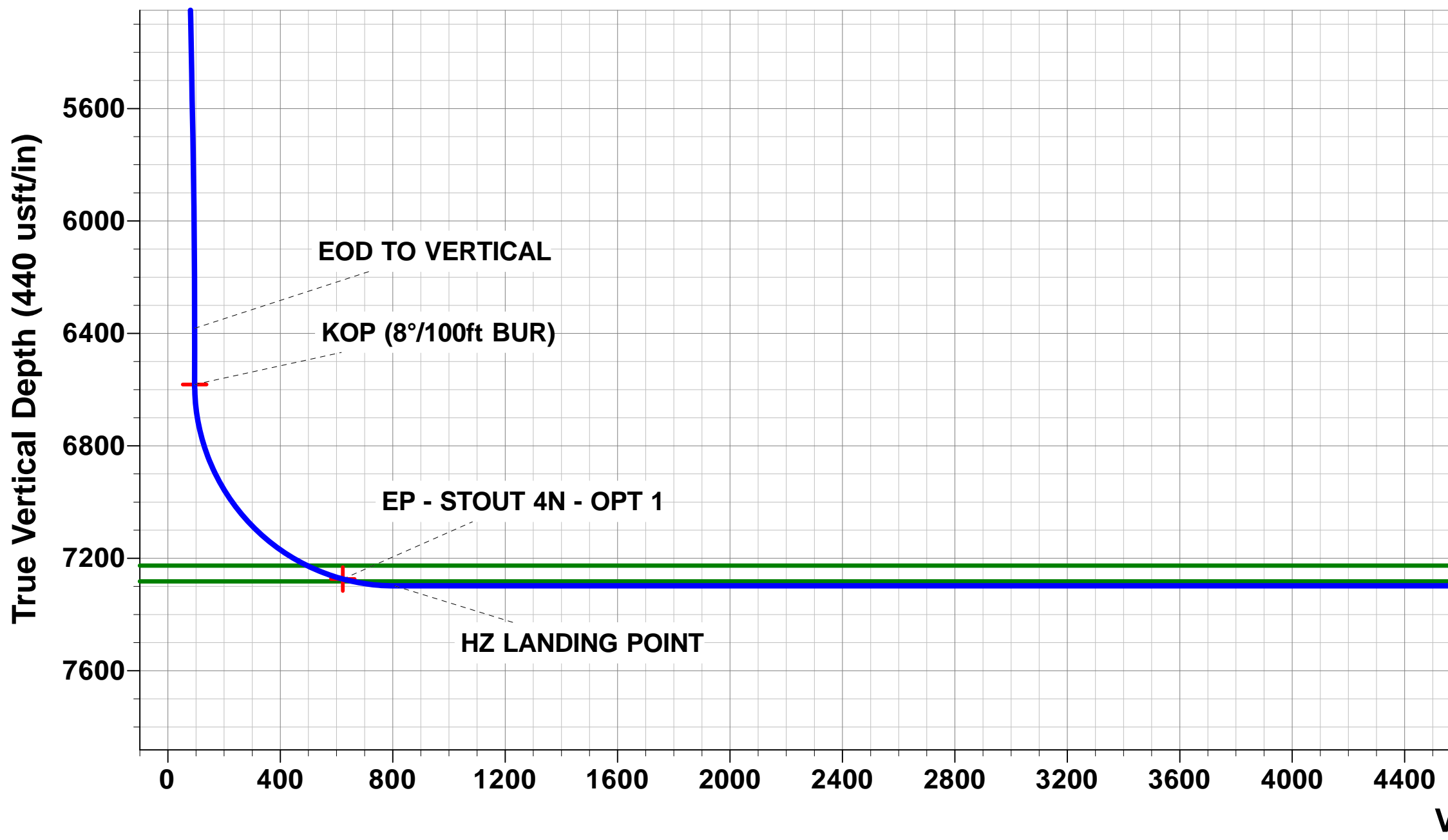
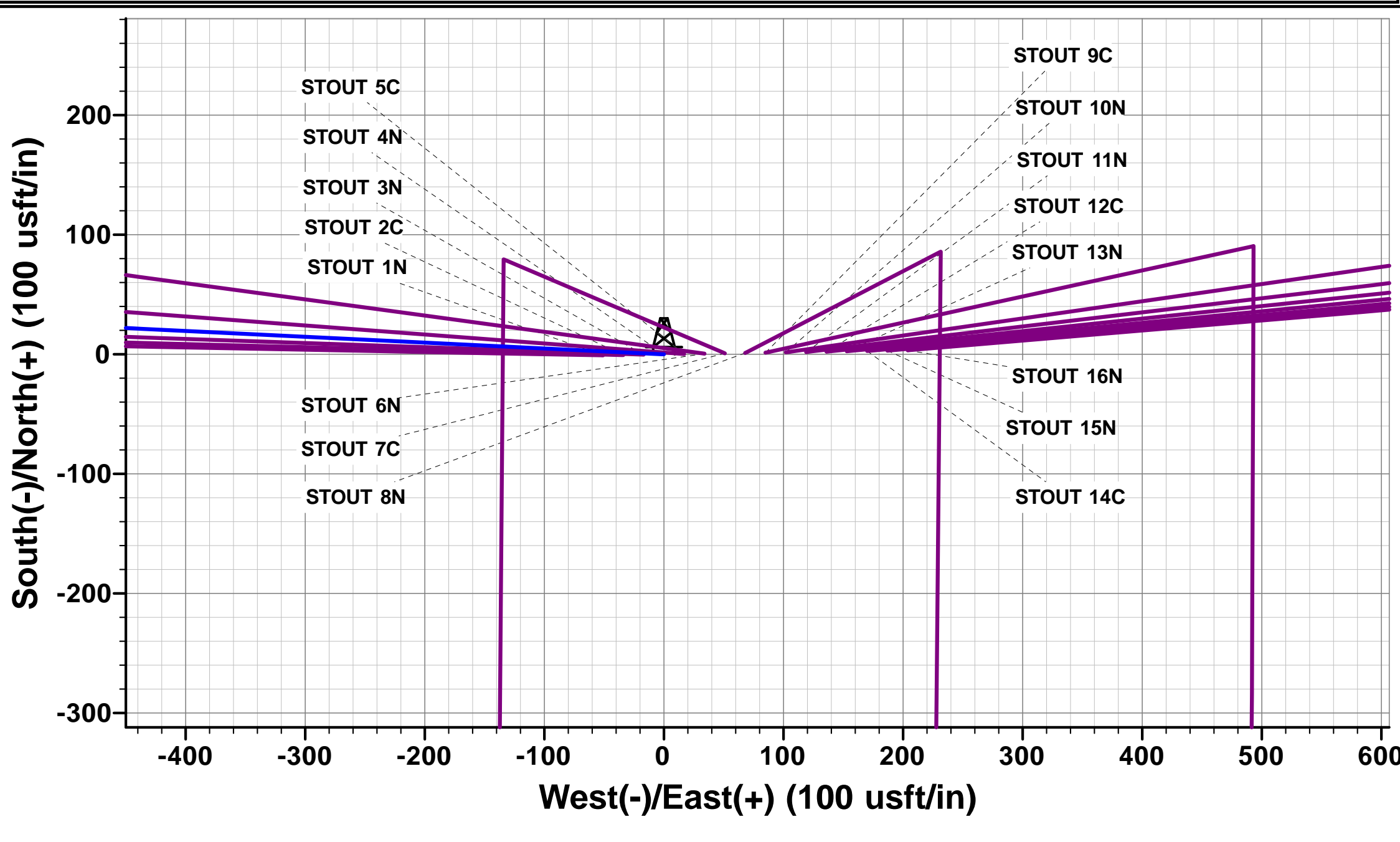
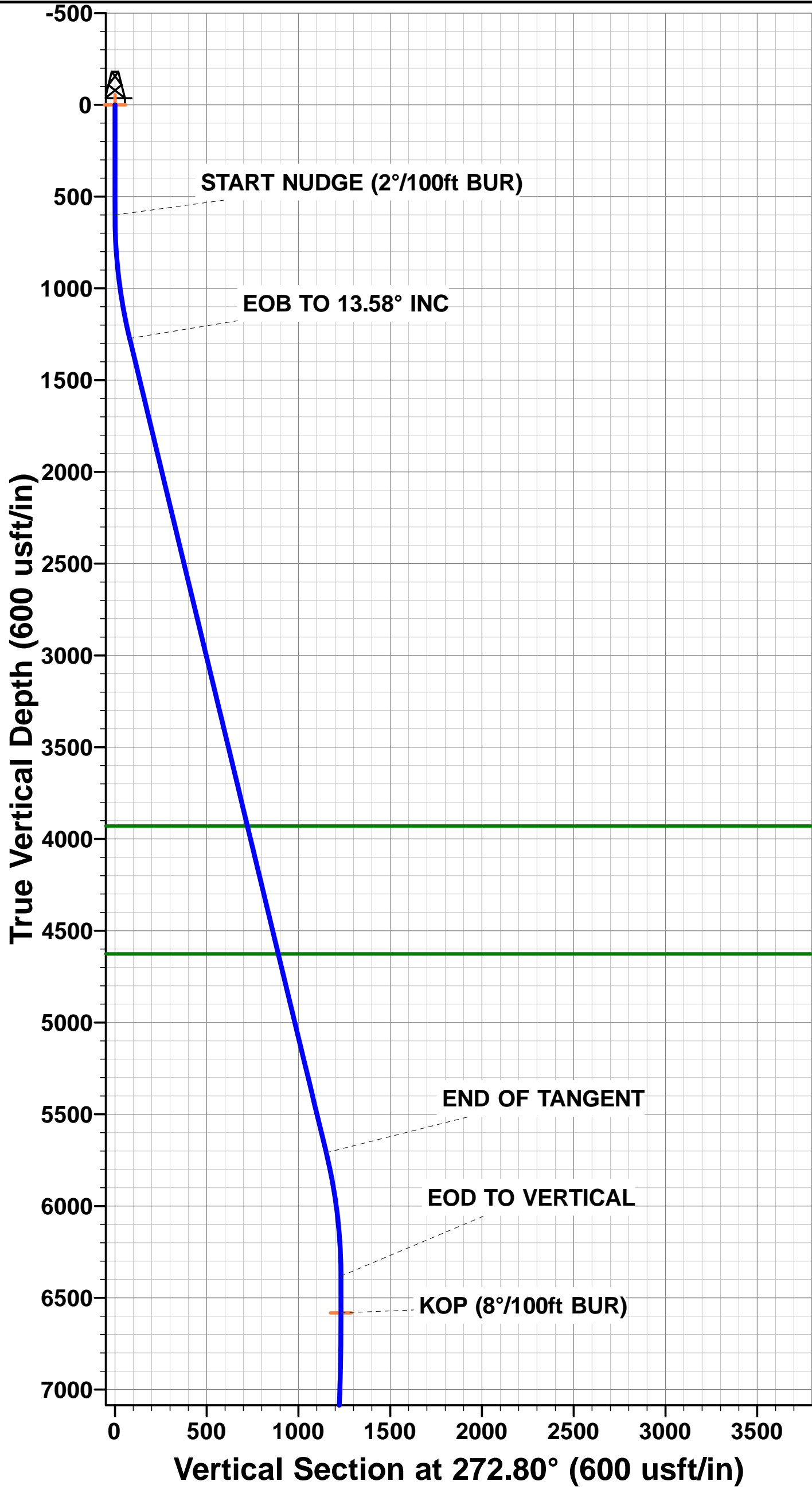
SHL: 288ft FNL & 2442ft FWL Sec 18

EP : 737ft FNL & 1210ft FWL Sec 18

BHL: 150ft FSL & 1210ft FWL of Sec 19

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - STOUT 4N - OPT 1	6581.81	60.26	-1230.05	40.581055	-104.827444
EP - STOUT 4N - OPT 1	7273.60	-470.56	-1233.20	40.579598	-104.827455
BHL - STOUT 4N - OPT 1	7298.00	-10158.37	-1289.99	40.553007	-104.827658
SHL - STOUT 4N - OPT 1	0.00	0.00	0.00	40.580890	-104.823016



PDC ENERGY

WELD COUNTY, COLORADO (TRUE)

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

STOUT 4N

ORIGINAL WELLBORE

PROPOSAL #1

Anticollision Report

28 February, 2019



Anticollision Report



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well STOUT 4N
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 4N	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	17,349.62	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	15,533.50	7,209.00	513.96	209.75	1.689	CC, ES, SF
EXIST DD VAIR #12-18 - Wellbore #1 - Wellbore #1	10,265.49	7,330.07	377.03	300.79	4.946	CC, ES
EXIST DD VAIR #12-18 - Wellbore #1 - Wellbore #1	10,300.00	7,330.43	378.60	301.74	4.926	SF
EXIST DD VAIR #13-18 - Wellbore #1 - Wellbore #1	11,523.07	7,530.87	355.23	242.50	3.151	CC, ES, SF
EXIST HZ THORNTON #19X-404 - Wellbore #1 - Wellbo	16,125.97	11,347.07	227.32	128.67	2.304	CC, ES, SF
EXIST VERT DRAKE #1118-04 - ORIGINAL WELLBORE	7,481.76	7,228.87	665.06	501.59	4.068	CC
EXIST VERT DRAKE #1118-04 - ORIGINAL WELLBORE	7,500.00	7,237.57	665.26	501.50	4.063	ES
EXIST VERT DRAKE #1118-04 - ORIGINAL WELLBORE	7,550.00	7,259.30	667.86	503.42	4.061	SF
EXIST VERT DRAKE #18-12 - Wellbore #1 - Design #1	600.00	580.00	969.12	957.37	82.461	CC
EXIST VERT DRAKE #18-12 - Wellbore #1 - Design #1	700.00	679.98	970.87	956.89	69.476	ES
EXIST VERT DRAKE #18-12 - Wellbore #1 - Design #1	7,700.00	7,262.97	2,239.84	2,074.57	13.553	SF
EXIST VERT DRAKE #18-13 - Wellbore #1 - Design #1	600.00	575.00	2,050.75	2,039.05	175.291	CC
EXIST VERT DRAKE #18-13 - Wellbore #1 - Design #1	9,000.00	7,273.00	2,203.93	2,020.61	12.023	ES
EXIST VERT DRAKE #18-13 - Wellbore #1 - Design #1	9,500.00	7,273.00	2,262.42	2,070.56	11.792	SF
STOUT 10N - ORIGINAL WELLBORE - PROPOSAL #1	600.00	600.00	101.96	99.54	42.119	CC, ES
STOUT 10N - ORIGINAL WELLBORE - PROPOSAL #1	17,349.62	17,385.80	2,031.47	1,642.95	5.229	SF
STOUT 11N - ORIGINAL WELLBORE - PROPOSAL #1	600.00	600.00	118.96	116.54	49.142	CC, ES
STOUT 11N - ORIGINAL WELLBORE - PROPOSAL #1	17,349.62	17,370.50	2,386.44	1,999.50	6.167	SF
STOUT 12C - ORIGINAL WELLBORE - PROPOSAL #1	600.00	600.00	135.96	133.54	56.166	CC, ES
STOUT 12C - ORIGINAL WELLBORE - PROPOSAL #1	17,349.62	17,655.17	2,754.24	2,366.61	7.105	SF
STOUT 13N - ORIGINAL WELLBORE - PROPOSAL #1	600.00	600.00	152.96	150.54	63.189	CC, ES
STOUT 13N - ORIGINAL WELLBORE - PROPOSAL #1	17,349.62	17,671.92	3,104.58	2,717.92	8.029	SF
STOUT 14C - ORIGINAL WELLBORE - PROPOSAL #1	500.00	500.00	169.97	167.99	86.224	CC, ES
STOUT 14C - ORIGINAL WELLBORE - PROPOSAL #1	17,349.62	17,914.93	3,467.81	3,079.81	8.938	SF
STOUT 15N - ORIGINAL WELLBORE - PROPOSAL #1	400.00	400.00	186.94	185.42	122.852	CC, ES
STOUT 15N - ORIGINAL WELLBORE - PROPOSAL #1	17,349.62	17,905.58	3,817.33	3,430.57	9.870	SF
STOUT 16N - ORIGINAL WELLBORE - PROPOSAL #1	300.00	300.00	203.94	202.87	190.221	CC, ES
STOUT 16N - ORIGINAL WELLBORE - PROPOSAL #1	17,349.62	17,771.74	4,183.61	3,803.99	11.020	SF
STOUT 1N - ORIGINAL WELLBORE - PROPOSAL #1	300.00	300.00	51.01	49.93	47.574	CC, ES
STOUT 1N - ORIGINAL WELLBORE - PROPOSAL #1	17,100.00	17,316.07	1,046.16	665.82	2.751	SF
STOUT 2C - ORIGINAL WELLBORE - PROPOSAL #1	400.00	400.00	34.00	32.48	22.347	CC, ES
STOUT 2C - ORIGINAL WELLBORE - PROPOSAL #1	17,349.62	17,699.93	734.98	357.74	1.948	SF
STOUT 3N - ORIGINAL WELLBORE - PROPOSAL #1	500.00	500.00	17.00	15.03	8.625	CC
STOUT 3N - ORIGINAL WELLBORE - PROPOSAL #1	17,349.62	17,517.27	366.88	-10.32	0.973	Level 1, ES, SF
STOUT 5C - ORIGINAL WELLBORE - PROPOSAL #1	600.00	600.00	17.00	14.58	7.024	CC, ES
STOUT 5C - ORIGINAL WELLBORE - PROPOSAL #1	17,349.62	17,479.51	402.19	46.30	1.130	Level 2, 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 STOUT 4N
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 4N	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 6N - ORIGINAL WELLBORE - PROPOSAL #1	600.00	600.00	33.98	31.56	14.036	CC, ES
STOUT 6N - ORIGINAL WELLBORE - PROPOSAL #1	17,349.62	17,349.70	721.48	335.70	1.870	SF
STOUT 7C - ORIGINAL WELLBORE - PROPOSAL #1	600.00	600.00	50.98	48.56	21.059	CC, ES
STOUT 7C - ORIGINAL WELLBORE - PROPOSAL #1	17,349.62	17,415.81	1,090.81	706.41	2.838	SF
STOUT 8N - ORIGINAL WELLBORE - PROPOSAL #1	600.00	600.00	67.98	65.56	28.083	CC, ES
STOUT 8N - ORIGINAL WELLBORE - PROPOSAL #1	17,349.62	17,245.76	1,426.85	1,039.25	3.681	SF
STOUT 9C - ORIGINAL WELLBORE - PROPOSAL #1	600.00	600.00	84.98	82.56	35.106	CC, ES
STOUT 9C - ORIGINAL WELLBORE - PROPOSAL #1	17,349.62	17,440.77	1,756.99	1,370.00	4.540	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 Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-167.86	-8,339.29	-1,793.42	8,530.42				
100.00	100.00	11.00	11.00	0.09	0.13	-167.86	-8,339.29	-1,793.42	8,529.96	8,529.75	0.21	N/A	
200.00	200.00	111.00	111.00	0.31	1.40	-167.86	-8,339.29	-1,793.42	8,529.96	8,528.25	1.71	4,989.905	
300.00	300.00	211.00	211.00	0.54	3.68	-167.86	-8,339.29	-1,793.42	8,529.96	8,525.75	4.21	2,025.477	
400.00	400.00	311.00	311.00	0.76	5.75	-167.86	-8,339.29	-1,793.42	8,529.96	8,523.45	6.51	1,310.029	
500.00	500.00	411.00	411.00	0.99	7.79	-167.86	-8,339.29	-1,793.42	8,529.96	8,521.18	8.78	971.855	
600.00	600.00	511.00	511.00	1.21	9.82	-167.86	-8,339.29	-1,793.42	8,529.96	8,518.93	11.03	773.329	
700.00	699.98	610.98	610.98	1.42	11.84	-80.68	-8,339.29	-1,793.42	8,529.68	8,516.41	13.27	643.013	
800.00	799.84	710.84	710.84	1.64	13.86	-80.74	-8,339.29	-1,793.42	8,528.83	8,513.34	15.49	550.540	
900.00	899.45	810.45	810.45	1.87	15.87	-80.82	-8,339.29	-1,793.42	8,527.43	8,509.70	17.73	480.973	
1,000.00	998.70	909.70	909.70	2.13	17.87	-80.94	-8,339.29	-1,793.42	8,525.48	8,505.50	19.99	426.580	
1,100.00	1,097.47	1,008.47	1,008.47	2.42	19.86	-81.09	-8,339.29	-1,793.42	8,523.01	8,500.74	22.27	382.742	
1,200.00	1,195.62	1,106.62	1,106.62	2.77	21.83	-81.27	-8,339.29	-1,793.42	8,520.03	8,495.45	24.59	346.553	
1,278.81	1,272.47	1,183.47	1,183.47	3.08	23.38	-81.44	-8,339.29	-1,793.42	8,517.34	8,490.91	26.44	322.147	
1,300.00	1,293.07	1,204.07	1,204.07	3.17	23.80	-81.47	-8,339.29	-1,793.42	8,516.58	8,489.64	26.94	316.095	
1,400.00	1,390.28	1,301.28	1,301.28	3.61	25.75	-81.63	-8,339.29	-1,793.42	8,513.04	8,483.70	29.33	290.210	
1,500.00	1,487.49	1,398.49	1,398.49	4.07	27.71	-81.78	-8,339.29	-1,793.42	8,509.55	8,477.81	31.74	268.079	
1,600.00	1,584.69	1,495.69	1,495.69	4.54	29.67	-81.93	-8,339.29	-1,793.42	8,506.13	8,471.97	34.16	248.981	
1,700.00	1,681.90	1,592.90	1,592.90	5.02	31.62	-82.08	-8,339.29	-1,793.42	8,502.78	8,466.18	36.59	232.355	
1,800.00	1,779.10	1,690.10	1,690.10	5.50	33.58	-82.23	-8,339.29	-1,793.42	8,499.49	8,460.45	39.03	217.763	
1,900.00	1,876.31	1,787.31	1,787.31	5.99	35.53	-82.39	-8,339.29	-1,793.42	8,496.26	8,454.78	41.47	204.862	
2,000.00	1,973.52	1,884.52	1,884.52	6.49	37.49	-82.54	-8,339.29	-1,793.42	8,493.09	8,449.17	43.92	193.380	
2,100.00	2,070.72	1,981.72	1,981.72	6.98	39.45	-82.69	-8,339.29	-1,793.42	8,489.99	8,443.62	46.37	183.097	
2,200.00	2,167.93	2,078.93	2,078.93	7.48	41.40	-82.85	-8,339.29	-1,793.42	8,486.95	8,438.13	48.82	173.839	
2,300.00	2,265.13	2,176.13	2,176.13	7.98	43.36	-83.00	-8,339.29	-1,793.42	8,483.98	8,432.70	51.28	165.459	
2,400.00	2,362.34	2,273.34	2,273.34	8.49	45.31	-83.15	-8,339.29	-1,793.42	8,481.07	8,427.33	53.73	157.842	
2,500.00	2,459.54	2,370.54	2,370.54	8.99	47.27	-83.30	-8,339.29	-1,793.42	8,478.22	8,422.03	56.19	150.886	
2,600.00	2,556.75	2,467.75	2,467.75	9.50	49.22	-83.46	-8,339.29	-1,793.42	8,475.44	8,416.79	58.65	144.512	
2,700.00	2,653.96	2,564.96	2,564.96	10.00	51.18	-83.61	-8,339.29	-1,793.42	8,472.72	8,411.61	61.11	138.649	
2,800.00	2,751.16	2,662.16	2,662.16	10.51	53.13	-83.76	-8,339.29	-1,793.42	8,470.06	8,406.49	63.57	133.239	
2,900.00	2,848.37	2,759.37	2,759.37	11.02	55.09	-83.92	-8,339.29	-1,793.42	8,467.47	8,401.44	66.03	128.231	
3,000.00	2,945.57	2,856.57	2,856.57	11.53	57.04	-84.07	-8,339.29	-1,793.42	8,464.95	8,396.45	68.50	123.583	
3,100.00	3,042.78	2,953.78	2,953.78	12.04	59.00	-84.23	-8,339.29	-1,793.42	8,462.49	8,391.53	70.96	119.257	
3,200.00	3,139.99	3,050.99	3,050.99	12.54	60.95	-84.38	-8,339.29	-1,793.42	8,460.09	8,386.67	73.42	115.221	

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