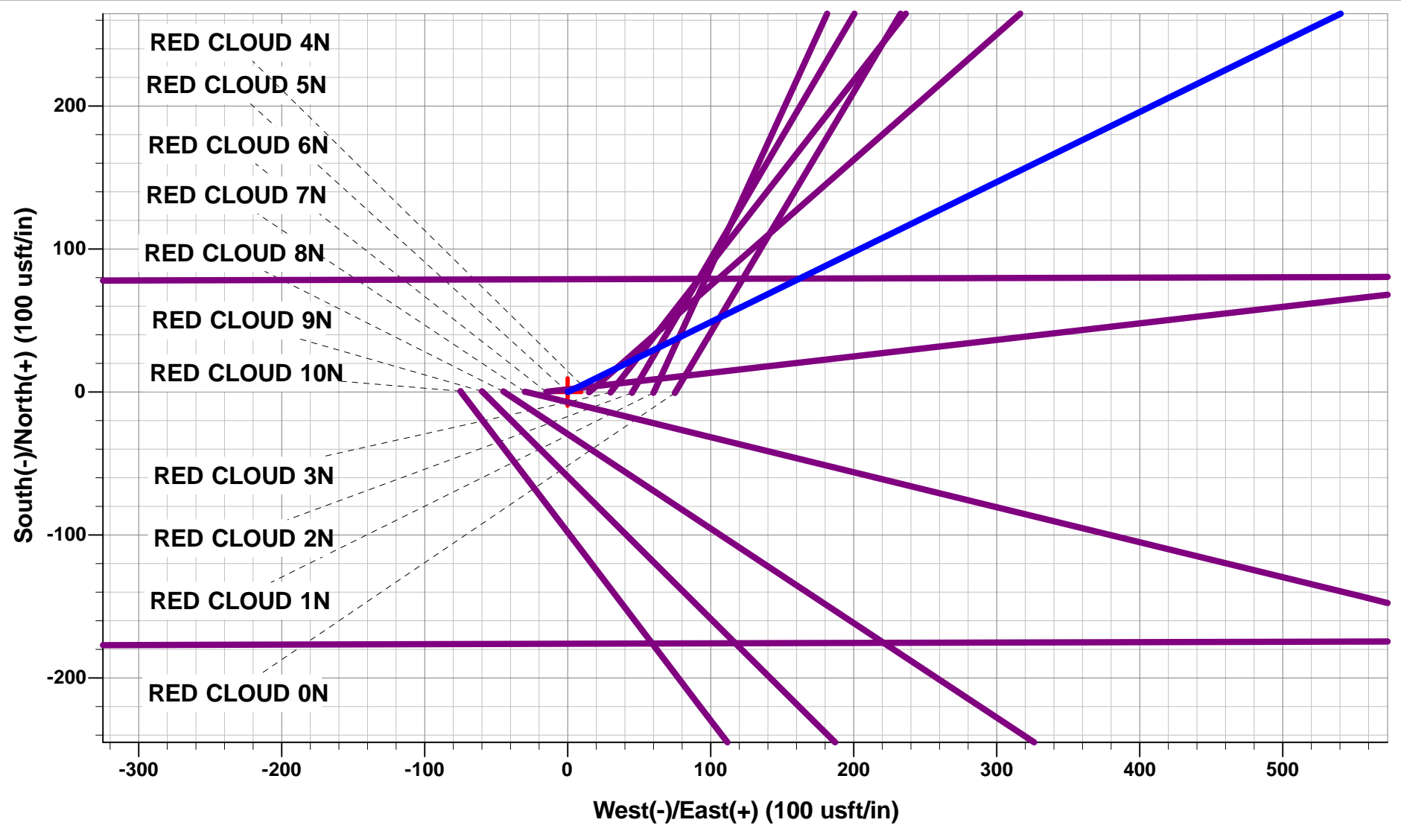




Project: WELD COUNTY, COLORADO (TRUE)
Site: SE NE SEC. 1 T4N R64W 6th P.M. (RED CLOUD)
Well: RED CLOUD 5N
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL #2

ANNOTATIONS									
TVD	MD	Inc	Azi	+N/-S	+E/-W	VSect	Dep	Annotation	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	SHL: 1529ft FNL & 704ft FEL of Sec 1	
800.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00	START NUDGE (2°/100ft BUR)	
1395.62	1400.00	12.00	63.91	27.53	56.22	-55.32	62.60	EOB TO 12° INC	
4398.50	4469.97	12.00	63.91	308.22	629.47	-619.39	700.88	END OF TANGENT	
4994.13	5069.97	0.00	63.91	335.75	685.70	-674.72	763.49	EOD TO VERTICAL	
5783.80	5859.64	0.00	0.00	335.75	685.70	-674.72	763.49	KOP (8°/100ft BUR)	
6500.00	6984.64	90.00	269.84	333.75	-30.49	41.05	1479.69	EP: 1195ft FNL & 737ft FEL of Sec 1	
6500.00	16639.12	90.00	269.84	306.98	-9684.94	9689.80	11134.17	BHL: 1195ft FNL & 50ft FWL of Sec 2	

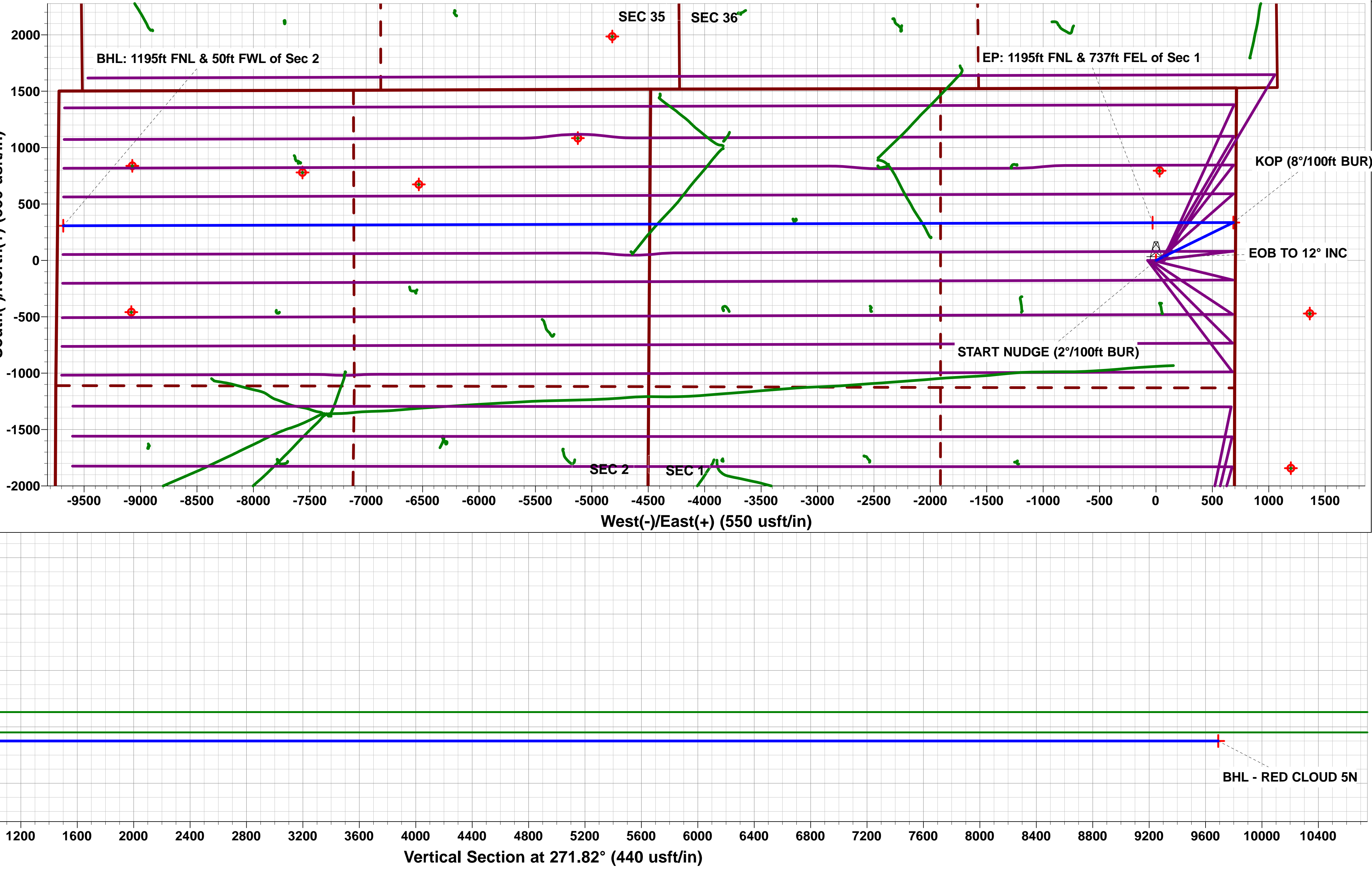
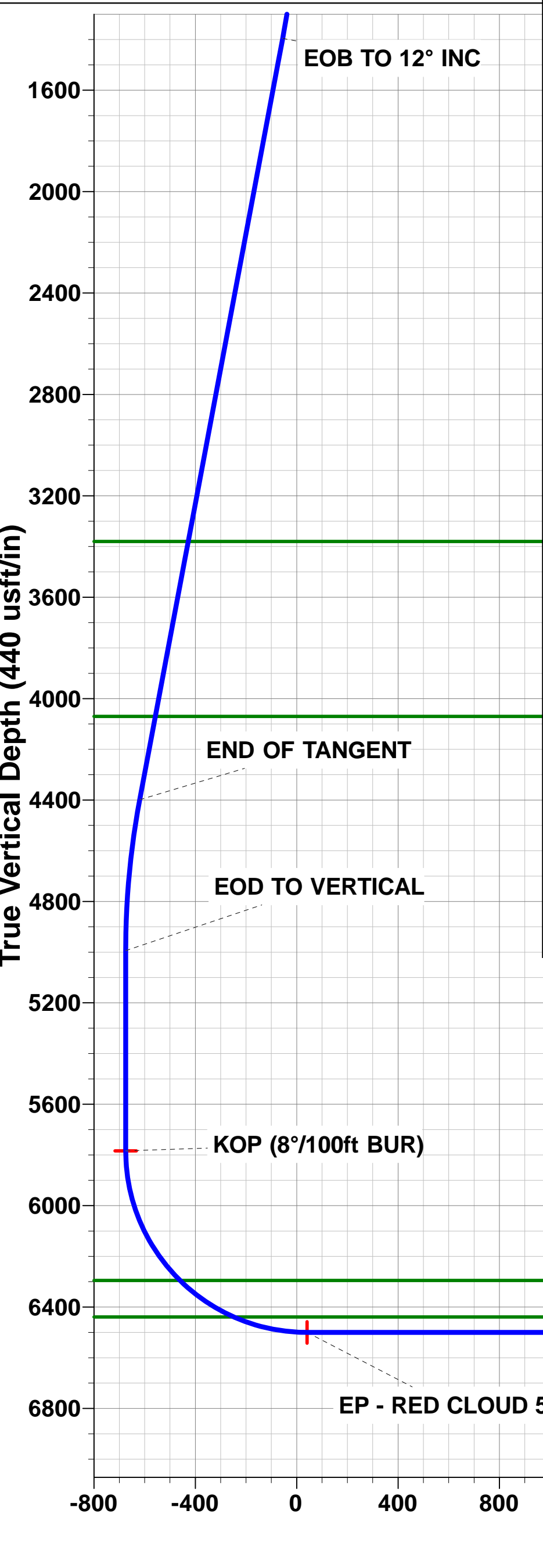
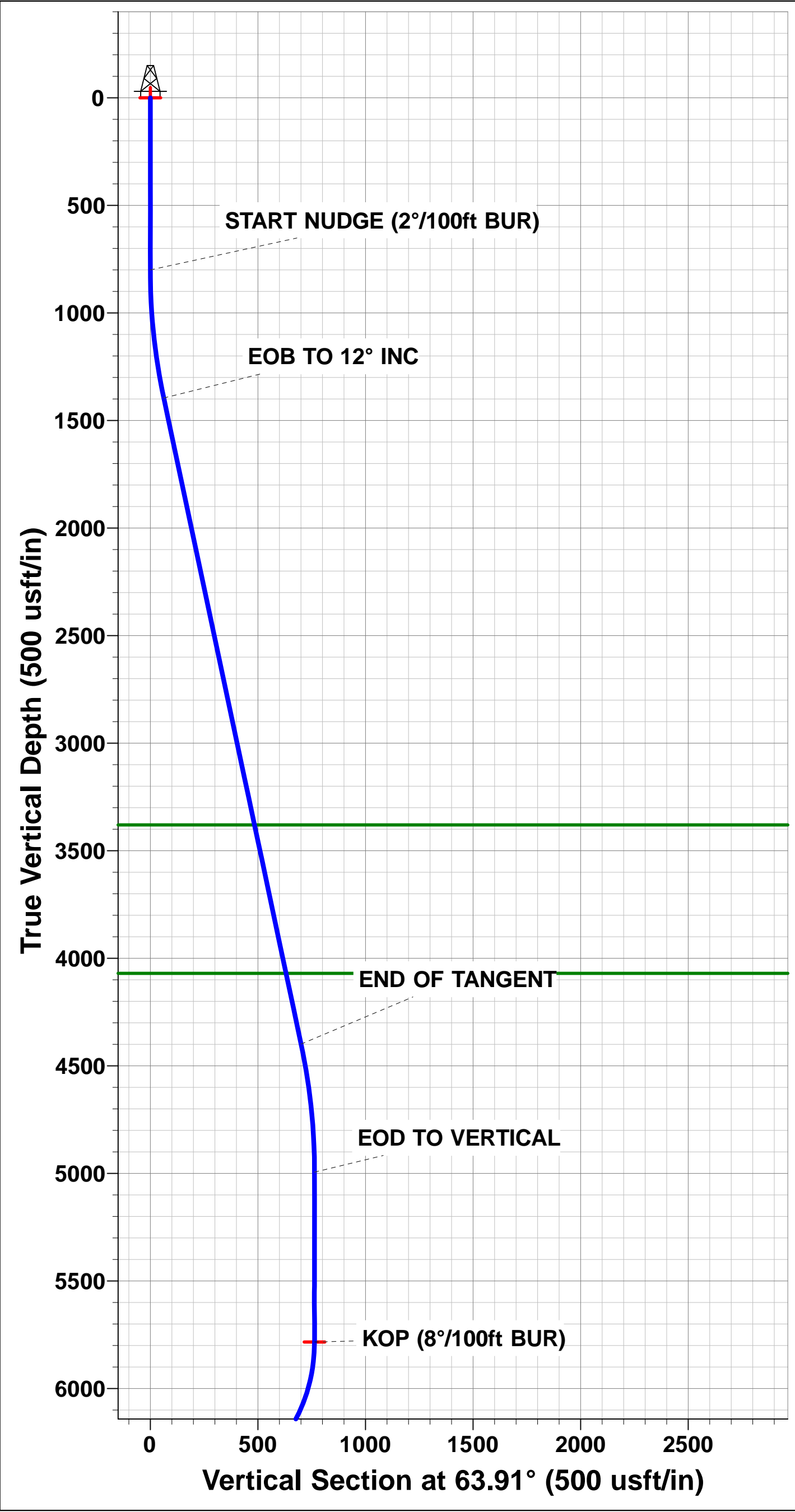
WELLBORE TARGET DETAILS (LAT/LONG)					
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - RED CLOUD 5N	5783.80	335.75	685.70	40.345405	-104.489601
EP - RED CLOUD 5N	6500.00	333.75	-30.49	40.345399	-104.492171
BHL - RED CLOUD 5N	6500.00	306.98	-9684.94	40.345320	-104.526806
SHL - RED CLOUD 5N	0.00	0.00	0.00	40.344483	-104.492061



PROPOSED LOCAL COORDINATES:
SHL: 1529ft FNL & 704ft FEL of Sec 1
EP: 1195ft FNL & 737ft FEL of Sec 1
BHL: 1195ft FNL & 50ft FWL of Sec 2

Azimuths to True North
Magnetic North: 7.94°

Magnetic Field
Strength: 52267.3snT
Dip Angle: 66.82°
Date: 26/07/2018
Model: IGRF2015



PDC ENERGY

**WELD COUNTY, COLORADO (TRUE)
SE NE SEC. 1 T4N R64W 6th P.M. (RED CLOUD)
RED CLOUD 5N**

**ORIGINAL WELLBORE
PROPOSAL #2**

Anticollision Report

13 August, 2018



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well RED CLOUD 5N
Project:	WELD COUNTY, COLORADO (TRUE)	TVD Reference:	KB-EST @ 4625.00usft (Original Well Elev)
Reference Site:	SE NE SEC. 1 T4N R64W 6th P.M. (RED CLOUD)	MD Reference:	KB-EST @ 4625.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	RED CLOUD 5N	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 #2	Offset TVD Reference:	Offset Datum

Reference	PROPOSAL #2		
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 10,000.00 usft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date	13/08/2018		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	16,639.13	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						
SE NE SEC. 1 T4N R64W 6th P.M. (RED CLOUD)						
EXIST HZ SOONER STATE B #36-63HN - Wellbore #1 -	1,862.43	1,554.10	1,909.63	1,902.42	264.708	CC
EXIST HZ SOONER STATE B #36-63HN - Wellbore #1 -	1,900.00	1,577.00	1,909.79	1,902.39	258.330	ES
EXIST HZ SOONER STATE B #36-63HN - Wellbore #1 -	11,200.00	11,055.00	2,256.74	1,996.99	8.688	SF
EXIST VERT ROTHE #4-6 - Wellbore #1 - Design #1	5,859.64	5,766.80	865.18	730.74	6.435	CC, ES, SF
EXIST VERT ROTHE #5-6 - Wellbore #1 - Design #1	5,859.64	5,766.80	1,053.67	924.10	8.132	CC
EXIST VERT ROTHE #5-6 - Wellbore #1 - Design #1	5,900.00	5,807.14	1,054.40	919.26	7.802	ES
EXIST VERT ROTHE #5-6 - Wellbore #1 - Design #1	5,950.00	5,856.92	1,057.33	921.52	7.785	SF
RED CLOUD 0N - ORIGINAL WELLBORE - PROPOSAL	300.00	300.00	74.96	73.89	69.916	CC, ES
RED CLOUD 0N - ORIGINAL WELLBORE - PROPOSAL	16,500.00	17,188.44	1,315.35	750.84	2.330	SF
RED CLOUD 10N - ORIGINAL WELLBORE - PROPOSAL	800.00	800.00	74.99	71.67	22.588	CC, ES
RED CLOUD 10N - ORIGINAL WELLBORE - PROPOSAL	16,639.13	16,813.39	1,326.27	759.26	2.339	SF
RED CLOUD 1N - ORIGINAL WELLBORE - PROPOSAL	400.00	400.00	59.99	58.47	39.424	CC, ES
RED CLOUD 1N - ORIGINAL WELLBORE - PROPOSAL	16,639.13	16,824.82	1,045.05	477.64	1.842	SF
RED CLOUD 2N - ORIGINAL WELLBORE - PROPOSAL	500.00	500.00	44.99	43.02	22.826	CC, ES
RED CLOUD 2N - ORIGINAL WELLBORE - PROPOSAL	16,639.13	16,810.73	768.58	204.00	1.361	Level 3, SF
RED CLOUD 3N - ORIGINAL WELLBORE - PROPOSAL	600.00	600.00	29.99	27.57	12.391	CC
RED CLOUD 3N - ORIGINAL WELLBORE - PROPOSAL	16,639.13	16,688.00	509.91	-57.62	0.898	Level 1, ES, SF
RED CLOUD 4N - ORIGINAL WELLBORE - PROPOSAL	700.00	700.00	15.00	12.13	5.225	CC
RED CLOUD 4N - ORIGINAL WELLBORE - PROPOSAL	16,639.13	16,726.85	265.76	-279.67	0.487	Level 1, ES, SF
RED CLOUD 6N - ORIGINAL WELLBORE - PROPOSAL	800.00	800.00	15.00	11.68	4.518	CC
RED CLOUD 6N - ORIGINAL WELLBORE - PROPOSAL	16,639.13	16,706.78	265.74	-281.40	0.486	Level 1, ES, SF
RED CLOUD 7N - ORIGINAL WELLBORE - PROPOSAL	800.00	800.00	29.99	26.67	9.035	CC
RED CLOUD 7N - ORIGINAL WELLBORE - PROPOSAL	16,639.13	16,626.18	509.93	-57.91	0.898	Level 1, ES, SF
RED CLOUD 8N - ORIGINAL WELLBORE - PROPOSAL	800.00	800.00	44.99	41.67	13.553	CC, ES
RED CLOUD 8N - ORIGINAL WELLBORE - PROPOSAL	16,639.13	16,708.61	817.40	251.51	1.444	Level 3, SF
RED CLOUD 9N - ORIGINAL WELLBORE - PROPOSAL	800.00	800.00	59.99	56.67	18.070	CC, ES
RED CLOUD 9N - ORIGINAL WELLBORE - PROPOSAL	16,639.13	16,682.65	1,069.76	502.17	1.885	SF

Company:	PDC ENERGY	Local Co-ordinate Reference:	Well RED CLOUD 5N
Project:	WELD COUNTY, COLORADO (TRUE)	TVD Reference:	KB-EST @ 4625.00usft (Original Well Elev)
Reference Site:	SE NE SEC. 1 T4N R64W 6th P.M. (RED CLOUD)	MD Reference:	KB-EST @ 4625.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	RED CLOUD 5N	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 #2	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
SE NE SEC. 36 T5N R64W 6th P.M. (PYRAMID)						
ABDN VERT ROTHE STATE B #36-15 - Wellbore #1 - W	7,687.91	6,326.62	1,735.88	1,697.57	45.316	CC
ABDN VERT ROTHE STATE B #36-15 - Wellbore #1 - W	7,700.00	6,326.29	1,735.92	1,697.32	44.976	ES
ABDN VERT ROTHE STATE B #36-15 - Wellbore #1 - W	10,000.00	6,273.70	2,890.58	2,790.82	28.975	SF
ABDN VERT ROTHE STATE B #36-16 - Wellbore #1 - W	5,048.82	4,934.72	1,990.77	1,971.20	101.722	CC, ES
ABDN VERT ROTHE STATE B #36-16 - Wellbore #1 - W	16,300.00	6,112.64	9,864.69	9,591.90	36.162	SF
EXIST DD ECKHARDT B #35-13 - Wellbore #1 - Wellbor	15,842.10	6,610.88	1,732.97	1,468.68	6.557	CC
EXIST DD ECKHARDT B #35-13 - Wellbore #1 - Wellbor	15,900.00	6,610.42	1,733.94	1,468.02	6.521	ES
EXIST DD ECKHARDT B #35-13 - Wellbore #1 - Wellbor	16,200.00	6,608.02	1,769.54	1,495.20	6.450	SF
EXIST VERT BAKER STATE B #36-13 - Wellbore #1 - W	10,594.70	6,422.86	1,888.74	1,772.24	16.212	CC
EXIST VERT BAKER STATE B #36-13 - Wellbore #1 - W	10,600.00	6,422.58	1,888.75	1,772.10	16.191	ES
EXIST VERT BAKER STATE B #36-13 - Wellbore #1 - W	11,400.00	6,387.06	2,052.93	1,914.09	14.787	SF
EXIST VERT BAKER STATE B #36-14 - Wellbore #1 - W	9,204.48	6,407.17	1,747.96	1,669.75	22.349	CC
EXIST VERT BAKER STATE B #36-14 - Wellbore #1 - W	9,300.00	6,405.89	1,750.56	1,669.75	21.660	ES
EXIST VERT BAKER STATE B #36-14 - Wellbore #1 - W	10,300.00	6,393.71	2,062.84	1,954.50	19.041	SF
EXIST VERT HOSHIKO #2 - Wellbore #1 - Wellbore #1	13,161.88	6,537.72	1,897.42	1,709.10	10.075	CC
EXIST VERT HOSHIKO #2 - Wellbore #1 - Wellbore #1	13,200.00	6,537.79	1,897.80	1,708.42	10.021	ES
EXIST VERT HOSHIKO #2 - Wellbore #1 - Wellbore #1	13,700.00	6,538.65	1,972.25	1,768.87	9.697	SF
EXIST VERT HOSHIKO #35-16H4 - Wellbore #1 - Desig	11,768.45	6,510.01	1,664.39	1,388.55	6.034	CC
EXIST VERT HOSHIKO #35-16H4 - Wellbore #1 - Desig	11,800.00	6,510.01	1,664.68	1,387.97	6.016	ES
EXIST VERT HOSHIKO #35-16H4 - Wellbore #1 - Desig	12,000.00	6,510.01	1,680.42	1,398.12	5.953	SF
EXIST VERT HOSHIKO B #35-14 - Wellbore #1 - Wellbo	14,672.80	6,506.56	1,811.77	1,581.35	7.863	CC
EXIST VERT HOSHIKO B #35-14 - Wellbore #1 - Wellbo	14,700.00	6,506.35	1,811.98	1,580.79	7.838	ES
EXIST VERT HOSHIKO B #35-14 - Wellbore #1 - Wellbo	15,100.00	6,503.32	1,861.45	1,619.06	7.679	SF

Company:	PDC ENERGY	Local Co-ordinate Reference:	Well RED CLOUD 5N
Project:	WELD COUNTY, COLORADO (TRUE)	TVD Reference:	KB-EST @ 4625.00usft (Original Well Elev)
Reference Site:	SE NE SEC. 1 T4N R64W 6th P.M. (RED CLOUD)	MD Reference:	KB-EST @ 4625.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	RED CLOUD 5N	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 #2	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
SE SE SEC. 1 T4N R64W 6th P.M. (LINDSEY)						
ABDN DD MERCER C #11-30D - Wellbore #1 - Wellbore	16,639.13	6,491.62	4,153.60	3,867.49	14.518	CC, ES, SF
ABDN VERT BOOY HILLS FARM #2-12 - Wellbore #1 -	15,889.70	6,565.45	1,939.41	1,674.93	7.333	CC
ABDN VERT BOOY HILLS FARM #2-12 - Wellbore #1 -	15,900.00	6,565.60	1,939.44	1,674.67	7.325	ES
ABDN VERT BOOY HILLS FARM #2-12 - Wellbore #1 -	16,300.00	6,571.68	1,982.32	1,706.36	7.183	SF
ABDN VERT FHA #10-1 - Wellbore #1 - Wellbore #1	8,212.58	6,500.00	2,120.11	2,068.58	41.143	CC
ABDN VERT FHA #10-1 - Wellbore #1 - Wellbore #1	8,300.00	6,500.00	2,121.91	2,068.09	39.423	ES
ABDN VERT FHA #10-1 - Wellbore #1 - Wellbore #1	10,700.00	6,530.75	3,268.20	3,148.76	27.363	SF
ABDN VERT FHA #15-1 - Wellbore #1 - Wellbore #1	0.00	0.00	3,349.80			
ABDN VERT FHA #15-1 - Wellbore #1 - Wellbore #1	805.66	799.58	3,350.19	3,348.06	1,573.397	ES
ABDN VERT FHA #15-1 - Wellbore #1 - Wellbore #1	14,900.00	6,312.15	7,559.17	7,322.72	31.969	SF
ABDN VERT HOSHIKO C #2-8 - Wellbore #1 - Wellbore	12,390.78	6,510.06	848.04	681.24	5.084	CC
ABDN VERT HOSHIKO C #2-8 - Wellbore #1 - Wellbore	12,400.00	6,510.30	848.09	681.04	5.077	ES
ABDN VERT HOSHIKO C #2-8 - Wellbore #1 - Wellbore	12,500.00	6,512.94	855.04	685.20	5.034	SF
ABDN VERT SAND CREEK RANCH C #2-3X - Wellbore	14,587.44	6,485.43	613.54	385.32	2.688	CC
ABDN VERT SAND CREEK RANCH C #2-3X - Wellbore	14,600.00	6,485.61	613.67	385.10	2.685	ES, SF
ABDN VERT SAND CREEK RANCH CO #2-3 - Wellbore	14,517.61	6,506.01	466.82	114.11	1.324	Level 3, CC, ES, SF
ABDN VERT SHAKLEE #1 - Wellbore #1 - Wellbore #1	16,122.83	6,500.00	3,373.93	3,102.82	12.445	CC
ABDN VERT SHAKLEE #1 - Wellbore #1 - Wellbore #1	16,200.00	6,500.00	3,374.81	3,101.53	12.350	ES
ABDN VERT SHAKLEE #1 - Wellbore #1 - Wellbore #1	16,639.13	6,500.00	3,413.20	3,127.61	11.951	SF
ABDN VERT SHAKLEE #2 - Wellbore #1 - Wellbore #1	14,787.03	6,500.00	3,345.53	3,111.84	14.316	CC
ABDN VERT SHAKLEE #2 - Wellbore #1 - Wellbore #1	14,900.00	6,500.00	3,347.43	3,110.57	14.133	ES
ABDN VERT SHAKLEE #2 - Wellbore #1 - Wellbore #1	16,100.00	6,539.31	3,593.69	3,323.18	13.285	SF
ABDN VERT SHAKLEE #3 - Wellbore #1 - Wellbore #1	14,750.00	6,522.92	2,076.82	1,844.22	8.929	CC
ABDN VERT SHAKLEE #3 - Wellbore #1 - Wellbore #1	14,800.00	6,522.71	2,077.42	1,843.42	8.878	ES
ABDN VERT SHAKLEE #3 - Wellbore #1 - Wellbore #1	15,300.00	6,520.76	2,148.41	1,900.39	8.662	SF
EXIST DD HOFFMAN C #2-20D - Wellbore #1 - Wellbore	15,324.58	6,648.62	1,363.30	1,093.97	5.062	CC
EXIST DD HOFFMAN C #2-20D - Wellbore #1 - Wellbore	15,400.00	6,649.87	1,365.39	1,093.94	5.030	ES
EXIST DD HOFFMAN C #2-20D - Wellbore #1 - Wellbore	15,500.00	6,651.52	1,374.54	1,100.28	5.012	SF
EXIST DD HOFFMAN C #2-25D - Wellbore #1 - Wellbore	15,396.13	6,789.09	2,770.37	2,496.50	10.116	CC
EXIST DD HOFFMAN C #2-25D - Wellbore #1 - Wellbore	15,500.00	6,789.17	2,772.32	2,495.53	10.016	ES
EXIST DD HOFFMAN C #2-25D - Wellbore #1 - Wellbore	16,200.00	6,789.75	2,884.64	2,588.22	9.732	SF
EXIST DD HOFFMAN C #2-33D - Wellbore #1 - Wellbore	16,639.13	7,264.42	2,777.71	2,440.32	8.233	CC, ES, SF
EXIST DD HOFFMAN C 2-21D - Wellbore #1 - Wellbore	14,144.57	6,531.40	1,301.44	1,074.23	5.728	CC
EXIST DD HOFFMAN C 2-21D - Wellbore #1 - Wellbore	14,200.00	6,531.88	1,302.62	1,073.85	5.694	ES
EXIST DD HOFFMAN C 2-21D - Wellbore #1 - Wellbore	14,400.00	6,533.57	1,326.27	1,091.89	5.659	SF
EXIST DD MARLEY C #1-18D - Wellbore #1 - Wellbore #	8,947.24	6,598.75	126.27	40.75	1.476	Level 3, CC, ES, SF
EXIST DD MARLEY C #1-24D - Wellbore #1 - Wellbore #	8,762.01	7,013.13	2,837.55	2,728.67	26.061	CC
EXIST DD MARLEY C #1-24D - Wellbore #1 - Wellbore #	8,800.00	7,012.71	2,837.80	2,727.90	25.821	ES
EXIST DD MARLEY C #1-24D - Wellbore #1 - Wellbore #	10,800.00	6,989.68	3,493.52	3,328.59	21.183	SF
EXIST DD MARLEY C #1-28D - Wellbore #1 - Wellbore #	8,681.32	6,581.00	1,378.80	1,297.28	16.914	CC
EXIST DD MARLEY C #1-28D - Wellbore #1 - Wellbore #	8,700.00	6,581.00	1,378.92	1,296.90	16.812	ES
EXIST DD MARLEY C #1-28D - Wellbore #1 - Wellbore #	9,300.00	6,597.81	1,511.12	1,412.79	15.368	SF
EXIST DD MARLEY C #1-30D - Wellbore #1 - Wellbore #	11,345.89	6,555.81	1,152.14	999.64	7.555	CC
EXIST DD MARLEY C #1-30D - Wellbore #1 - Wellbore #	11,400.00	6,556.64	1,153.41	999.40	7.489	ES
EXIST DD MARLEY C #1-30D - Wellbore #1 - Wellbore #	11,600.00	6,559.57	1,179.82	1,020.23	7.393	SF
EXIST DD MARLEY C #1-31D - Wellbore #1 - Wellbore #	11,605.14	6,710.90	244.99	81.22	1.496	Level 3, CC, ES, SF
EXIST DD MARLEY C #1-33D - Wellbore #1 - Wellbore #	11,311.77	6,614.78	2,736.61	2,585.76	18.141	CC
EXIST DD MARLEY C #1-33D - Wellbore #1 - Wellbore #	11,400.00	6,614.65	2,738.03	2,584.72	17.859	ES
EXIST DD MARLEY C #1-33D - Wellbore #1 - Wellbore #	12,700.00	6,612.76	3,068.59	2,878.98	16.184	SF
EXIST DD PANTHER C #11-27D - Wellbore #1 - Wellbor	12,808.74	6,635.62	4,034.49	3,841.62	20.919	CC
EXIST DD PANTHER C #11-27D - Wellbore #1 - Wellbor	12,900.00	6,635.26	4,035.52	3,840.10	20.651	ES
EXIST DD PANTHER C #11-27D - Wellbore #1 - Wellbor	15,200.00	6,624.00	4,689.91	4,430.08	18.050	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 RED CLOUD 5N
Project:	WELD COUNTY, COLORADO (TRUE)	TVD Reference:	KB-EST @ 4625.00usft (Original Well Elev)
Reference Site:	SE NE SEC. 1 T4N R64W 6th P.M. (RED CLOUD)	MD Reference:	KB-EST @ 4625.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	RED CLOUD 5N	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 #2	Offset TVD Reference:	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
SE SE SEC. 1 T4N R64W 6th P.M. (LINDSEY)						
EXIST DD PANTHER C #11-28D - Wellbore #1 - Wellbor	14,166.57	7,028.58	4,012.88	3,758.07	15.749	CC
EXIST DD PANTHER C #11-28D - Wellbore #1 - Wellbor	14,300.00	7,027.18	4,015.09	3,756.55	15.530	ES
EXIST DD PANTHER C #11-28D - Wellbore #1 - Wellbor	15,900.00	7,010.89	4,371.23	4,067.84	14.408	SF
EXIST DD PANTHER C #2-23D - Wellbore #1 - Wellbore	12,782.11	6,646.70	2,743.43	2,551.12	14.266	CC
EXIST DD PANTHER C #2-23D - Wellbore #1 - Wellbore	12,900.00	6,645.44	2,745.96	2,550.36	14.039	ES
EXIST DD PANTHER C #2-23D - Wellbore #1 - Wellbore	13,900.00	6,634.66	2,962.42	2,738.85	13.250	SF
EXIST HZ BOBCAT C #12-69HN - Wellbore #1 - Wellbor	7,336.81	11,078.00	3,940.64	3,777.97	24.225	CC
EXIST HZ BOBCAT C #12-69HN - Wellbore #1 - Wellbor	7,400.00	11,078.00	3,941.03	3,776.99	24.024	ES
EXIST HZ BOBCAT C #12-69HN - Wellbore #1 - Wellbor	14,800.00	5,949.00	4,813.79	4,571.94	19.904	SF
EXIST HZ HOFFMAN C #02-65HN - Wellbore #1 - Wellb	6,804.39	13,691.00	1,267.03	1,040.76	5.600	CC, ES
EXIST HZ HOFFMAN C #02-65HN - Wellbore #1 - Wellb	6,850.00	13,691.00	1,267.87	1,041.09	5.591	SF
EXIST HZ TOBY C #12-79HN - Wellbore #1 - Wellbore #	11,388.27	6,057.00	4,135.27	3,979.79	26.597	CC
EXIST HZ TOBY C #12-79HN - Wellbore #1 - Wellbore #	11,500.00	6,057.00	4,136.77	3,978.21	26.089	ES
EXIST HZ TOBY C #12-79HN - Wellbore #1 - Wellbore #	14,400.00	6,057.00	5,115.77	4,876.95	21.421	SF
EXIST VERT AMIGO #1 - Wellbore #1 - Wellbore #1	10,738.17	6,350.00	787.48	668.37	6.611	CC, ES
EXIST VERT AMIGO #1 - Wellbore #1 - Wellbore #1	10,900.00	6,350.00	803.94	680.38	6.507	SF
EXIST VERT AMIGO #2 - Wellbore #1 - Wellbore #1	9,487.45	6,487.86	735.33	649.03	8.521	CC
EXIST VERT AMIGO #2 - Wellbore #1 - Wellbore #1	9,500.00	6,488.05	735.44	648.80	8.488	ES
EXIST VERT AMIGO #2 - Wellbore #1 - Wellbore #1	9,700.00	6,491.04	765.43	673.29	8.307	SF
EXIST VERT AMIGO FARMS #1-12 - Wellbore #1 - Well	10,799.75	6,500.00	2,082.14	1,959.98	17.044	CC
EXIST VERT AMIGO FARMS #1-12 - Wellbore #1 - Well	10,900.00	6,500.00	2,084.55	1,959.60	16.683	ES
EXIST VERT AMIGO FARMS #1-12 - Wellbore #1 - Well	11,800.00	6,500.00	2,309.94	2,159.92	15.397	SF
EXIST VERT FEIT #1 - Wellbore #1 - Wellbore #1	9,326.84	6,463.64	522.63	441.13	6.412	CC, ES
EXIST VERT FEIT #1 - Wellbore #1 - Wellbore #1	9,400.00	6,461.57	527.72	444.22	6.320	SF
EXIST VERT FEIT #1-4 - Wellbore #1 - Wellbore #1	10,731.74	6,350.00	822.42	702.84	6.878	CC, ES
EXIST VERT FEIT #1-4 - Wellbore #1 - Wellbore #1	10,900.00	6,350.00	839.46	715.25	6.759	SF
EXIST VERT FHA #2-1 - Wellbore #1 - Wellbore #1	14,752.89	6,517.12	757.12	524.41	3.254	CC, ES
EXIST VERT FHA #2-1 - Wellbore #1 - Wellbore #1	14,800.00	6,517.22	758.59	524.56	3.241	SF
EXIST VERT FOOS #1-1614 - Wellbore #1 - Wellbore #1	0.00	0.00	2,776.55			
EXIST VERT FOOS #1-1614 - Wellbore #1 - Wellbore #1	300.00	275.67	2,777.14	2,776.40	3,779.460	ES
EXIST VERT FOOS #1-1614 - Wellbore #1 - Wellbore #1	16,639.13	6,865.61	9,795.45	9,511.45	34.491	SF
EXIST VERT FUEGO C #1-19 - Wellbore #1 - Wellbore #	10,148.35	6,480.11	32.20	-72.01	0.309	Level 1, CC, ES, SF
EXIST VERT HAPPY AMIGO C #1-25 - Wellbore #1 - W	10,158.39	6,524.80	3,042.21	2,937.50	29.053	CC
EXIST VERT HAPPY AMIGO C #1-25 - Wellbore #1 - W	10,200.00	6,524.46	3,042.50	2,936.63	28.739	ES
EXIST VERT HAPPY AMIGO C #1-25 - Wellbore #1 - W	12,600.00	6,506.27	3,900.79	3,728.08	22.586	SF
EXIST VERT HAPPY TALK #1 - Wellbore #1 - Wellbore	9,547.33	6,479.65	2,059.55	1,971.61	23.420	CC
EXIST VERT HAPPY TALK #1 - Wellbore #1 - Wellbore	9,600.00	6,479.40	2,060.23	1,970.84	23.048	ES
EXIST VERT HAPPY TALK #1 - Wellbore #1 - Wellbore	10,900.00	6,473.04	2,464.03	2,338.66	19.654	SF
EXIST VERT HAPPY TALK #2 - Wellbore #1 - Wellbore	9,501.29	6,539.24	3,350.30	3,264.04	38.838	CC
EXIST VERT HAPPY TALK #2 - Wellbore #1 - Wellbore	9,600.00	6,538.94	3,351.75	3,262.78	37.671	ES
EXIST VERT HAPPY TALK #2 - Wellbore #1 - Wellbore	13,200.00	6,526.91	4,990.49	4,801.33	26.382	SF
EXIST VERT HOFFMAN C #11-29 - Wellbore #1 - Wellb	15,470.57	6,598.80	3,795.79	3,542.77	15.002	CC
EXIST VERT HOFFMAN C #11-29 - Wellbore #1 - Wellb	15,600.00	6,604.32	3,798.00	3,541.35	14.798	ES
EXIST VERT HOFFMAN C #11-29 - Wellbore #1 - Wellb	16,639.13	16,639.13	3,971.03	3,683.26	13.800	SF
EXIST VERT HOSHIKO #1-2 - Wellbore #1 - Design #1	12,075.78	6,498.01	764.36	480.07	2.689	CC
EXIST VERT HOSHIKO #1-2 - Wellbore #1 - Design #1	12,100.00	6,498.01	764.75	479.77	2.684	ES, SF
EXIST VERT HOSHIKO #2-2 - Wellbore #1 - Design #1	13,486.60	6,522.01	358.02	34.03	1.105	Level 2, CC
EXIST VERT HOSHIKO #2-2 - Wellbore #1 - Design #1	13,500.00	6,522.01	358.28	33.91	1.105	Level 2, ES, SF
EXIST VERT HOSHIKO #7-2 - Wellbore #1 - Wellbore #1	13,571.53	6,506.81	552.74	353.12	2.769	CC
EXIST VERT HOSHIKO #7-2 - Wellbore #1 - Wellbore #1	13,600.00	6,506.95	553.47	353.05	2.762	ES, SF
EXIST VERT MCDERMED #1-1 - Wellbore #1 - Design #	6,920.13	6,483.10	461.68	312.86	3.102	CC, ES
EXIST VERT MCDERMED #1-1 - Wellbore #1 - Design #	6,950.00	6,485.16	462.64	313.36	3.099	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 RED CLOUD 5N
Project:	WELD COUNTY, COLORADO (TRUE)	TVD Reference:	KB-EST @ 4625.00usft (Original Well Elev)
Reference Site:	SE NE SEC. 1 T4N R64W 6th P.M. (RED CLOUD)	MD Reference:	KB-EST @ 4625.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	RED CLOUD 5N	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 #2	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
SE SE SEC. 1 T4N R64W 6th P.M. (LINDSEY)						
EXIST VERT MCDERMED #2-1 - Wellbore #1 - Wellbore	8,184.76	6,465.56	517.70	466.76	10.164	CC
EXIST VERT MCDERMED #2-1 - Wellbore #1 - Wellbore	8,200.00	6,465.61	517.92	466.59	10.089	ES
EXIST VERT MCDERMED #2-1 - Wellbore #1 - Wellbore	8,300.00	6,465.91	530.37	476.41	9.830	SF
EXIST VERT MCFERREN #4-2 - Wellbore #1 - Design #	16,025.43	4,629.00	1,948.41	1,822.40	15.463	CC, ES
EXIST VERT MCFERREN #4-2 - Wellbore #1 - Design #	16,300.00	4,629.00	1,967.66	1,838.80	15.269	SF
EXIST VERT MCFERREN #5-2 - Wellbore #1 - Design #	16,037.83	6,526.00	767.13	485.77	2.727	CC, ES
EXIST VERT MCFERREN #5-2 - Wellbore #1 - Design #	16,100.00	6,526.00	769.64	486.54	2.719	SF
EXIST VERT MINOR #1 - Wellbore #1 - Wellbore #1	10,831.48	6,400.00	3,513.93	3,390.96	28.575	CC
EXIST VERT MINOR #1 - Wellbore #1 - Wellbore #1	10,900.00	6,400.00	3,514.60	3,389.72	28.144	ES
EXIST VERT MINOR #1 - Wellbore #1 - Wellbore #1	13,600.00	6,400.00	4,473.53	4,273.28	22.339	SF
EXIST VERT REIN #1 - Wellbore #1 - Wellbore #1	8,145.02	6,469.01	652.55	602.17	12.953	CC, ES
EXIST VERT REIN #1 - Wellbore #1 - Wellbore #1	8,400.00	6,467.59	700.59	643.52	12.275	SF
EXIST VERT REIN #1-8 - Wellbore #1 - Wellbore #1	779.25	756.25	472.81	470.80	234.154	CC
EXIST VERT REIN #1-8 - Wellbore #1 - Wellbore #1	800.00	776.78	472.82	470.75	228.561	ES
EXIST VERT REIN #1-8 - Wellbore #1 - Wellbore #1	7,500.00	6,475.67	929.19	895.39	27.492	SF
EXIST VERT ROTHE #1 - Wellbore #1 - Wellbore #1	12,213.88	6,497.76	1,993.11	1,831.46	12.330	CC
EXIST VERT ROTHE #1 - Wellbore #1 - Wellbore #1	12,300.00	6,499.51	1,994.97	1,830.92	12.161	ES
EXIST VERT ROTHE #1 - Wellbore #1 - Wellbore #1	12,900.00	6,510.84	2,107.86	1,927.04	11.657	SF
EXIST VERT ROTHE #2 - Wellbore #1 - Wellbore #1	13,447.46	6,465.40	3,385.36	3,189.25	17.263	CC
EXIST VERT ROTHE #2 - Wellbore #1 - Wellbore #1	13,500.00	6,465.10	3,385.77	3,188.19	17.136	ES
EXIST VERT ROTHE #2 - Wellbore #1 - Wellbore #1	15,100.00	6,455.81	3,767.16	3,524.76	15.541	SF
EXIST VERT ROTHE #2-10 - Wellbore #1 - Wellbore #1	13,271.00	6,100.00	1,936.20	1,748.55	10.318	CC
EXIST VERT ROTHE #2-10 - Wellbore #1 - Wellbore #1	13,300.00	6,100.00	1,936.42	1,747.97	10.276	ES
EXIST VERT ROTHE #2-10 - Wellbore #1 - Wellbore #1	13,800.00	6,134.65	2,006.60	1,803.81	9.895	SF
EXIST VERT ROTHE #3 - Wellbore #1 - Wellbore #1	12,169.28	6,493.21	3,375.70	3,215.01	21.008	CC
EXIST VERT ROTHE #3 - Wellbore #1 - Wellbore #1	12,300.00	6,492.75	3,378.23	3,213.89	20.556	ES
EXIST VERT ROTHE #3 - Wellbore #1 - Wellbore #1	14,200.00	6,486.61	3,939.44	3,721.93	18.112	SF
EXIST VERT SPIKE STATE #CC6-12 - Wellbore #1 - De	2,365.90	2,317.42	2,180.29	2,128.84	42.375	CC
EXIST VERT SPIKE STATE #CC6-12 - Wellbore #1 - De	5,900.00	5,801.14	2,237.16	2,103.89	16.786	ES
EXIST VERT SPIKE STATE #CC6-12 - Wellbore #1 - De	6,300.00	6,173.93	2,270.04	2,130.99	16.326	SF
EXIST VERT SPIKE STATE #CC6-13 - Wellbore #1 - We	294.76	273.77	3,468.87	3,468.24	5,529.562	CC
EXIST VERT SPIKE STATE #CC6-13 - Wellbore #1 - We	600.00	562.98	3,469.26	3,467.77	2,324.967	ES
EXIST VERT SPIKE STATE #CC6-13 - Wellbore #1 - We	15,100.00	6,214.00	9,984.74	9,742.90	41.287	SF
LINDSEY 10N - ORIGINAL WELLBORE - PROPOSAL #	264.16	271.16	3,438.65	3,437.73	3,710.461	CC
LINDSEY 10N - ORIGINAL WELLBORE - PROPOSAL #	16,639.13	16,473.16	3,986.85	3,419.43	7.026	ES, SF
LINDSEY 1C - ORIGINAL WELLBORE - PROPOSAL #1	16,552.66	17,057.78	1,623.22	1,065.79	2.912	CC
LINDSEY 1C - ORIGINAL WELLBORE - PROPOSAL #1	16,600.00	17,061.79	1,623.74	1,064.88	2.905	ES
LINDSEY 1C - ORIGINAL WELLBORE - PROPOSAL #1	16,639.13	17,061.79	1,625.20	1,065.26	2.902	SF
LINDSEY 2N - ORIGINAL WELLBORE - PROPOSAL #1	16,561.04	16,856.65	1,865.93	1,301.37	3.305	CC
LINDSEY 2N - ORIGINAL WELLBORE - PROPOSAL #1	16,600.00	16,856.65	1,866.30	1,300.65	3.299	ES
LINDSEY 2N - ORIGINAL WELLBORE - PROPOSAL #1	16,639.13	16,856.65	1,867.50	1,300.74	3.295	SF
LINDSEY 3N - ORIGINAL WELLBORE - PROPOSAL #1	16,562.66	16,822.59	2,133.32	1,568.93	3.780	CC
LINDSEY 3N - ORIGINAL WELLBORE - PROPOSAL #1	16,639.13	16,822.59	2,134.67	1,568.13	3.768	ES, SF
LINDSEY 4N - ORIGINAL WELLBORE - PROPOSAL #1	16,566.57	16,701.63	2,394.11	1,829.28	4.239	CC
LINDSEY 4N - ORIGINAL WELLBORE - PROPOSAL #1	16,639.13	16,701.63	2,395.20	1,828.33	4.225	ES, SF
LINDSEY 5N - ORIGINAL WELLBORE - PROPOSAL #1	16,568.00	16,694.71	2,661.22	2,096.49	4.712	CC
LINDSEY 5N - ORIGINAL WELLBORE - PROPOSAL #1	16,639.13	16,694.71	2,662.18	2,095.45	4.697	ES, SF
LINDSEY 6N - ORIGINAL WELLBORE - PROPOSAL #1	16,568.68	16,594.46	2,925.96	2,361.05	5.179	CC
LINDSEY 6N - ORIGINAL WELLBORE - PROPOSAL #1	16,639.13	16,594.46	2,926.81	2,359.92	5.163	ES, SF
LINDSEY 7N - ORIGINAL WELLBORE - PROPOSAL #1	4,016.30	4,300.00	3,184.27	3,157.69	119.804	CC
LINDSEY 7N - ORIGINAL WELLBORE - PROPOSAL #1	16,639.13	16,630.53	3,193.57	2,626.50	5.632	ES, SF
LINDSEY 8N - ORIGINAL WELLBORE - PROPOSAL #1	3,152.96	3,428.91	3,382.94	3,361.98	161.348	CC

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 RED CLOUD 5N
Project:	WELD COUNTY, COLORADO (TRUE)	TVD Reference:	KB-EST @ 4625.00usft (Original Well Elev)
Reference Site:	SE NE SEC. 1 T4N R64W 6th P.M. (RED CLOUD)	MD Reference:	KB-EST @ 4625.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	RED CLOUD 5N	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 #2	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
Offset Well - Wellbore - Design						
SE SE SEC. 1 T4N R64W 6th P.M. (LINDSEY)						
LINDSEY 8N - ORIGINAL WELLBORE - PROPOSAL #1	16,639.13	16,558.58	3,454.80	2,887.31	6.088	ES, SF
LINDSEY 9N - ORIGINAL WELLBORE - PROPOSAL #1	364.16	371.16	3,424.12	3,422.74	2,487.957	CC
LINDSEY 9N - ORIGINAL WELLBORE - PROPOSAL #1	16,639.13	16,608.36	3,721.47	3,153.73	6.555	ES, SF

Offset Design SE NE SEC. 1 T4N R64W 6th P.M. (RED CLOUD) - EXIST HZ SOONER STATE B #36-63HN - Wellbo												Offset Site Error:	0.00 usft
Survey Program: 572-MWD												Offset Well Error:	0.00 usft
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Semi Major Axis 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	24.99	1,794.93	836.50	1,980.28				
100.00	100.00	99.00	99.00	0.09	0.11	24.99	1,794.93	836.50	1,980.28	1,980.08	0.19	N/A	
200.00	200.00	199.00	199.00	0.31	0.22	24.99	1,794.93	836.50	1,980.28	1,979.75	0.53	3,762.338	
300.00	300.00	299.00	299.00	0.54	0.32	24.99	1,794.93	836.50	1,980.28	1,979.42	0.86	2,304.875	
400.00	400.00	399.00	399.00	0.76	0.43	24.99	1,794.93	836.50	1,980.28	1,979.08	1.19	1,661.312	
500.00	500.00	499.00	499.00	0.99	0.54	24.99	1,794.93	836.50	1,980.28	1,978.75	1.52	1,298.693	
600.00	600.00	599.61	599.61	1.21	0.68	24.99	1,794.94	836.45	1,980.27	1,978.38	1.89	1,048.775	
700.00	700.00	703.69	703.69	1.44	0.89	24.96	1,795.18	835.67	1,980.16	1,977.83	2.33	851.029	
800.00	800.00	809.08	809.08	1.66	1.10	24.94	1,795.17	834.75	1,979.78	1,977.02	2.76	717.264	
900.00	899.98	907.19	907.18	1.88	1.30	-39.05	1,795.04	833.86	1,977.93	1,974.75	3.18	621.867	
1,000.00	999.84	1,009.63	1,009.61	2.10	1.52	-39.23	1,795.01	832.83	1,973.42	1,969.80	3.61	546.358	
1,100.00	1,099.45	1,113.33	1,113.30	2.33	1.73	-39.52	1,794.79	831.69	1,966.02	1,961.97	4.05	485.055	
1,200.00	1,198.70	1,208.00	1,207.97	2.58	1.94	-39.90	1,794.61	830.43	1,955.89	1,951.41	4.49	435.855	
1,300.00	1,297.47	1,253.70	1,253.66	2.86	2.03	-40.19	1,795.10	830.17	1,944.66	1,939.82	4.83	402.313	
1,400.00	1,395.62	1,300.00	1,299.93	3.19	2.13	-40.51	1,796.68	830.80	1,933.60	1,928.40	5.20	372.059	
1,500.00	1,493.44	1,340.84	1,340.69	3.55	2.22	-40.67	1,799.10	831.89	1,924.11	1,918.54	5.58	344.946	
1,600.00	1,591.25	1,392.00	1,391.60	3.93	2.34	-40.89	1,803.71	833.62	1,917.64	1,911.65	5.99	320.073	
1,700.00	1,689.07	1,464.30	1,463.41	4.32	2.50	-41.21	1,811.81	835.88	1,913.28	1,906.81	6.47	295.638	
1,800.00	1,786.88	1,523.11	1,521.74	4.73	2.64	-41.50	1,819.16	837.29	1,910.22	1,903.29	6.93	275.527	
1,862.43	1,847.95	1,554.10	1,552.39	4.99	2.72	-41.65	1,823.65	838.26	1,909.63	1,902.42	7.21	264.708	CC
1,900.00	1,884.70	1,577.00	1,574.99	5.15	2.78	-41.77	1,827.26	839.10	1,909.79	1,902.39	7.39	258.330	ES
2,000.00	1,982.51	1,629.02	1,626.18	5.57	2.93	-42.02	1,836.24	841.24	1,911.85	1,903.99	7.86	243.290	
2,100.00	2,080.33	1,669.00	1,665.39	5.99	3.05	-42.22	1,843.83	843.05	1,916.34	1,908.04	8.30	230.922	
2,200.00	2,178.14	1,735.58	1,730.37	6.43	3.27	-42.56	1,857.92	846.54	1,923.10	1,914.28	8.82	218.141	
2,300.00	2,275.96	1,815.55	1,807.95	6.86	3.56	-42.96	1,876.74	851.23	1,932.15	1,922.77	9.37	206.162	
2,400.00	2,373.77	1,889.75	1,879.88	7.30	3.84	-43.35	1,894.54	855.12	1,941.74	1,931.82	9.92	195.729	
2,500.00	2,471.59	1,946.00	1,934.10	7.73	4.07	-43.64	1,909.11	858.49	1,953.47	1,943.04	10.43	187.347	
2,600.00	2,569.40	2,024.25	2,009.20	8.18	4.43	-44.05	1,930.56	863.35	1,966.88	1,955.88	11.01	178.682	
2,700.00	2,667.22	2,204.40	2,182.96	8.62	5.20	-45.01	1,977.16	872.16	1,978.33	1,966.48	11.85	166.976	
2,800.00	2,765.03	2,307.77	2,283.23	9.06	5.63	-45.54	2,001.81	877.15	1,988.20	1,975.71	12.49	159.182	
2,900.00	2,862.84	2,378.52	2,351.77	9.51	5.95	-45.90	2,019.01	880.55	1,998.73	1,985.67	13.06	153.072	
3,000.00	2,960.66	2,442.83	2,413.81	9.95	6.26	-46.20	2,035.40	884.84	2,011.01	1,997.40	13.61	147.736	
3,100.00	3,058.47	2,518.00	2,485.95	10.40	6.63	-46.56	2,055.89	889.89	2,025.09	2,010.89	14.21	142.554	
3,200.00	3,156.29	2,594.99	2,559.60	10.85	7.04	-46.94	2,077.84	894.52	2,040.35	2,025.54	14.81	137.723	
3,300.00	3,254.10	2,684.26	2,644.92	11.30	7.51	-47.40	2,103.71	899.22	2,056.11	2,040.64	15.47	132.940	
3,400.00	3,351.92	2,785.26	2,741.36	11.74	8.05	-47.93	2,133.28	904.08	2,072.22	2,056.06	16.16	128.259	
3,500.00	3,449.73	2,891.12	2,842.57	12.19	8.62	-48.48	2,164.00	908.60	2,088.11	2,071.24	16.86	123.819	
3,600.00	3,547.55	3,097.92	3,041.28	12.64	9.63	-49.55	2,220.62	916.44	2,103.59	2,085.73	17.85	117.815	
3,700.00	3,645.36	3,222.28	3,162.17	13.09	10.17	-50.16	2,249.47	920.84	2,113.90	2,095.31	18.59	113.704	

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