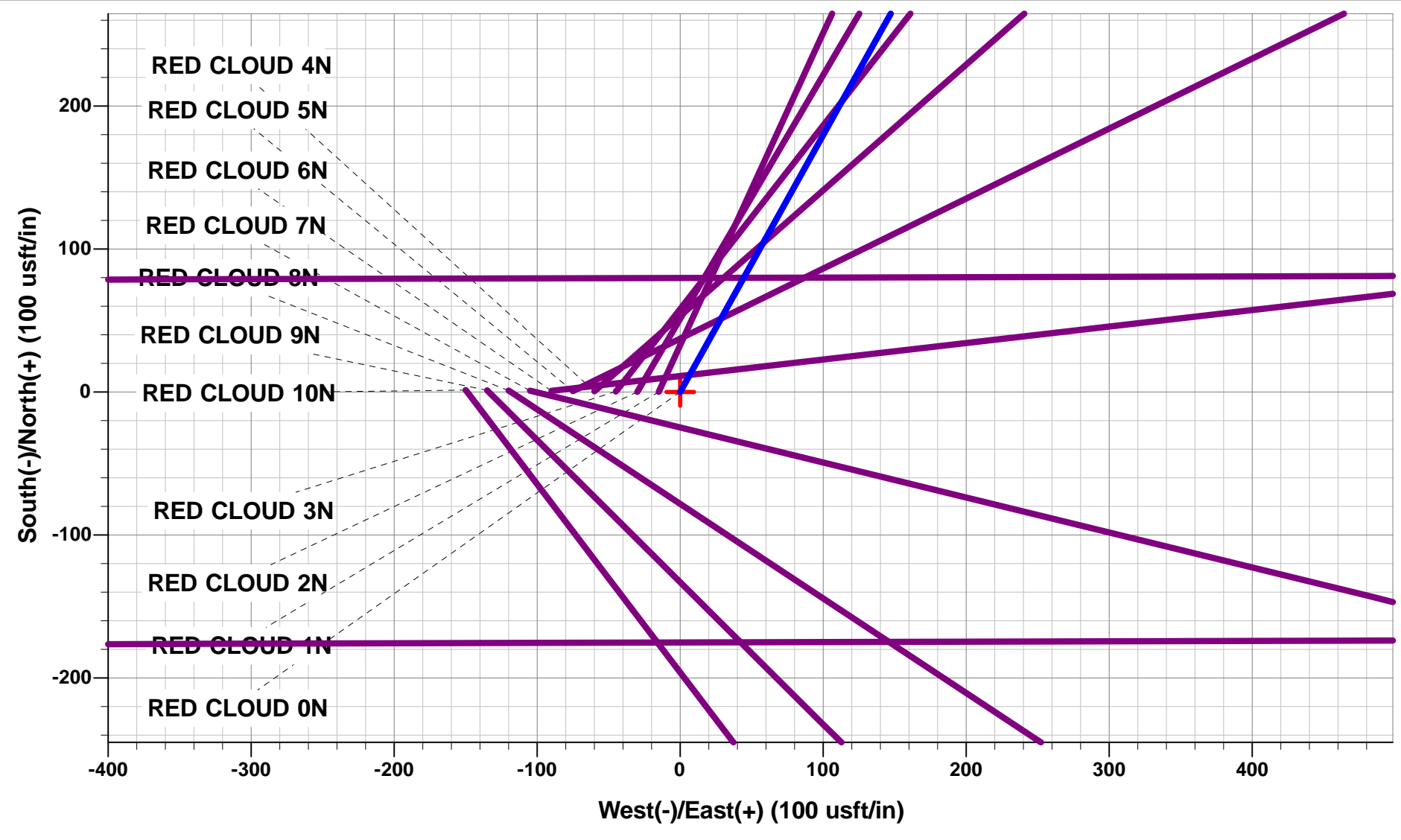




Project: WELD COUNTY, COLORADO (TRUE)
Site: SE NE SEC. 1 T4N R64W 6th P.M. (RED CLOUD)
Well: RED CLOUD 0N
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL #3

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: 1530ft FNL & 629ft FEL of Sec 1	
300.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	START NUDGE (2°/100ft BUR)	
1489.95	1527.13	24.54	29.09	226.19	125.82	-86.23	258.83	EOB TO 24.54° INC	
4483.85	4818.39	24.54	29.09	1420.88	790.38	-541.71	1625.92	END OF TANGENT	
5673.80	6045.52	0.00	29.09	1647.07	916.20	-627.95	1884.74	EOD TO VERTICAL	
5873.80	6245.52	0.00	0.00	1647.07	916.20	-627.95	1884.74	KOP (8°/100ft BUR)	
6494.05	6995.53	60.00	269.84	1646.07	558.10	-275.05	2242.92	60° INC	
6590.00	7370.52	90.00	269.84	1645.08	200.01	77.83	2600.94	EP: 115ft FSL & 800ft FEL of Sec 36	
6590.10	17112.20	90.00	269.84	1618.01	-9541.63	9677.84	12342.62	BHL: 115ft FSL & 50ft FWL of Sec 35	

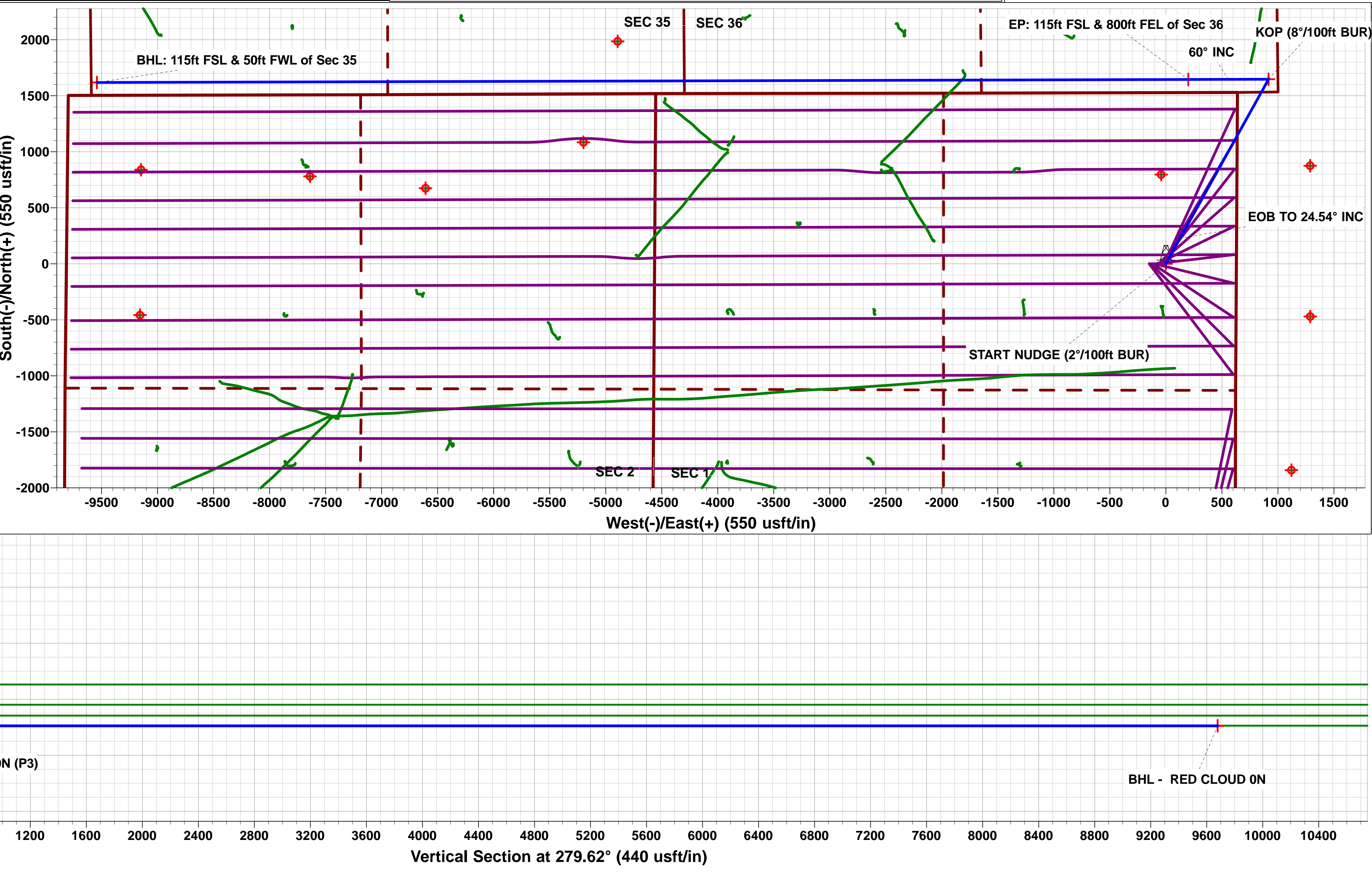
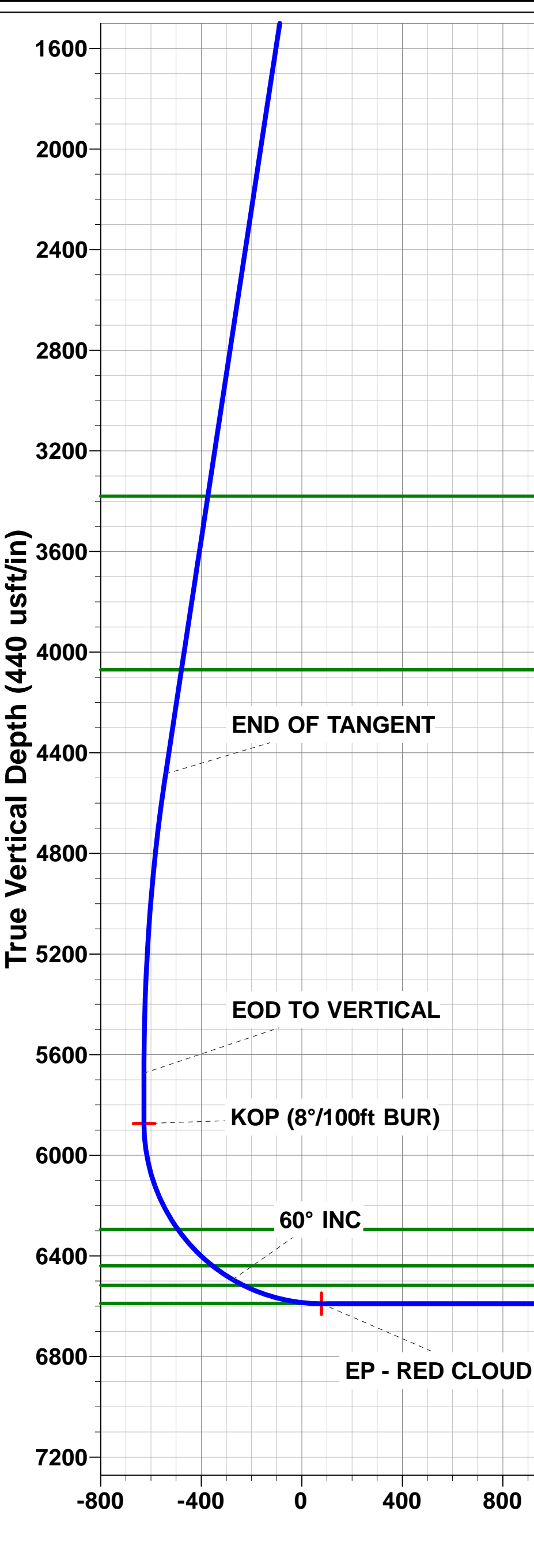
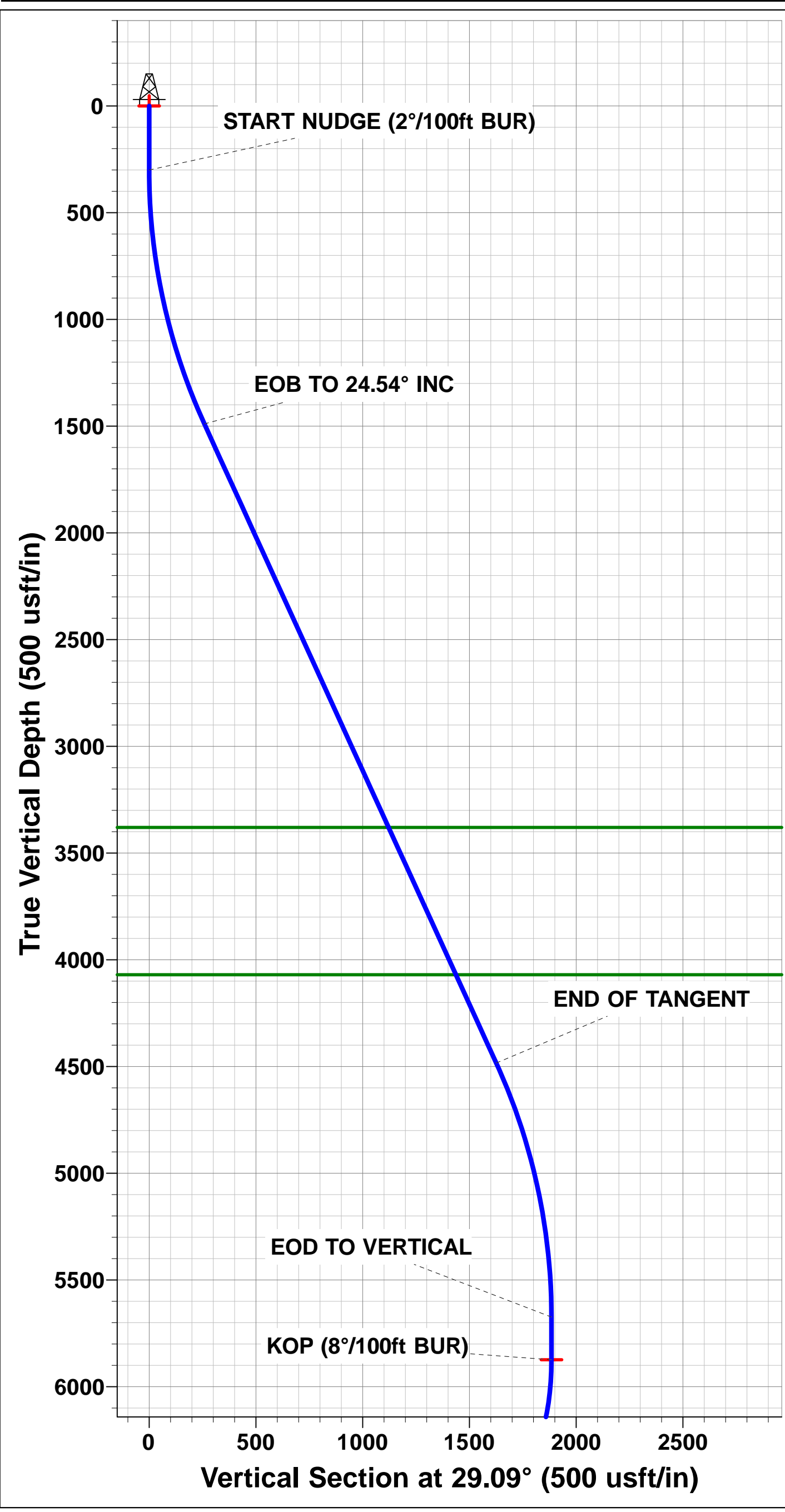
WELLBORE TARGET DETAILS (LAT/LONG)					
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - RED CLOUD 0N (P3)	5873.80	1647.07	916.20	40.349002	-104.488505
EP - RED CLOUD 0N (P3)	6590.00	1645.08	200.01	40.348997	-104.491075
BHL - RED CLOUD 0N	6590.00	1617.95	-9541.63	40.348917	-104.526025
SHL - RED CLOUD 0N	0.00	0.00	0.00	40.344481	-104.491792



PROPOSED LOCAL COORDINATES:
SHL: 1530ft FNL & 629ft FEL of Sec 1
EP: 115ft FSL & 800ft FEL of Sec 36
BHL: 115ft FSL & 50ft FWL of Sec 35

Azimuths to True North
Magnetic North: 7.94°

Magnetic Field
Strength: 52268.6snT
Dip Angle: 66.82°
Date: 22/07/2018
Model: IGRF2015



PDC ENERGY

**WELD COUNTY, COLORADO (TRUE)
SE NE SEC. 1 T4N R64W 6th P.M. (RED CLOUD)
RED CLOUD 0N**

**ORIGINAL WELLBORE
PROPOSAL #3**

Anticollision Report

28 August, 2018



Anticollision Report



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well RED CLOUD 0N - Slot RED CLOUD 0N
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 0N	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 #3	Offset TVD Reference:	Offset Datum

Reference	PROPOSAL #3		
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	28/08/2018		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	17,112.20	PROPOSAL #3 (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 -	11,349.85	11,055.00	879.93	627.91	3.491	CC, ES
EXIST HZ SOONER STATE B #36-63HN - Wellbore #1 -	11,400.00	11,055.00	881.36	627.95	3.478	SF
EXIST VERT ROTHE #4-6 - Wellbore #1 - Design #1	4,252.57	3,952.15	699.65	592.56	6.533	CC
EXIST VERT ROTHE #4-6 - Wellbore #1 - Design #1	4,400.00	4,086.26	702.33	591.43	6.333	ES
EXIST VERT ROTHE #4-6 - Wellbore #1 - Design #1	6,350.00	5,960.91	859.70	708.23	5.676	SF
EXIST VERT ROTHE #5-6 - Wellbore #1 - Design #1	1,417.71	1,372.57	1,354.64	1,322.36	41.968	CC
EXIST VERT ROTHE #5-6 - Wellbore #1 - Design #1	1,600.00	1,539.23	1,356.64	1,319.65	36.669	ES
EXIST VERT ROTHE #5-6 - Wellbore #1 - Design #1	6,650.00	6,240.12	2,171.63	2,020.65	14.383	SF
RED CLOUD 10N - ORIGINAL WELLBORE - PROPOSAL	300.00	300.00	149.95	148.87	139.857	CC, ES
RED CLOUD 10N - ORIGINAL WELLBORE - PROPOSAL	17,112.20	16,591.44	2,634.44	2,072.48	4.688	SF
RED CLOUD 1N - ORIGINAL WELLBORE - PROPOSAL	300.00	300.00	14.97	13.90	13.962	CC
RED CLOUD 1N - ORIGINAL WELLBORE - PROPOSAL	17,112.20	16,617.25	273.99	-269.35	0.504	Level 1, ES, SF
RED CLOUD 2N - ORIGINAL WELLBORE - PROPOSAL	300.00	300.00	29.97	28.89	27.950	CC
RED CLOUD 2N - ORIGINAL WELLBORE - PROPOSAL	17,112.20	16,599.33	545.02	-16.73	0.970	Level 1, ES, SF
RED CLOUD 3N - ORIGINAL WELLBORE - PROPOSAL	300.00	300.00	44.96	43.89	41.939	CC, ES
RED CLOUD 3N - ORIGINAL WELLBORE - PROPOSAL	17,112.20	16,473.09	804.83	246.69	1.442	Level 3, SF
RED CLOUD 4N - ORIGINAL WELLBORE - PROPOSAL	300.00	300.00	59.96	58.89	55.927	CC, ES
RED CLOUD 4N - ORIGINAL WELLBORE - PROPOSAL	17,112.20	16,508.46	1,054.83	492.85	1.877	SF
RED CLOUD 5N - ORIGINAL WELLBORE - PROPOSAL	300.00	300.00	74.96	73.89	69.916	CC, ES
RED CLOUD 5N - ORIGINAL WELLBORE - PROPOSAL	17,112.20	16,417.26	1,312.74	752.04	2.341	SF
RED CLOUD 6N - ORIGINAL WELLBORE - PROPOSAL	300.00	300.00	89.96	88.88	83.904	CC, ES
RED CLOUD 6N - ORIGINAL WELLBORE - PROPOSAL	17,112.20	16,484.79	1,564.64	1,002.39	2.783	SF
RED CLOUD 7N - ORIGINAL WELLBORE - PROPOSAL	300.00	300.00	104.95	103.88	97.892	CC, ES
RED CLOUD 7N - ORIGINAL WELLBORE - PROPOSAL	17,112.20	16,404.30	1,822.03	1,260.71	3.246	SF
RED CLOUD 8N - ORIGINAL WELLBORE - PROPOSAL	300.00	300.00	119.95	118.88	111.881	CC, ES
RED CLOUD 8N - ORIGINAL WELLBORE - PROPOSAL	17,112.20	16,486.74	2,124.62	1,562.84	3.782	SF
RED CLOUD 9N - ORIGINAL WELLBORE - PROPOSAL	300.00	300.00	134.95	133.88	125.869	CC, ES
RED CLOUD 9N - ORIGINAL WELLBORE - PROPOSAL	17,112.20	16,460.77	2,381.30	1,819.87	4.241	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 0N - Slot RED CLOUD 0N
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 0N	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 #3	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 NE SEC. 36 T5N R64W 6th P.M. (PYRAMID)						
ABDN VERT ROTHE STATE B #36-15 - Wellbore #1 - W	8,375.23	6,526.08	437.71	391.36	9.443	CC, ES
ABDN VERT ROTHE STATE B #36-15 - Wellbore #1 - W	8,500.00	6,519.23	455.10	405.67	9.207	SF
ABDN VERT ROTHE STATE B #36-16 - Wellbore #1 - W	6,009.06	5,600.00	947.96	909.78	24.831	SF
ABDN VERT ROTHE STATE B #36-16 - Wellbore #1 - W	7,326.98	6,550.00	701.76	675.53	26.756	CC, ES
EXIST DD ECKHARDT B #35-13 - Wellbore #1 - Wellbor	16,536.56	6,688.90	422.26	151.18	1.558	CC, ES, SF
EXIST VERT BAKER STATE B #36-13 - Wellbore #1 - W	11,282.75	6,556.89	581.80	458.19	4.707	CC
EXIST VERT BAKER STATE B #36-13 - Wellbore #1 - W	11,300.00	6,555.87	582.06	457.96	4.690	ES
EXIST VERT BAKER STATE B #36-13 - Wellbore #1 - W	11,400.00	6,550.04	593.46	466.59	4.678	SF
EXIST VERT BAKER STATE B #36-14 - Wellbore #1 - W	9,897.34	6,553.58	443.01	357.26	5.166	CC
EXIST VERT BAKER STATE B #36-14 - Wellbore #1 - W	9,900.00	6,553.55	443.02	357.19	5.162	ES
EXIST VERT BAKER STATE B #36-14 - Wellbore #1 - W	10,000.00	6,552.40	454.75	366.21	5.136	SF
EXIST VERT HOSHIKO #2 - Wellbore #1 - Wellbore #1	13,857.26	6,622.68	587.03	391.78	3.007	CC, ES
EXIST VERT HOSHIKO #2 - Wellbore #1 - Wellbore #1	13,900.00	6,623.04	588.58	392.14	2.996	SF
EXIST VERT HOSHIKO #35-16H4 - Wellbore #1 - Desig	12,463.41	6,600.05	354.59	69.89	1.245	Level 2, CC, ES, SF
EXIST VERT HOSHIKO B #35-14 - Wellbore #1 - Wellbo	15,366.85	6,602.51	502.64	265.33	2.118	CC, ES
EXIST VERT HOSHIKO B #35-14 - Wellbore #1 - Wellbo	15,400.00	6,602.18	503.73	265.49	2.114	SF

Company:	PDC ENERGY	Local Co-ordinate Reference:	Well RED CLOUD 0N - Slot RED CLOUD 0N
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 0N	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 #3	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)						
ABDN DD MERCER C #11-30D - Wellbore #1 - Wellbore	17,112.20	6,562.92	5,469.60	5,182.93	19.080	CC, ES, SF
ABDN VERT BOOY HILLS FARM #2-12 - Wellbore #1 -	16,586.01	6,650.00	3,246.17	2,974.71	11.958	CC
ABDN VERT BOOY HILLS FARM #2-12 - Wellbore #1 -	16,700.00	6,650.00	3,248.17	2,973.51	11.826	ES
ABDN VERT BOOY HILLS FARM #2-12 - Wellbore #1 -	17,112.20	6,650.00	3,288.48	3,002.27	11.490	SF
ABDN VERT FHA #10-1 - Wellbore #1 - Wellbore #1	0.00	0.00	2,218.93			
ABDN VERT FHA #10-1 - Wellbore #1 - Wellbore #1	300.00	278.93	2,219.53	2,218.79	3,013.171	ES
ABDN VERT FHA #10-1 - Wellbore #1 - Wellbore #1	14,700.00	6,600.00	6,730.40	6,511.71	30.777	SF
ABDN VERT FHA #15-1 - Wellbore #1 - Wellbore #1	0.00	0.00	3,377.85			
ABDN VERT FHA #15-1 - Wellbore #1 - Wellbore #1	300.00	283.77	3,378.06	3,377.32	4,601.505	ES
ABDN VERT FHA #15-1 - Wellbore #1 - Wellbore #1	17,112.20	6,338.20	9,518.64	9,233.01	33.325	SF
ABDN VERT HOSHIKO C #2-8 - Wellbore #1 - Wellbore	13,090.27	6,657.78	2,154.78	1,980.76	12.382	CC
ABDN VERT HOSHIKO C #2-8 - Wellbore #1 - Wellbore	13,200.00	6,663.21	2,157.57	1,980.50	12.185	ES
ABDN VERT HOSHIKO C #2-8 - Wellbore #1 - Wellbore	13,800.00	6,696.07	2,268.44	2,074.68	11.708	SF
ABDN VERT SAND CREEK RANCH C #2-3X - Wellbore	15,284.50	6,600.00	694.21	458.96	2.951	CC
ABDN VERT SAND CREEK RANCH C #2-3X - Wellbore	15,300.00	6,600.00	694.38	458.70	2.946	ES, SF
ABDN VERT SAND CREEK RANCH CO #2-3 - Wellbore	15,212.59	6,596.08	842.94	481.53	2.332	CC, ES
ABDN VERT SAND CREEK RANCH CO #2-3 - Wellbore	15,300.00	6,596.08	847.46	483.61	2.329	SF
ABDN VERT SHAKLEE #1 - Wellbore #1 - Wellbore #1	16,818.09	6,564.52	4,683.78	4,405.86	16.853	CC
ABDN VERT SHAKLEE #1 - Wellbore #1 - Wellbore #1	16,900.00	6,564.66	4,684.49	4,404.28	16.717	ES
ABDN VERT SHAKLEE #1 - Wellbore #1 - Wellbore #1	17,112.20	6,564.95	4,692.94	4,406.78	16.400	SF
ABDN VERT SHAKLEE #2 - Wellbore #1 - Wellbore #1	15,484.72	6,571.02	4,655.38	4,414.75	19.346	CC
ABDN VERT SHAKLEE #2 - Wellbore #1 - Wellbore #1	15,600.00	6,574.52	4,656.81	4,412.94	19.096	ES
ABDN VERT SHAKLEE #2 - Wellbore #1 - Wellbore #1	17,112.20	6,623.22	4,931.27	4,645.01	17.227	SF
ABDN VERT SHAKLEE #3 - Wellbore #1 - Wellbore #1	15,444.07	6,609.87	3,385.57	3,146.08	14.137	CC
ABDN VERT SHAKLEE #3 - Wellbore #1 - Wellbore #1	15,500.00	6,609.17	3,386.03	3,144.98	14.047	ES
ABDN VERT SHAKLEE #3 - Wellbore #1 - Wellbore #1	16,800.00	6,600.00	3,646.96	3,369.51	13.144	SF
EXIST DD HOFFMAN C #2-20D - Wellbore #1 - Wellbore	16,021.16	6,750.62	2,671.87	2,395.46	9.666	CC
EXIST DD HOFFMAN C #2-20D - Wellbore #1 - Wellbore	16,100.00	6,751.65	2,673.03	2,394.42	9.594	ES
EXIST DD HOFFMAN C #2-20D - Wellbore #1 - Wellbore	16,700.00	6,759.32	2,756.74	2,461.30	9.331	SF
EXIST DD HOFFMAN C #2-25D - Wellbore #1 - Wellbore	16,091.20	6,874.98	4,080.37	3,799.56	14.531	CC
EXIST DD HOFFMAN C #2-25D - Wellbore #1 - Wellbore	16,200.00	6,874.94	4,081.82	3,797.97	14.380	ES
EXIST DD HOFFMAN C #2-25D - Wellbore #1 - Wellbore	17,112.20	6,874.59	4,206.11	3,896.70	13.594	SF
EXIST DD HOFFMAN C #2-33D - Wellbore #1 - Wellbore	17,112.20	7,345.47	4,103.45	3,765.41	12.139	CC, ES, SF
EXIST DD HOFFMAN C 2-21D - Wellbore #1 - Wellbore	14,839.93	6,612.67	2,611.77	2,377.50	11.149	CC
EXIST DD HOFFMAN C 2-21D - Wellbore #1 - Wellbore	14,900.00	6,612.72	2,612.46	2,376.51	11.072	ES
EXIST DD HOFFMAN C 2-21D - Wellbore #1 - Wellbore	15,700.00	6,613.27	2,749.74	2,491.40	10.644	SF
EXIST DD MARLEY C #1-18D - Wellbore #1 - Wellbore #	9,643.03	6,702.26	1,435.58	1,342.32	15.394	CC
EXIST DD MARLEY C #1-18D - Wellbore #1 - Wellbore #	9,700.00	6,702.89	1,436.71	1,341.92	15.157	ES
EXIST DD MARLEY C #1-18D - Wellbore #1 - Wellbore #	10,200.00	6,708.36	1,539.83	1,431.48	14.212	SF
EXIST DD MARLEY C #1-24D - Wellbore #1 - Wellbore #	9,456.22	7,118.93	4,146.62	4,030.08	35.581	CC
EXIST DD MARLEY C #1-24D - Wellbore #1 - Wellbore #	9,600.00	7,118.21	4,149.11	4,028.72	34.466	ES
EXIST DD MARLEY C #1-24D - Wellbore #1 - Wellbore #	13,500.00	7,097.07	5,791.90	5,563.98	25.411	SF
EXIST DD MARLEY C #1-28D - Wellbore #1 - Wellbore #	9,378.23	6,727.07	74.08	-15.41	0.828	Level 1, CC, ES, SF
EXIST DD MARLEY C #1-30D - Wellbore #1 - Wellbore #	12,041.51	6,659.28	156.66	-3.17	0.980	Level 1, CC, ES, SF
EXIST DD MARLEY C #1-31D - Wellbore #1 - Wellbore #	12,301.31	6,811.91	1,553.83	1,382.77	9.084	CC, ES
EXIST DD MARLEY C #1-31D - Wellbore #1 - Wellbore #	12,700.00	6,815.52	1,604.16	1,422.01	8.807	SF
EXIST DD MARLEY C #1-33D - Wellbore #1 - Wellbore #	12,006.44	6,714.00	4,045.49	3,887.35	25.581	CC
EXIST DD MARLEY C #1-33D - Wellbore #1 - Wellbore #	12,100.00	6,714.00	4,046.57	3,885.83	25.175	ES
EXIST DD MARLEY C #1-33D - Wellbore #1 - Wellbore #	14,900.00	6,697.39	4,973.77	4,734.97	20.828	SF
EXIST DD PANTHER C #11-27D - Wellbore #1 - Wellbor	13,503.31	6,733.23	5,343.72	5,143.72	26.719	CC
EXIST DD PANTHER C #11-27D - Wellbore #1 - Wellbor	13,700.00	6,732.18	5,347.34	5,141.86	26.023	ES
EXIST DD PANTHER C #11-27D - Wellbore #1 - Wellbor	17,112.20	6,714.74	6,448.14	6,147.20	21.427	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 0N - Slot RED CLOUD 0N
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 0N	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 #3	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	14,860.59	7,116.78	5,322.63	5,060.91	20.337	CC
EXIST DD PANTHER C #11-28D - Wellbore #1 - Wellbor	15,000.00	7,115.03	5,324.46	5,058.84	20.046	ES
EXIST DD PANTHER C #11-28D - Wellbore #1 - Wellbor	17,112.20	7,096.00	5,779.17	5,454.42	17.796	SF
EXIST DD PANTHER C #2-23D - Wellbore #1 - Wellbore	13,476.09	6,746.55	4,052.60	3,853.17	20.321	CC
EXIST DD PANTHER C #2-23D - Wellbore #1 - Wellbore	13,600.00	6,745.27	4,054.49	3,851.61	19.985	ES
EXIST DD PANTHER C #2-23D - Wellbore #1 - Wellbore	15,800.00	6,719.00	4,671.57	4,407.24	17.674	SF
EXIST HZ BOBCAT C #12-69HN - Wellbore #1 - Wellbor	8,038.72	11,078.00	5,251.10	5,080.44	30.769	CC
EXIST HZ BOBCAT C #12-69HN - Wellbore #1 - Wellbor	8,100.00	11,078.00	5,251.46	5,079.45	30.529	ES
EXIST HZ BOBCAT C #12-69HN - Wellbore #1 - Wellbor	17,112.20	5,949.00	6,823.83	6,529.91	23.216	SF
EXIST HZ HOFFMAN C #02-65HN - Wellbore #1 - Wellb	7,498.09	13,691.00	2,578.70	2,345.84	11.074	CC
EXIST HZ HOFFMAN C #02-65HN - Wellbore #1 - Wellb	7,500.00	13,691.00	2,578.71	2,345.82	11.073	ES
EXIST HZ HOFFMAN C #02-65HN - Wellbore #1 - Wellb	7,600.00	13,685.47	2,580.71	2,346.46	11.017	SF
EXIST HZ TOBY C #12-79HN - Wellbore #1 - Wellbore #	12,083.49	6,034.47	5,444.51	5,282.09	33.521	CC
EXIST HZ TOBY C #12-79HN - Wellbore #1 - Wellbore #	12,200.00	6,034.35	5,445.76	5,280.13	32.879	ES
EXIST HZ TOBY C #12-79HN - Wellbore #1 - Wellbore #	17,112.20	6,009.00	7,411.74	7,110.19	24.579	SF
EXIST VERT AMIGO #1 - Wellbore #1 - Wellbore #1	11,433.15	6,350.00	2,098.07	1,971.34	16.556	CC
EXIST VERT AMIGO #1 - Wellbore #1 - Wellbore #1	11,500.00	6,350.00	2,099.14	1,970.57	16.327	ES
EXIST VERT AMIGO #1 - Wellbore #1 - Wellbore #1	12,400.00	6,350.00	2,310.13	2,156.71	15.058	SF
EXIST VERT AMIGO #2 - Wellbore #1 - Wellbore #1	10,184.25	6,600.00	2,043.39	1,949.57	21.780	CC
EXIST VERT AMIGO #2 - Wellbore #1 - Wellbore #1	10,200.00	6,600.00	2,043.45	1,949.20	21.681	ES
EXIST VERT AMIGO #2 - Wellbore #1 - Wellbore #1	11,400.00	6,620.69	2,377.61	2,250.38	18.687	SF
EXIST VERT AMIGO FARMS #1-12 - Wellbore #1 - Well	11,494.63	6,576.97	3,391.48	3,262.16	26.225	CC
EXIST VERT AMIGO FARMS #1-12 - Wellbore #1 - Well	11,600.00	6,576.80	3,393.12	3,260.88	25.659	ES
EXIST VERT AMIGO FARMS #1-12 - Wellbore #1 - Well	14,000.00	6,572.95	4,216.52	4,017.48	21.185	SF
EXIST VERT FEIT #1 - Wellbore #1 - Wellbore #1	10,018.22	6,583.36	784.78	695.87	8.826	CC, ES
EXIST VERT FEIT #1 - Wellbore #1 - Wellbore #1	10,200.00	6,578.05	805.55	711.71	8.585	SF
EXIST VERT FEIT #1-4 - Wellbore #1 - Wellbore #1	11,426.72	6,350.00	542.95	424.93	4.601	CC, ES
EXIST VERT FEIT #1-4 - Wellbore #1 - Wellbore #1	11,500.00	6,350.00	547.87	427.98	4.570	SF
EXIST VERT FHA #2-1 - Wellbore #1 - Wellbore #1	15,447.83	6,630.65	2,065.56	1,825.93	8.620	CC
EXIST VERT FHA #2-1 - Wellbore #1 - Wellbore #1	15,500.00	6,630.56	2,066.22	1,825.13	8.570	ES
EXIST VERT FHA #2-1 - Wellbore #1 - Wellbore #1	15,900.00	6,629.86	2,114.47	1,862.18	8.381	SF
EXIST VERT FOOS #1-1614 - Wellbore #1 - Wellbore #1	0.00	0.00	2,785.29			
EXIST VERT FOOS #1-1614 - Wellbore #1 - Wellbore #1	300.00	276.03	2,785.84	2,785.11	3,798.655	ES
EXIST VERT FOOS #1-1614 - Wellbore #1 - Wellbore #1	17,000.00	6,900.00	9,975.30	9,692.56	35.280	SF
EXIST VERT FUEGO C #1-19 - Wellbore #1 - Wellbore #	10,844.73	6,550.00	1,275.92	1,164.48	11.450	CC
EXIST VERT FUEGO C #1-19 - Wellbore #1 - Wellbore #	10,900.00	6,550.00	1,277.11	1,164.16	11.306	ES
EXIST VERT FUEGO C #1-19 - Wellbore #1 - Wellbore #	11,200.00	6,550.00	1,324.45	1,203.23	10.926	SF
EXIST VERT HAPPY AMIGO C #1-25 - Wellbore #1 - W	0.00	0.00	4,163.17			
EXIST VERT HAPPY AMIGO C #1-25 - Wellbore #1 - W	15,600.00	6,583.42	6,439.62	6,195.50	26.379	SF
EXIST VERT HAPPY TALK #1 - Wellbore #1 - Wellbore	183.16	165.16	3,167.45	3,167.12	9,389.776	CC
EXIST VERT HAPPY TALK #1 - Wellbore #1 - Wellbore	300.00	276.68	3,167.65	3,166.95	4,485.606	ES
EXIST VERT HAPPY TALK #1 - Wellbore #1 - Wellbore	13,600.00	6,555.69	4,757.12	4,568.83	25.266	SF
EXIST VERT HAPPY TALK #2 - Wellbore #1 - Wellbore	305.07	300.00	3,983.39	3,982.61	5,132.137	CC, ES
EXIST VERT HAPPY TALK #2 - Wellbore #1 - Wellbore	16,800.00	6,600.00	8,081.92	7,804.49	29.132	SF
EXIST VERT HOFFMAN C #11-29 - Wellbore #1 - Wellb	16,168.86	6,700.00	5,102.02	4,841.95	19.619	CC
EXIST VERT HOFFMAN C #11-29 - Wellbore #1 - Wellb	16,300.00	6,700.00	5,103.70	4,839.97	19.352	ES
EXIST VERT HOFFMAN C #11-29 - Wellbore #1 - Wellb	17,112.20	6,700.00	5,188.43	4,901.94	18.110	SF
EXIST VERT HOSHIKO #1-2 - Wellbore #1 - Design #1	12,770.75	6,588.05	545.43	252.29	1.861	CC
EXIST VERT HOSHIKO #1-2 - Wellbore #1 - Design #1	12,800.00	6,588.05	546.21	252.26	1.858	ES, SF
EXIST VERT HOSHIKO #2-2 - Wellbore #1 - Design #1	14,181.57	6,612.07	951.75	619.01	2.860	CC
EXIST VERT HOSHIKO #2-2 - Wellbore #1 - Design #1	14,200.00	6,612.07	951.93	618.68	2.856	ES
EXIST VERT HOSHIKO #2-2 - Wellbore #1 - Design #1	14,300.00	6,612.07	959.09	623.04	2.854	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 0N - Slot RED CLOUD 0N
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 0N	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 #3	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 VERT HOSHIKO #7-2 - Wellbore #1 - Wellbore #1	14,266.96	6,600.00	1,860.39	1,653.75	9.003	CC
EXIST VERT HOSHIKO #7-2 - Wellbore #1 - Wellbore #1	14,300.00	6,600.00	1,860.68	1,653.12	8.965	ES
EXIST VERT HOSHIKO #7-2 - Wellbore #1 - Wellbore #1	14,700.00	6,600.00	1,910.12	1,691.38	8.732	SF
EXIST VERT MCDERMED #1-1 - Wellbore #1 - Design #	2,529.82	2,388.04	424.07	364.57	7.128	CC
EXIST VERT MCDERMED #1-1 - Wellbore #1 - Design #	2,600.00	2,451.89	425.07	363.76	6.933	ES
EXIST VERT MCDERMED #1-1 - Wellbore #1 - Design #	7,700.00	6,576.00	852.34	692.79	5.342	SF
EXIST VERT MCDERMED #2-1 - Wellbore #1 - Wellbore	8,879.73	6,580.82	790.03	731.23	13.436	CC
EXIST VERT MCDERMED #2-1 - Wellbore #1 - Wellbore	8,900.00	6,580.75	790.29	730.97	13.322	ES
EXIST VERT MCDERMED #2-1 - Wellbore #1 - Wellbore	9,200.00	6,579.83	852.48	785.35	12.698	SF
EXIST VERT MCFERREN #4-2 - Wellbore #1 - Design #	16,720.37	4,629.00	2,114.22	1,959.15	13.634	CC, ES
EXIST VERT MCFERREN #4-2 - Wellbore #1 - Design #	17,100.00	4,629.00	2,148.03	1,988.28	13.446	SF
EXIST VERT MCFERREN #5-2 - Wellbore #1 - Design #	16,732.84	6,616.09	2,076.85	1,788.46	7.202	CC
EXIST VERT MCFERREN #5-2 - Wellbore #1 - Design #	16,800.00	6,616.10	2,077.94	1,787.67	7.159	ES
EXIST VERT MCFERREN #5-2 - Wellbore #1 - Design #	17,112.20	6,616.00	2,111.15	1,812.13	7.060	SF
EXIST VERT MINOR #1 - Wellbore #1 - Wellbore #1	11,526.48	6,400.00	4,825.93	4,695.96	37.130	CC
EXIST VERT MINOR #1 - Wellbore #1 - Wellbore #1	11,700.00	6,400.00	4,829.05	4,694.28	35.830	ES
EXIST VERT MINOR #1 - Wellbore #1 - Wellbore #1	16,600.00	6,400.00	7,002.16	6,730.68	25.793	SF
EXIST VERT REIN #1 - Wellbore #1 - Wellbore #1	317.24	290.38	1,347.02	1,346.15	1,558.688	CC, ES
EXIST VERT REIN #1 - Wellbore #1 - Wellbore #1	10,700.00	6,542.22	2,704.18	2,596.14	25.030	SF
EXIST VERT REIN #1-8 - Wellbore #1 - Wellbore #1	312.41	291.23	470.09	469.35	635.116	CC, ES
EXIST VERT REIN #1-8 - Wellbore #1 - Wellbore #1	13,000.00	6,478.85	5,765.19	5,594.22	33.721	SF
EXIST VERT ROTHE #1 - Wellbore #1 - Wellbore #1	12,910.54	6,600.00	3,302.59	3,133.85	19.572	CC
EXIST VERT ROTHE #1 - Wellbore #1 - Wellbore #1	13,000.00	6,600.00	3,303.80	3,132.57	19.294	ES
EXIST VERT ROTHE #1 - Wellbore #1 - Wellbore #1	14,700.00	6,619.58	3,756.17	3,537.46	17.174	SF
EXIST VERT ROTHE #2 - Wellbore #1 - Wellbore #1	14,142.04	6,540.71	4,695.80	4,492.78	23.130	CC
EXIST VERT ROTHE #2 - Wellbore #1 - Wellbore #1	14,300.00	6,539.79	4,698.45	4,491.02	22.651	ES
EXIST VERT ROTHE #2 - Wellbore #1 - Wellbore #1	17,112.20	6,524.13	5,556.21	5,270.08	19.418	SF
EXIST VERT ROTHE #2-10 - Wellbore #1 - Wellbore #1	13,966.00	6,100.00	3,241.82	3,046.09	16.563	CC
EXIST VERT ROTHE #2-10 - Wellbore #1 - Wellbore #1	14,100.00	6,100.00	3,244.58	3,045.15	16.269	ES
EXIST VERT ROTHE #2-10 - Wellbore #1 - Wellbore #1	15,500.00	6,100.00	3,586.44	3,348.26	15.058	SF
EXIST VERT ROTHE #3 - Wellbore #1 - Wellbore #1	12,863.90	6,583.04	4,685.41	4,517.70	27.936	CC
EXIST VERT ROTHE #3 - Wellbore #1 - Wellbore #1	13,000.00	6,582.42	4,687.39	4,515.88	27.331	ES
EXIST VERT ROTHE #3 - Wellbore #1 - Wellbore #1	16,500.00	6,567.02	5,930.77	5,661.43	22.019	SF
EXIST VERT SPIKE STATE #CC6-12 - Wellbore #1 - De	300.00	277.00	2,155.69	2,152.10	601.109	CC
EXIST VERT SPIKE STATE #CC6-12 - Wellbore #1 - De	400.00	376.98	2,156.55	2,150.62	363.728	ES
EXIST VERT SPIKE STATE #CC6-12 - Wellbore #1 - De	9,000.00	6,567.02	4,315.97	4,126.17	22.739	SF
EXIST VERT SPIKE STATE #CC6-13 - Wellbore #1 - We	295.01	274.02	3,443.20	3,442.58	5,488.292	CC
EXIST VERT SPIKE STATE #CC6-13 - Wellbore #1 - We	300.00	278.40	3,443.20	3,442.56	5,391.814	ES
EXIST VERT SPIKE STATE #CC6-13 - Wellbore #1 - We	15,100.00	6,408.75	9,926.68	9,697.00	43.220	SF
LINDSEY 10N - ORIGINAL WELLBORE - PROPOSAL #	264.16	271.16	3,433.25	3,432.32	3,704.632	CC
LINDSEY 10N - ORIGINAL WELLBORE - PROPOSAL #	300.00	300.00	3,433.26	3,432.19	3,202.264	ES
LINDSEY 10N - ORIGINAL WELLBORE - PROPOSAL #	17,112.20	16,329.88	5,298.19	4,734.45	9.398	SF
LINDSEY 1C - ORIGINAL WELLBORE - PROPOSAL #1	3,864.32	5,068.38	2,786.31	2,753.21	84.180	CC
LINDSEY 1C - ORIGINAL WELLBORE - PROPOSAL #1	17,112.20	16,927.87	2,915.65	2,352.80	5.180	ES, SF
LINDSEY 2N - ORIGINAL WELLBORE - PROPOSAL #1	3,630.49	4,844.67	2,981.40	2,950.54	96.635	CC
LINDSEY 2N - ORIGINAL WELLBORE - PROPOSAL #1	17,112.20	16,722.12	3,176.38	2,613.08	5.639	ES, SF
LINDSEY 3N - ORIGINAL WELLBORE - PROPOSAL #1	1,442.90	2,566.75	3,181.84	3,170.51	280.724	CC
LINDSEY 3N - ORIGINAL WELLBORE - PROPOSAL #1	17,112.20	16,688.14	3,441.76	2,878.20	6.107	ES, SF
LINDSEY 4N - ORIGINAL WELLBORE - PROPOSAL #1	1,268.86	2,234.65	3,279.70	3,270.55	358.454	CC
LINDSEY 4N - ORIGINAL WELLBORE - PROPOSAL #1	17,112.20	16,564.44	3,704.55	3,141.15	6.575	ES, SF
LINDSEY 5N - ORIGINAL WELLBORE - PROPOSAL #1	1,056.48	1,821.08	3,358.65	3,351.81	491.160	CC, ES
LINDSEY 5N - ORIGINAL WELLBORE - PROPOSAL #1	17,112.20	16,557.60	3,970.01	3,406.41	7.044	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 RED CLOUD 0N - Slot RED CLOUD 0N
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 0N	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 #3	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 6N - ORIGINAL WELLBORE - PROPOSAL #1	300.00	308.00	3,375.04	3,373.95	3,096.040	CC, ES
LINDSEY 6N - ORIGINAL WELLBORE - PROPOSAL #1	17,112.20	16,457.43	4,236.38	3,672.89	7.518	SF
LINDSEY 7N - ORIGINAL WELLBORE - PROPOSAL #1	300.00	308.00	3,389.59	3,388.50	3,109.389	CC, ES
LINDSEY 7N - ORIGINAL WELLBORE - PROPOSAL #1	17,112.20	16,490.79	4,501.90	3,938.06	7.984	SF
LINDSEY 8N - ORIGINAL WELLBORE - PROPOSAL #1	300.00	308.00	3,404.15	3,403.06	3,122.738	CC, ES
LINDSEY 8N - ORIGINAL WELLBORE - PROPOSAL #1	17,112.20	16,418.90	4,764.58	4,200.52	8.447	SF
LINDSEY 9N - ORIGINAL WELLBORE - PROPOSAL #1	300.00	307.00	3,418.70	3,417.61	3,142.567	CC, ES
LINDSEY 9N - ORIGINAL WELLBORE - PROPOSAL #1	17,112.20	16,465.97	5,030.15	4,465.73	8.912	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)	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	22.98	1,795.61	761.55	1,950.42				
100.00	100.00	99.00	99.00	0.09	0.11	22.98	1,795.61	761.55	1,950.42	1,950.23	0.19	N/A	
200.00	200.00	199.00	199.00	0.31	0.22	22.98	1,795.61	761.55	1,950.42	1,949.90	0.53	3,705.621	
300.00	300.00	299.00	299.00	0.54	0.32	22.98	1,795.61	761.55	1,950.42	1,949.56	0.86	2,270.129	
400.00	399.98	398.98	398.98	0.76	0.43	-6.11	1,795.61	761.55	1,948.69	1,947.49	1.20	1,629.885	
500.00	499.84	498.84	498.84	0.99	0.54	-6.14	1,795.61	761.55	1,943.48	1,941.94	1.54	1,260.247	
600.00	599.45	598.79	598.79	1.23	0.68	-6.19	1,795.62	761.50	1,934.82	1,932.89	1.93	1,003.828	
700.00	698.70	701.56	701.55	1.51	0.89	-6.28	1,795.85	760.74	1,922.62	1,920.24	2.38	807.831	
800.00	797.47	805.47	805.46	1.82	1.09	-6.39	1,795.85	759.83	1,906.74	1,903.91	2.83	673.778	
900.00	895.62	902.04	902.03	2.19	1.29	-6.53	1,795.72	758.96	1,887.31	1,884.03	3.28	576.226	
1,000.00	993.06	1,001.29	1,001.27	2.60	1.50	-6.69	1,795.70	757.97	1,864.56	1,860.82	3.73	499.284	
1,100.00	1,089.64	1,101.49	1,101.46	3.08	1.71	-6.88	1,795.50	756.88	1,838.27	1,834.07	4.20	437.575	
1,200.00	1,185.27	1,196.13	1,196.10	3.62	1.91	-7.10	1,795.29	755.66	1,808.57	1,803.91	4.67	387.673	
1,300.00	1,279.82	1,246.95	1,246.92	4.22	2.02	-7.27	1,795.64	755.20	1,776.64	1,771.59	5.05	351.766	
1,400.00	1,373.17	1,300.00	1,299.93	4.88	2.13	-7.45	1,797.35	755.85	1,744.11	1,738.68	5.44	320.771	
1,500.00	1,465.21	1,335.55	1,335.41	5.61	2.21	-7.60	1,799.40	756.79	1,710.95	1,705.14	5.81	294.644	
1,527.13	1,489.95	1,347.35	1,347.17	5.82	2.24	-7.65	1,800.27	757.14	1,701.88	1,695.97	5.91	287.903	
1,600.00	1,556.23	1,392.00	1,391.60	6.38	2.34	-7.74	1,804.39	758.67	1,678.33	1,672.11	6.23	269.519	
1,700.00	1,647.20	1,453.99	1,453.17	7.17	2.48	-7.90	1,811.29	760.67	1,647.65	1,640.95	6.69	246.104	
1,800.00	1,738.16	1,518.29	1,516.97	7.96	2.63	-8.09	1,819.18	762.21	1,618.10	1,610.92	7.18	225.431	
1,900.00	1,829.13	1,577.00	1,574.99	8.76	2.78	-8.27	1,827.94	764.15	1,591.05	1,583.39	7.66	207.689	
2,000.00	1,920.09	1,630.05	1,627.19	9.57	2.93	-8.43	1,837.11	766.34	1,566.46	1,558.32	8.14	192.468	
2,100.00	2,011.06	1,689.04	1,685.00	10.37	3.12	-8.63	1,848.54	769.08	1,544.20	1,535.57	8.64	178.811	
2,200.00	2,102.02	1,761.00	1,755.05	11.18	3.36	-8.87	1,864.49	773.11	1,524.68	1,515.50	9.17	166.224	
2,300.00	2,192.99	1,837.87	1,829.60	11.99	3.64	-9.15	1,882.71	777.47	1,506.74	1,497.00	9.74	154.747	
2,400.00	2,283.95	1,906.20	1,895.77	12.80	3.91	-9.42	1,899.36	781.11	1,489.64	1,479.35	10.29	144.762	
2,500.00	2,374.92	1,976.21	1,963.12	13.62	4.21	-9.69	1,917.97	785.46	1,474.88	1,464.03	10.86	135.840	
2,600.00	2,465.89	2,097.51	2,079.55	14.43	4.76	-10.22	1,951.25	792.40	1,461.11	1,449.54	11.57	126.250	
2,700.00	2,556.85	2,228.81	2,206.64	15.24	5.30	-10.81	1,983.68	798.43	1,444.10	1,431.77	12.32	117.181	
2,800.00	2,647.82	2,327.00	2,301.88	16.06	5.72	-11.25	2,007.10	803.02	1,426.52	1,413.53	12.99	109.830	
2,900.00	2,738.78	2,398.45	2,371.03	16.87	6.04	-11.56	2,024.68	806.82	1,409.95	1,396.36	13.59	103.765	
3,000.00	2,829.75	2,470.79	2,440.69	17.69	6.40	-11.85	2,043.52	811.82	1,395.32	1,381.12	14.20	98.289	
3,100.00	2,920.71	2,551.71	2,518.21	18.51	6.81	-12.22	2,066.14	817.05	1,382.47	1,367.63	14.84	93.134	
3,200.00	3,011.68	2,646.20	2,608.55	19.32	7.31	-12.69	2,093.30	822.31	1,370.28	1,354.73	15.55	88.102	

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