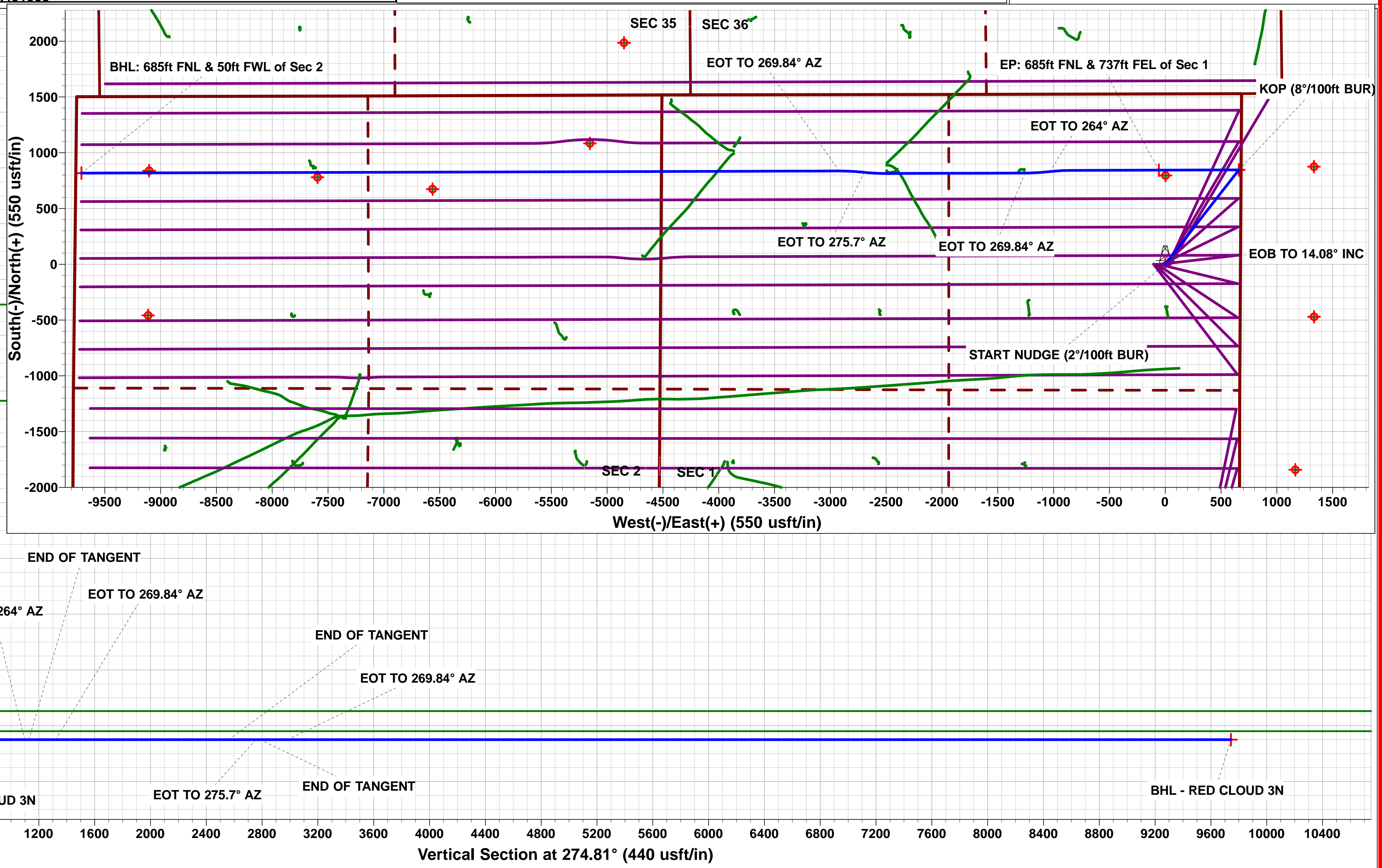
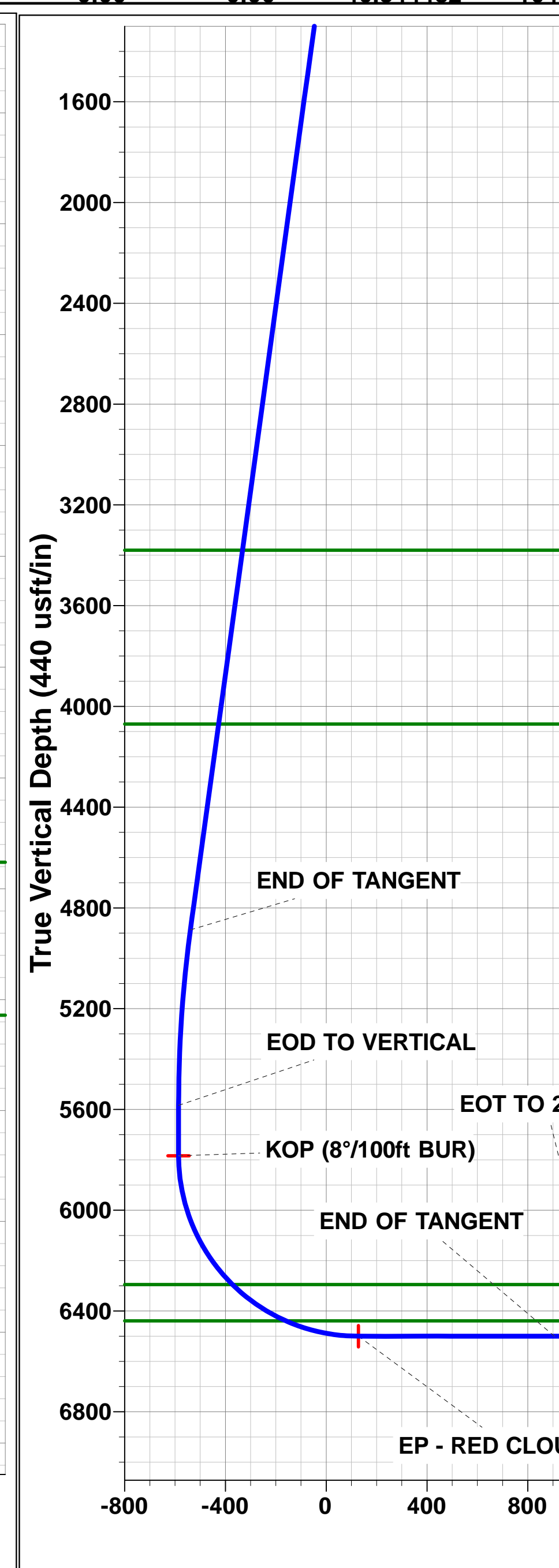
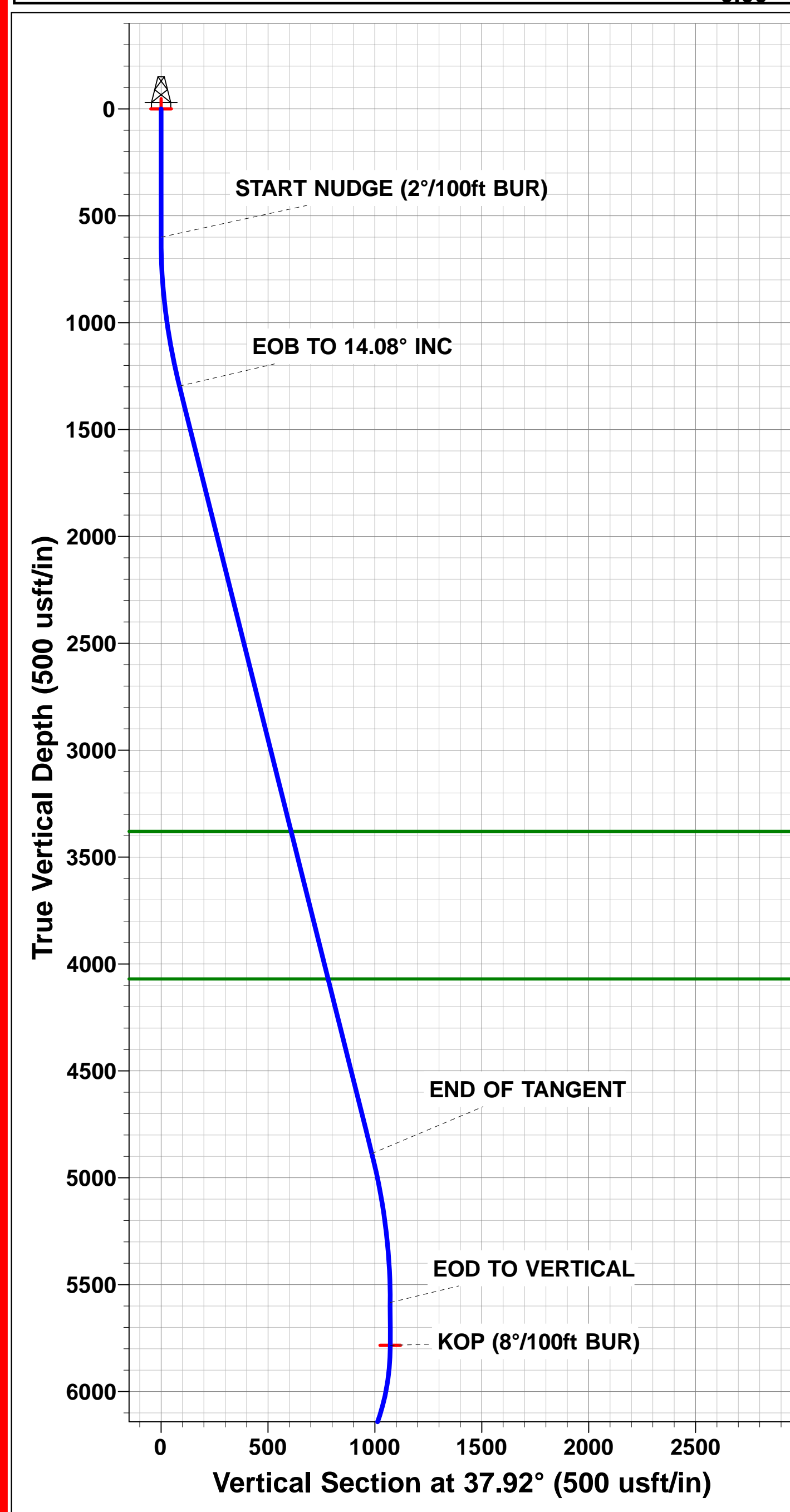
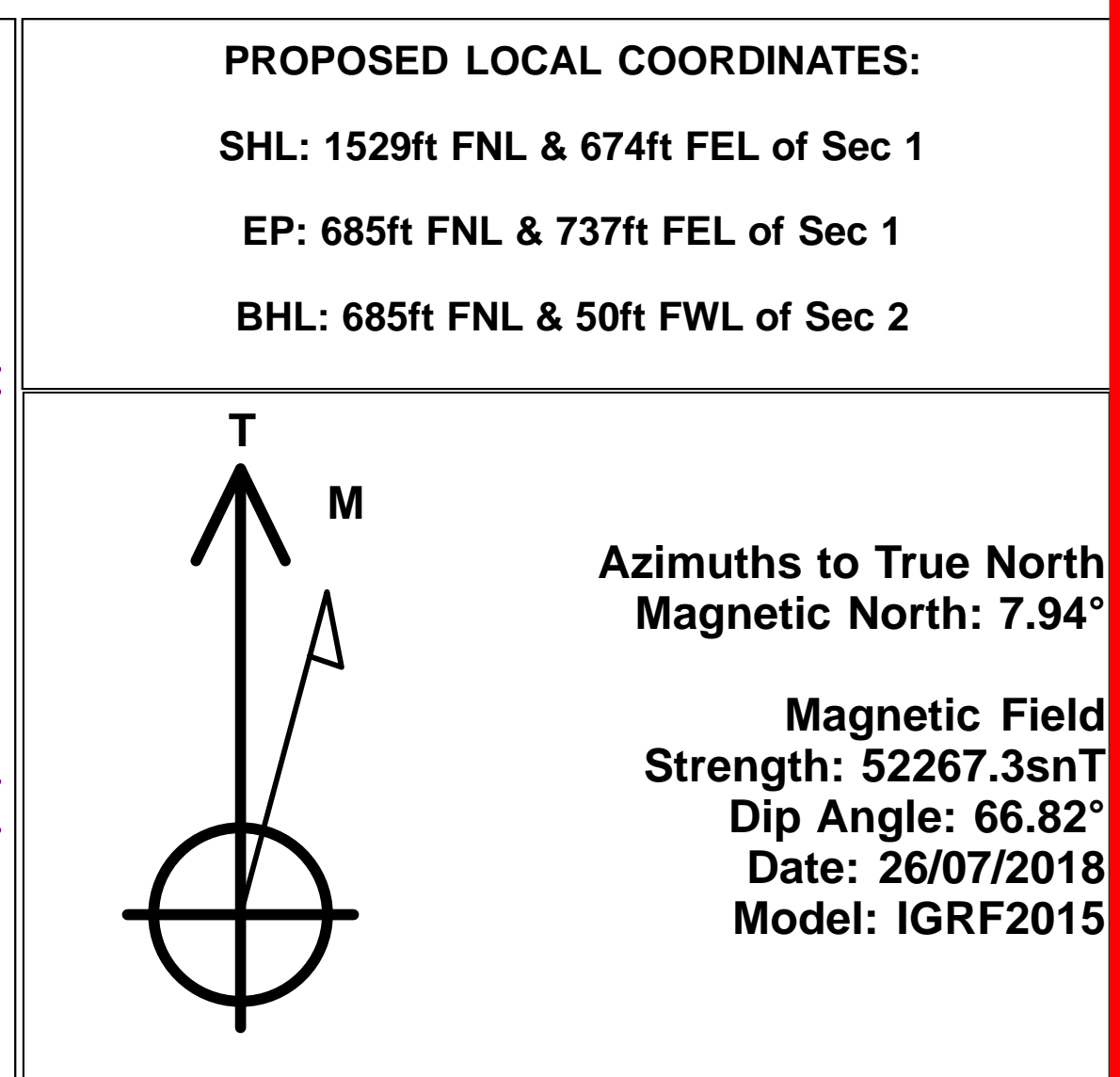
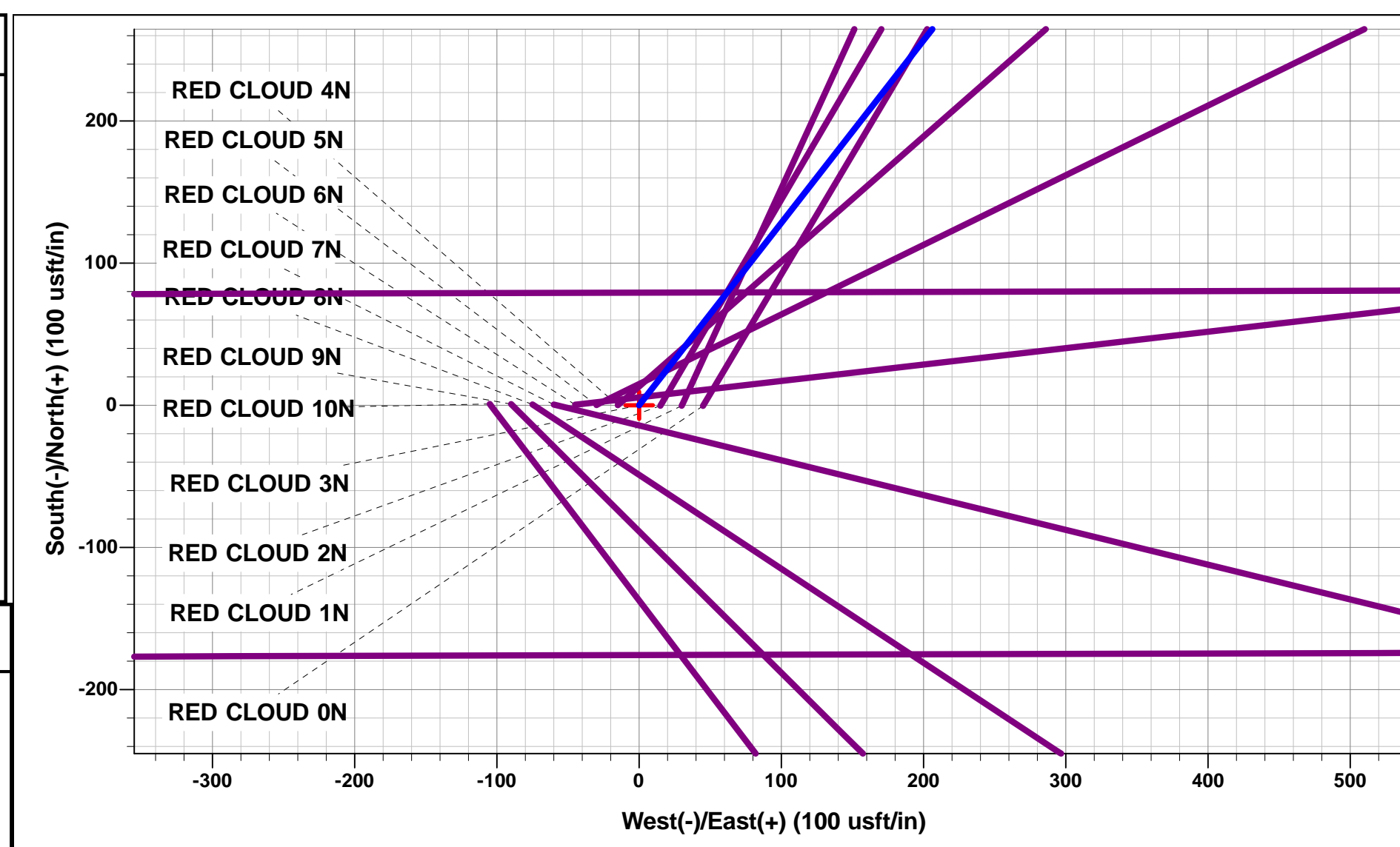




Project: WELD COUNTY, COLORADO (TRUE)
Site: SE NE SEC. 1 T4N R64W 6th P.M. (RED CLOUD)
Well: RED CLOUD 3N
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL #2

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 & 674ft FEL of Sec 1	
600.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	START NUDGE (2°/100ft BUR)	
1296.83	1303.89	14.08	37.92	67.87	52.88	-47.00	86.04	EOB TO 14.08° INC	
4886.97	5005.20	14.08	37.92	778.09	606.17	-538.78	986.34	END OF TANGENT	
5583.80	5709.08	0.00	0.00	845.96	659.05	-585.78	1072.38	EOD TO VERTICAL	
5783.80	5909.08	0.00	0.00	845.96	659.05	-585.78	1072.38	KOP (8°/100ft BUR)	
6500.00	7034.08	90.00	269.84	843.97	-57.14	127.72	1788.58	EP: 685ft FNL & 737ft FEL of Sec 1	
6500.01	7815.08	90.00	269.84	841.79	-838.14	905.78	2569.58	END OF TANGENT	
6500.01	8009.76	90.00	264.00	831.34	-1032.45	1098.53	2764.25	EOT TO 264° AZ	
6500.01	8039.76	90.00	264.00	828.20	-1062.29	1128.00	2794.25	END OF TANGENT	
6500.01	8234.43	90.00	269.84	817.75	-1256.59	1320.74	2988.92	EOT TO 269.84° AZ	
6500.02	9479.43	90.00	269.84	814.27	-2501.58	2561.06	4233.92	END OF TANGENT	
6500.02	9674.76	90.00	275.70	823.70	-2696.60	2756.18	4429.25	EOT TO 275.7° AZ	
6500.02	9704.76	90.00	275.70	826.68	-2726.45	2786.18	4459.25	END OF TANGENT	
6500.02	9900.09	90.00	269.84	836.12	-2921.47	2981.30	4654.59	EOT TO 269.84° AZ	
6500.00	16688.00	90.00	269.84	817.17	-9709.35	9743.68	11442.49	BHL: 685ft FNL & 50ft FWL of Sec 2	

WELLBORE TARGET DETAILS (LAT/LONG)					
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - RED CLOUD 3N	5783.80	845.96	659.05	40.346804	-104.489589
EP - RED CLOUD 3N	6500.00	843.97	-57.14	40.346799	-104.492159
BHL - RED CLOUD 3N	6500.00	817.17	-9709.35	40.346720	-104.526786
SHL - RED CLOUD 3N	0.00	0.00	0.00	40.344482	-104.491953



PDC ENERGY

**WELD COUNTY, COLORADO (TRUE)
SE NE SEC. 1 T4N R64W 6th P.M. (RED CLOUD)
RED CLOUD 3N**

**ORIGINAL WELLBORE
PROPOSAL #2**

Anticollision Report

13 August, 2018



Anticollision Report



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well RED CLOUD 3N
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 3N	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	16,688.00	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 -	10,710.73	11,055.00	1,680.12	1,435.82	6.877	CC
EXIST HZ SOONER STATE B #36-63HN - Wellbore #1 -	10,800.00	11,055.00	1,682.49	1,435.72	6.818	ES
EXIST HZ SOONER STATE B #36-63HN - Wellbore #1 -	11,000.00	11,055.00	1,704.84	1,452.51	6.756	SF
EXIST VERT ROTHE #4-6 - Wellbore #1 - Design #1	5,909.09	5,766.80	674.09	539.51	5.009	CC
EXIST VERT ROTHE #4-6 - Wellbore #1 - Design #1	5,950.00	5,807.69	675.26	538.86	4.950	ES, SF
EXIST VERT ROTHE #5-6 - Wellbore #1 - Design #1	2,792.46	2,723.69	1,341.20	1,276.40	20.696	CC
EXIST VERT ROTHE #5-6 - Wellbore #1 - Design #1	3,300.00	3,215.99	1,346.87	1,269.64	17.440	ES
EXIST VERT ROTHE #5-6 - Wellbore #1 - Design #1	6,050.00	5,906.81	1,485.68	1,345.42	10.592	SF
RED CLOUD 0N - ORIGINAL WELLBORE - PROPOSAL	300.00	300.00	44.96	43.89	41.939	CC, ES
RED CLOUD 0N - ORIGINAL WELLBORE - PROPOSAL	16,500.00	17,188.44	805.28	244.90	1.437	Level 3, SF
RED CLOUD 10N - ORIGINAL WELLBORE - PROPOSAL	600.00	600.00	104.98	102.56	43.368	CC, ES
RED CLOUD 10N - ORIGINAL WELLBORE - PROPOSAL	16,688.00	16,806.37	1,835.70	1,268.92	3.239	SF
RED CLOUD 1N - ORIGINAL WELLBORE - PROPOSAL	400.00	400.00	29.99	28.47	19.712	CC
RED CLOUD 1N - ORIGINAL WELLBORE - PROPOSAL	16,688.00	16,824.82	535.32	-31.31	0.945	Level 1, ES, SF
RED CLOUD 2N - ORIGINAL WELLBORE - PROPOSAL	500.00	500.00	15.00	13.03	7.609	CC
RED CLOUD 2N - ORIGINAL WELLBORE - PROPOSAL	16,688.00	16,810.73	265.79	-278.57	0.488	Level 1, ES, SF
RED CLOUD 4N - ORIGINAL WELLBORE - PROPOSAL	600.00	600.00	15.00	12.58	6.195	CC
RED CLOUD 4N - ORIGINAL WELLBORE - PROPOSAL	16,688.00	16,723.34	265.74	-281.25	0.486	Level 1, ES, SF
RED CLOUD 5N - ORIGINAL WELLBORE - PROPOSAL	600.00	600.00	29.99	27.57	12.391	CC
RED CLOUD 5N - ORIGINAL WELLBORE - PROPOSAL	16,688.00	16,632.14	509.87	-57.47	0.899	Level 1, ES, SF
RED CLOUD 6N - ORIGINAL WELLBORE - PROPOSAL	600.00	600.00	44.99	42.57	18.586	CC, ES
RED CLOUD 6N - ORIGINAL WELLBORE - PROPOSAL	16,688.00	16,699.75	768.47	203.30	1.360	Level 3, SF
RED CLOUD 7N - ORIGINAL WELLBORE - PROPOSAL	600.00	600.00	59.99	57.57	24.782	CC, ES
RED CLOUD 7N - ORIGINAL WELLBORE - PROPOSAL	16,688.00	16,619.19	1,019.78	452.50	1.798	SF
RED CLOUD 8N - ORIGINAL WELLBORE - PROPOSAL	600.00	600.00	74.99	72.57	30.977	CC, ES
RED CLOUD 8N - ORIGINAL WELLBORE - PROPOSAL	16,688.00	16,701.63	1,326.28	759.90	2.342	SF
RED CLOUD 9N - ORIGINAL WELLBORE - PROPOSAL	600.00	600.00	89.98	87.56	37.172	CC, ES
RED CLOUD 9N - ORIGINAL WELLBORE - PROPOSAL	16,688.00	16,675.66	1,579.62	1,012.61	2.786	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 3N
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 3N	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 NE SEC. 36 T5N R64W 6th P.M. (PYRAMID)						
ABDN VERT ROTHE STATE B #36-15 - Wellbore #1 - W	7,740.91	6,366.95	1,227.69	1,189.29	31.969	CC
ABDN VERT ROTHE STATE B #36-15 - Wellbore #1 - W	7,800.00	6,365.15	1,229.11	1,189.27	30.856	ES
ABDN VERT ROTHE STATE B #36-15 - Wellbore #1 - W	8,900.00	6,332.73	1,704.11	1,635.81	24.953	SF
ABDN VERT ROTHE STATE B #36-16 - Wellbore #1 - W	6,635.32	6,296.24	1,497.76	1,477.58	74.218	CC, ES
ABDN VERT ROTHE STATE B #36-16 - Wellbore #1 - W	13,600.00	6,200.00	7,064.87	6,868.28	35.936	SF
EXIST DD ECKHARDT B #35-13 - Wellbore #1 - Wellbor	15,897.96	6,605.36	1,223.10	959.01	4.631	CC
EXIST DD ECKHARDT B #35-13 - Wellbore #1 - Wellbor	15,900.00	6,605.34	1,223.10	958.95	4.630	ES
EXIST DD ECKHARDT B #35-13 - Wellbore #1 - Wellbor	16,100.00	6,603.75	1,239.68	969.91	4.595	SF
EXIST VERT BAKER STATE B #36-13 - Wellbore #1 - W	10,649.75	6,440.48	1,378.95	1,262.60	11.853	CC
EXIST VERT BAKER STATE B #36-13 - Wellbore #1 - W	10,700.00	6,437.88	1,379.86	1,262.13	11.720	ES
EXIST VERT BAKER STATE B #36-13 - Wellbore #1 - W	11,100.00	6,418.21	1,450.43	1,321.61	11.259	SF
EXIST VERT BAKER STATE B #36-14 - Wellbore #1 - W	9,259.22	6,428.83	1,261.37	1,183.29	16.155	CC
EXIST VERT BAKER STATE B #36-14 - Wellbore #1 - W	9,300.00	6,428.26	1,262.03	1,182.84	15.936	ES
EXIST VERT BAKER STATE B #36-14 - Wellbore #1 - W	9,800.00	6,422.23	1,353.37	1,260.29	14.540	SF
EXIST VERT HOSHIKO #2 - Wellbore #1 - Wellbore #1	13,217.70	6,534.82	1,387.45	1,199.32	7.375	CC, ES
EXIST VERT HOSHIKO #2 - Wellbore #1 - Wellbore #1	13,500.00	6,535.21	1,415.88	1,219.85	7.223	SF
EXIST VERT HOSHIKO #35-16H4 - Wellbore #1 - Desig	11,824.29	6,510.01	1,154.38	878.72	4.188	CC, ES
EXIST VERT HOSHIKO #35-16H4 - Wellbore #1 - Desig	12,000.00	6,510.01	1,167.67	887.12	4.162	SF
EXIST VERT HOSHIKO B #35-14 - Wellbore #1 - Wellbo	14,728.60	6,509.25	1,301.85	1,071.61	5.654	CC
EXIST VERT HOSHIKO B #35-14 - Wellbore #1 - Wellbo	14,800.00	6,508.69	1,303.80	1,071.56	5.614	ES
EXIST VERT HOSHIKO B #35-14 - Wellbore #1 - Wellbo	14,900.00	6,507.91	1,313.08	1,078.03	5.587	SF

Company:	PDC ENERGY	Local Co-ordinate Reference:	Well RED CLOUD 3N
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 3N	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	16,688.00	6,484.47	4,663.45	4,377.74	16.323	CC, ES, SF
ABDN VERT BOOY HILLS FARM #2-12 - Wellbore #1 -	15,945.88	6,579.52	2,449.06	2,184.72	9.265	CC
ABDN VERT BOOY HILLS FARM #2-12 - Wellbore #1 -	16,000.00	6,580.31	2,449.66	2,183.80	9.214	ES
ABDN VERT BOOY HILLS FARM #2-12 - Wellbore #1 -	16,600.00	6,588.83	2,534.89	2,252.22	8.968	SF
ABDN VERT FHA #10-1 - Wellbore #1 - Wellbore #1	0.00	0.00	2,193.38			
ABDN VERT FHA #10-1 - Wellbore #1 - Wellbore #1	600.00	578.20	2,194.36	2,192.76	1,369.142	ES
ABDN VERT FHA #10-1 - Wellbore #1 - Wellbore #1	12,200.00	6,550.79	4,729.88	4,570.37	29.652	SF
ABDN VERT FHA #15-1 - Wellbore #1 - Wellbore #1	0.00	0.00	3,360.83			
ABDN VERT FHA #15-1 - Wellbore #1 - Wellbore #1	600.00	587.50	3,361.11	3,359.54	2,142.267	ES
ABDN VERT FHA #15-1 - Wellbore #1 - Wellbore #1	16,688.00	6,277.24	9,339.87	9,055.18	32.807	SF
ABDN VERT HOSHIKO C #2-8 - Wellbore #1 - Wellbore	12,447.00	6,522.79	1,357.90	1,191.25	8.148	CC
ABDN VERT HOSHIKO C #2-8 - Wellbore #1 - Wellbore	12,500.00	6,524.30	1,358.94	1,190.81	8.083	ES
ABDN VERT HOSHIKO C #2-8 - Wellbore #1 - Wellbore	12,800.00	6,533.12	1,403.00	1,226.50	7.949	SF
ABDN VERT SAND CREEK RANCH C #2-3X - Wellbore	14,643.45	6,496.30	103.72	-124.35	0.455	Level 1, CC, ES, SF
ABDN VERT SAND CREEK RANCH CO #2-3 - Wellbore	14,573.49	6,506.01	43.12	-309.41	0.122	Level 1, CC, ES, SF
ABDN VERT SHAKLEE #1 - Wellbore #1 - Wellbore #1	16,178.83	6,500.00	3,883.81	3,612.88	14.335	CC
ABDN VERT SHAKLEE #1 - Wellbore #1 - Wellbore #1	16,300.00	6,500.00	3,885.70	3,611.37	14.165	ES
ABDN VERT SHAKLEE #1 - Wellbore #1 - Wellbore #1	16,688.00	6,500.00	3,917.05	3,631.83	13.734	SF
ABDN VERT SHAKLEE #2 - Wellbore #1 - Wellbore #1	14,843.06	6,500.00	3,855.46	3,621.95	16.511	CC
ABDN VERT SHAKLEE #2 - Wellbore #1 - Wellbore #1	15,000.00	6,500.00	3,858.65	3,620.74	16.219	ES
ABDN VERT SHAKLEE #2 - Wellbore #1 - Wellbore #1	16,600.00	6,553.01	4,236.53	3,953.73	14.981	SF
ABDN VERT SHAKLEE #3 - Wellbore #1 - Wellbore #1	14,805.92	6,528.76	2,586.71	2,354.27	11.129	CC
ABDN VERT SHAKLEE #3 - Wellbore #1 - Wellbore #1	14,900.00	6,528.31	2,588.42	2,353.35	11.011	ES
ABDN VERT SHAKLEE #3 - Wellbore #1 - Wellbore #1	15,600.00	6,525.30	2,705.85	2,451.15	10.624	SF
EXIST DD HOFFMAN C #2-20D - Wellbore #1 - Wellbore	15,380.62	6,654.99	1,873.17	1,604.00	6.959	CC
EXIST DD HOFFMAN C #2-20D - Wellbore #1 - Wellbore	15,400.00	6,655.30	1,873.27	1,603.55	6.945	ES
EXIST DD HOFFMAN C #2-20D - Wellbore #1 - Wellbore	15,700.00	6,660.14	1,900.20	1,622.06	6.832	SF
EXIST DD HOFFMAN C #2-25D - Wellbore #1 - Wellbore	15,452.11	6,787.63	3,280.28	3,006.60	11.986	CC
EXIST DD HOFFMAN C #2-25D - Wellbore #1 - Wellbore	15,500.00	6,787.67	3,280.63	3,005.60	11.928	ES
EXIST DD HOFFMAN C #2-25D - Wellbore #1 - Wellbore	16,600.00	6,788.60	3,475.33	3,169.44	11.361	SF
EXIST DD HOFFMAN C #2-33D - Wellbore #1 - Wellbore	16,688.00	7,259.00	3,286.77	2,949.78	9.753	CC, ES, SF
EXIST DD HOFFMAN C 2-21D - Wellbore #1 - Wellbore	14,200.46	6,528.18	1,811.38	1,584.37	7.979	CC
EXIST DD HOFFMAN C 2-21D - Wellbore #1 - Wellbore	14,300.00	6,529.08	1,814.11	1,584.31	7.894	ES
EXIST DD HOFFMAN C 2-21D - Wellbore #1 - Wellbore	14,600.00	6,531.65	1,854.92	1,616.69	7.786	SF
EXIST DD MARLEY C #1-18D - Wellbore #1 - Wellbore #	9,002.29	6,598.98	613.30	527.95	7.185	CC, ES
EXIST DD MARLEY C #1-18D - Wellbore #1 - Wellbore #	9,100.00	6,599.42	621.03	533.03	7.057	SF
EXIST DD MARLEY C #1-24D - Wellbore #1 - Wellbore #	8,817.04	7,016.57	3,324.57	3,215.85	30.579	CC
EXIST DD MARLEY C #1-24D - Wellbore #1 - Wellbore #	8,900.00	7,015.65	3,325.60	3,214.65	29.972	ES
EXIST DD MARLEY C #1-24D - Wellbore #1 - Wellbore #	11,700.00	6,982.99	4,417.24	4,229.00	23.466	SF
EXIST DD MARLEY C #1-28D - Wellbore #1 - Wellbore #	8,736.86	6,603.47	892.14	810.69	10.954	CC, ES
EXIST DD MARLEY C #1-28D - Wellbore #1 - Wellbore #	9,000.00	6,608.17	930.12	841.58	10.505	SF
EXIST DD MARLEY C #1-30D - Wellbore #1 - Wellbore #	11,401.83	6,561.07	642.15	489.81	4.215	CC, ES
EXIST DD MARLEY C #1-30D - Wellbore #1 - Wellbore #	11,500.00	6,562.48	649.61	494.53	4.189	SF
EXIST DD MARLEY C #1-31D - Wellbore #1 - Wellbore #	11,661.10	6,716.19	754.97	591.36	4.614	CC
EXIST DD MARLEY C #1-31D - Wellbore #1 - Wellbore #	11,700.00	6,716.71	755.97	591.28	4.590	ES
EXIST DD MARLEY C #1-31D - Wellbore #1 - Wellbore #	11,800.00	6,718.05	767.64	600.16	4.583	SF
EXIST DD MARLEY C #1-33D - Wellbore #1 - Wellbore #	11,367.69	6,620.31	3,246.60	3,095.91	21.545	CC
EXIST DD MARLEY C #1-33D - Wellbore #1 - Wellbore #	11,500.00	6,620.13	3,249.29	3,094.92	21.048	ES
EXIST DD MARLEY C #1-33D - Wellbore #1 - Wellbore #	13,300.00	6,617.58	3,778.12	3,573.46	18.460	SF
EXIST DD PANTHER C #11-27D - Wellbore #1 - Wellbor	12,864.70	6,638.60	4,544.46	4,351.77	23.584	CC
EXIST DD PANTHER C #11-27D - Wellbore #1 - Wellbor	13,000.00	6,638.06	4,546.48	4,350.00	23.140	ES
EXIST DD PANTHER C #11-27D - Wellbore #1 - Wellbor	15,900.00	6,624.00	5,464.89	5,187.18	19.678	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 3N
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 3N	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	14,222.56	7,028.80	4,522.83	4,268.20	17.763	CC
EXIST DD PANTHER C #11-28D - Wellbore #1 - Wellbor	14,300.00	7,027.99	4,523.49	4,266.70	17.615	ES
EXIST DD PANTHER C #11-28D - Wellbore #1 - Wellbor	16,500.00	7,005.88	5,063.80	4,745.34	15.901	SF
EXIST DD PANTHER C #2-23D - Wellbore #1 - Wellbore	12,838.02	6,649.94	3,253.40	3,061.27	16.933	CC
EXIST DD PANTHER C #2-23D - Wellbore #1 - Wellbore	12,900.00	6,649.28	3,253.99	3,060.13	16.785	ES
EXIST DD PANTHER C #2-23D - Wellbore #1 - Wellbore	14,400.00	6,633.04	3,608.90	3,373.07	15.303	SF
EXIST HZ BOBCAT C #12-69HN - Wellbore #1 - Wellbor	8,144.76	10,540.42	4,448.65	4,283.45	26.929	CC, ES
EXIST HZ BOBCAT C #12-69HN - Wellbore #1 - Wellbor	15,600.00	5,949.00	5,653.61	5,390.85	21.516	SF
EXIST HZ HOFFMAN C #02-65HN - Wellbore #1 - Wellb	6,858.37	13,691.00	1,776.91	1,550.46	7.847	CC, ES
EXIST HZ HOFFMAN C #02-65HN - Wellbore #1 - Wellb	6,900.00	13,691.00	1,777.41	1,550.51	7.834	SF
EXIST HZ TOBY C #12-79HN - Wellbore #1 - Wellbore #	11,444.23	6,057.00	4,640.29	4,484.81	29.844	CC
EXIST HZ TOBY C #12-79HN - Wellbore #1 - Wellbore #	11,600.00	6,057.00	4,642.90	4,483.11	29.056	ES
EXIST HZ TOBY C #12-79HN - Wellbore #1 - Wellbore #	15,300.00	6,032.09	6,032.73	5,770.47	23.003	SF
EXIST VERT AMIGO #1 - Wellbore #1 - Wellbore #1	10,794.06	6,350.00	1,293.28	1,173.63	10.809	CC
EXIST VERT AMIGO #1 - Wellbore #1 - Wellbore #1	10,800.00	6,350.00	1,293.29	1,173.48	10.794	ES
EXIST VERT AMIGO #1 - Wellbore #1 - Wellbore #1	11,200.00	6,350.00	1,355.49	1,224.60	10.356	SF
EXIST VERT AMIGO #2 - Wellbore #1 - Wellbore #1	9,517.96	6,496.47	1,222.92	1,137.37	14.294	CC, ES
EXIST VERT AMIGO #2 - Wellbore #1 - Wellbore #1	10,000.00	6,504.15	1,326.33	1,227.60	13.434	SF
EXIST VERT AMIGO FARMS #1-12 - Wellbore #1 - Well	10,855.66	6,500.00	2,592.16	2,470.17	21.249	CC
EXIST VERT AMIGO FARMS #1-12 - Wellbore #1 - Well	10,900.00	6,500.00	2,592.54	2,469.32	21.040	ES
EXIST VERT AMIGO FARMS #1-12 - Wellbore #1 - Well	12,400.00	6,500.00	3,017.33	2,852.29	18.282	SF
EXIST VERT FEIT #1 - Wellbore #1 - Wellbore #1	9,381.55	6,474.85	35.74	-45.61	0.439	Level 1, CC, ES, SF
EXIST VERT FEIT #1-4 - Wellbore #1 - Wellbore #1	10,787.61	6,350.00	328.29	214.49	2.885	CC
EXIST VERT FEIT #1-4 - Wellbore #1 - Wellbore #1	10,800.00	6,350.00	328.53	214.41	2.879	ES, SF
EXIST VERT FHA #2-1 - Wellbore #1 - Wellbore #1	14,808.81	6,522.79	1,267.03	1,034.49	5.449	CC, ES
EXIST VERT FHA #2-1 - Wellbore #1 - Wellbore #1	15,000.00	6,523.15	1,281.37	1,043.48	5.386	SF
EXIST VERT FOOS #1-1614 - Wellbore #1 - Wellbore #1	0.00	0.00	2,779.79			
EXIST VERT FOOS #1-1614 - Wellbore #1 - Wellbore #1	300.00	275.81	2,780.36	2,779.63	3,788.994	ES
EXIST VERT FOOS #1-1614 - Wellbore #1 - Wellbore #1	16,600.00	6,867.84	9,877.75	9,596.04	35.063	SF
EXIST VERT FUEGO C #1-19 - Wellbore #1 - Wellbore #	10,204.54	6,494.46	477.64	373.56	4.589	CC, ES
EXIST VERT FUEGO C #1-19 - Wellbore #1 - Wellbore #	10,300.00	6,496.67	487.08	380.36	4.564	SF
EXIST VERT HAPPY AMIGO C #1-25 - Wellbore #1 - W	10,214.27	6,530.30	3,552.22	3,447.67	33.977	CC
EXIST VERT HAPPY AMIGO C #1-25 - Wellbore #1 - W	10,300.00	6,529.57	3,553.25	3,446.33	33.233	ES
EXIST VERT HAPPY AMIGO C #1-25 - Wellbore #1 - W	13,600.00	6,504.63	4,907.21	4,708.26	24.666	SF
EXIST VERT HAPPY TALK #1 - Wellbore #1 - Wellbore	9,532.11	6,479.27	2,548.27	2,462.34	29.655	CC, ES
EXIST VERT HAPPY TALK #1 - Wellbore #1 - Wellbore	11,700.00	6,468.66	3,316.50	3,170.59	22.730	SF
EXIST VERT HAPPY TALK #2 - Wellbore #1 - Wellbore	9,505.00	6,545.44	3,837.78	3,753.02	45.280	CC, ES
EXIST VERT HAPPY TALK #2 - Wellbore #1 - Wellbore	14,500.00	6,529.80	6,271.60	6,047.77	28.019	SF
EXIST VERT HOFFMAN C #11-29 - Wellbore #1 - Wellb	15,527.56	6,639.66	4,305.49	4,052.61	17.026	CC
EXIST VERT HOFFMAN C #11-29 - Wellbore #1 - Wellb	15,600.00	6,646.96	4,306.10	4,051.19	16.893	ES
EXIST VERT HOFFMAN C #11-29 - Wellbore #1 - Wellb	16,688.00	6,700.00	4,458.68	4,173.35	15.626	SF
EXIST VERT HOSHIKO #1-2 - Wellbore #1 - Design #1	12,131.65	6,498.01	254.36	-29.75	0.895	Level 1, CC, ES, SF
EXIST VERT HOSHIKO #2-2 - Wellbore #1 - Design #1	13,542.47	6,522.01	151.94	-171.86	0.469	Level 1, CC, ES, SF
EXIST VERT HOSHIKO #7-2 - Wellbore #1 - Wellbore #1	13,627.48	6,518.67	1,062.55	863.08	5.327	CC, ES
EXIST VERT HOSHIKO #7-2 - Wellbore #1 - Wellbore #1	13,800.00	6,519.45	1,076.46	872.17	5.269	SF
EXIST VERT MCDERMED #1-1 - Wellbore #1 - Design #	6,974.36	6,483.51	48.23	-100.75	0.324	Level 1, CC, ES, SF
EXIST VERT MCDERMED #2-1 - Wellbore #1 - Wellbore	8,239.82	6,475.69	30.77	-20.04	0.606	Level 1, CC, ES, SF
EXIST VERT MCFERREN #4-2 - Wellbore #1 - Design #	16,081.29	4,629.00	1,875.11	1,797.96	24.305	CC
EXIST VERT MCFERREN #4-2 - Wellbore #1 - Design #	16,100.00	4,629.00	1,875.20	1,797.91	24.263	ES
EXIST VERT MCFERREN #4-2 - Wellbore #1 - Design #	16,400.00	4,629.00	1,902.00	1,822.52	23.931	SF
EXIST VERT MCFERREN #5-2 - Wellbore #1 - Design #	16,093.74	6,526.00	1,277.01	995.84	4.542	CC
EXIST VERT MCFERREN #5-2 - Wellbore #1 - Design #	16,100.00	6,526.00	1,277.03	995.68	4.539	ES

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 3N
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 3N	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 VERT MCFERREN #5-2 - Wellbore #1 - Design #	16,300.00	6,526.00	1,293.56	1,006.60	4.508	SF
EXIST VERT MINOR #1 - Wellbore #1 - Wellbore #1	10,887.42	6,400.00	4,023.81	3,901.03	32.773	CC
EXIST VERT MINOR #1 - Wellbore #1 - Wellbore #1	11,000.00	6,400.00	4,025.39	3,899.48	31.971	ES
EXIST VERT MINOR #1 - Wellbore #1 - Wellbore #1	14,600.00	6,400.00	5,474.88	5,248.37	24.171	SF
EXIST VERT REIN #1 - Wellbore #1 - Wellbore #1	8,212.91	6,468.53	1,139.77	1,089.27	22.567	CC
EXIST VERT REIN #1 - Wellbore #1 - Wellbore #1	8,234.43	6,468.41	1,140.10	1,088.98	22.305	ES
EXIST VERT REIN #1 - Wellbore #1 - Wellbore #1	8,900.00	6,464.65	1,337.36	1,268.53	19.431	SF
EXIST VERT REIN #1-8 - Wellbore #1 - Wellbore #1	607.51	585.45	470.17	468.58	295.643	CC, ES
EXIST VERT REIN #1-8 - Wellbore #1 - Wellbore #1	9,600.00	6,437.27	2,899.46	2,812.01	33.156	SF
EXIST VERT ROTHE #1 - Wellbore #1 - Wellbore #1	12,269.82	6,498.79	2,503.10	2,341.64	15.503	CC
EXIST VERT ROTHE #1 - Wellbore #1 - Wellbore #1	12,300.00	6,499.42	2,503.29	2,340.98	15.423	ES
EXIST VERT ROTHE #1 - Wellbore #1 - Wellbore #1	13,400.00	6,520.13	2,746.34	2,553.26	14.224	SF
EXIST VERT ROTHE #2 - Wellbore #1 - Wellbore #1	13,503.45	6,461.51	3,895.31	3,699.40	19.882	CC
EXIST VERT ROTHE #2 - Wellbore #1 - Wellbore #1	13,600.00	6,460.95	3,896.51	3,697.89	19.618	ES
EXIST VERT ROTHE #2 - Wellbore #1 - Wellbore #1	15,700.00	6,448.76	4,471.93	4,214.47	17.369	SF
EXIST VERT ROTHE #2-10 - Wellbore #1 - Wellbore #1	13,326.93	6,100.00	2,437.72	2,249.14	12.927	CC
EXIST VERT ROTHE #2-10 - Wellbore #1 - Wellbore #1	13,400.00	6,100.00	2,438.81	2,248.22	12.796	ES
EXIST VERT ROTHE #2-10 - Wellbore #1 - Wellbore #1	14,200.00	6,100.00	2,589.35	2,376.63	12.173	SF
EXIST VERT ROTHE #3 - Wellbore #1 - Wellbore #1	12,225.23	6,493.72	3,885.69	3,725.19	24.209	CC
EXIST VERT ROTHE #3 - Wellbore #1 - Wellbore #1	12,300.00	6,493.45	3,886.41	3,723.82	23.902	ES
EXIST VERT ROTHE #3 - Wellbore #1 - Wellbore #1	14,900.00	6,485.25	4,717.30	4,481.93	20.042	SF
EXIST VERT SPIKE STATE #CC6-12 - Wellbore #1 - De	600.00	577.00	2,179.72	2,169.26	208.350	CC
EXIST VERT SPIKE STATE #CC6-12 - Wellbore #1 - De	800.00	776.84	2,182.09	2,167.15	146.011	ES
EXIST VERT SPIKE STATE #CC6-12 - Wellbore #1 - De	6,450.00	6,251.74	2,777.38	2,635.83	19.620	SF
EXIST VERT SPIKE STATE #CC6-13 - Wellbore #1 - We	294.82	273.83	3,458.41	3,457.78	5,514.139	CC
EXIST VERT SPIKE STATE #CC6-13 - Wellbore #1 - We	600.00	562.97	3,458.81	3,457.32	2,322.419	ES
EXIST VERT SPIKE STATE #CC6-13 - Wellbore #1 - We	14,900.00	6,213.00	9,948.50	9,713.94	42.414	SF
LINDSEY 10N - ORIGINAL WELLBORE - PROPOSAL #	264.16	271.16	3,436.28	3,435.35	3,707.897	CC
LINDSEY 10N - ORIGINAL WELLBORE - PROPOSAL #	300.00	300.00	3,436.28	3,435.21	3,205.087	ES
LINDSEY 10N - ORIGINAL WELLBORE - PROPOSAL #	16,688.00	16,473.16	4,496.52	3,929.49	7.930	SF
LINDSEY 1C - ORIGINAL WELLBORE - PROPOSAL #1	9,483.79	9,935.84	2,119.55	1,953.05	12.731	CC
LINDSEY 1C - ORIGINAL WELLBORE - PROPOSAL #1	16,688.00	17,061.79	2,128.73	1,566.09	3.784	ES, SF
LINDSEY 2N - ORIGINAL WELLBORE - PROPOSAL #1	16,618.21	16,856.65	2,375.75	1,811.31	4.209	CC
LINDSEY 2N - ORIGINAL WELLBORE - PROPOSAL #1	16,688.00	16,856.65	2,376.76	1,810.37	4.196	ES, SF
LINDSEY 3N - ORIGINAL WELLBORE - PROPOSAL #1	16,619.49	16,822.59	2,642.87	2,078.49	4.683	CC
LINDSEY 3N - ORIGINAL WELLBORE - PROPOSAL #1	16,688.00	16,822.59	2,643.76	2,077.46	4.669	ES, SF
LINDSEY 4N - ORIGINAL WELLBORE - PROPOSAL #1	4,590.81	5,229.71	2,900.67	2,869.08	91.811	CC
LINDSEY 4N - ORIGINAL WELLBORE - PROPOSAL #1	16,688.00	16,701.63	2,904.67	2,338.18	5.127	ES, SF
LINDSEY 5N - ORIGINAL WELLBORE - PROPOSAL #1	4,570.22	5,200.00	3,170.45	3,139.87	103.669	CC
LINDSEY 5N - ORIGINAL WELLBORE - PROPOSAL #1	16,688.00	16,694.71	3,171.52	2,605.09	5.599	ES, SF
LINDSEY 6N - ORIGINAL WELLBORE - PROPOSAL #1	1,273.01	1,873.76	3,353.27	3,345.93	456.739	CC
LINDSEY 6N - ORIGINAL WELLBORE - PROPOSAL #1	16,688.00	16,594.46	3,436.39	2,869.87	6.066	ES, SF
LINDSEY 7N - ORIGINAL WELLBORE - PROPOSAL #1	600.00	608.00	3,392.65	3,390.21	1,391.166	CC
LINDSEY 7N - ORIGINAL WELLBORE - PROPOSAL #1	16,688.00	16,630.53	3,703.07	3,136.32	6.534	ES, SF
LINDSEY 8N - ORIGINAL WELLBORE - PROPOSAL #1	600.00	608.00	3,407.19	3,404.76	1,397.129	CC
LINDSEY 8N - ORIGINAL WELLBORE - PROPOSAL #1	16,688.00	16,558.58	3,964.46	3,397.34	6.991	ES, SF
LINDSEY 9N - ORIGINAL WELLBORE - PROPOSAL #1	364.16	371.16	3,421.73	3,420.36	2,486.224	CC
LINDSEY 9N - ORIGINAL WELLBORE - PROPOSAL #1	600.00	589.70	3,422.26	3,419.88	1,440.755	ES
LINDSEY 9N - ORIGINAL WELLBORE - PROPOSAL #1	16,688.00	16,608.36	4,231.06	3,663.66	7.457	SF