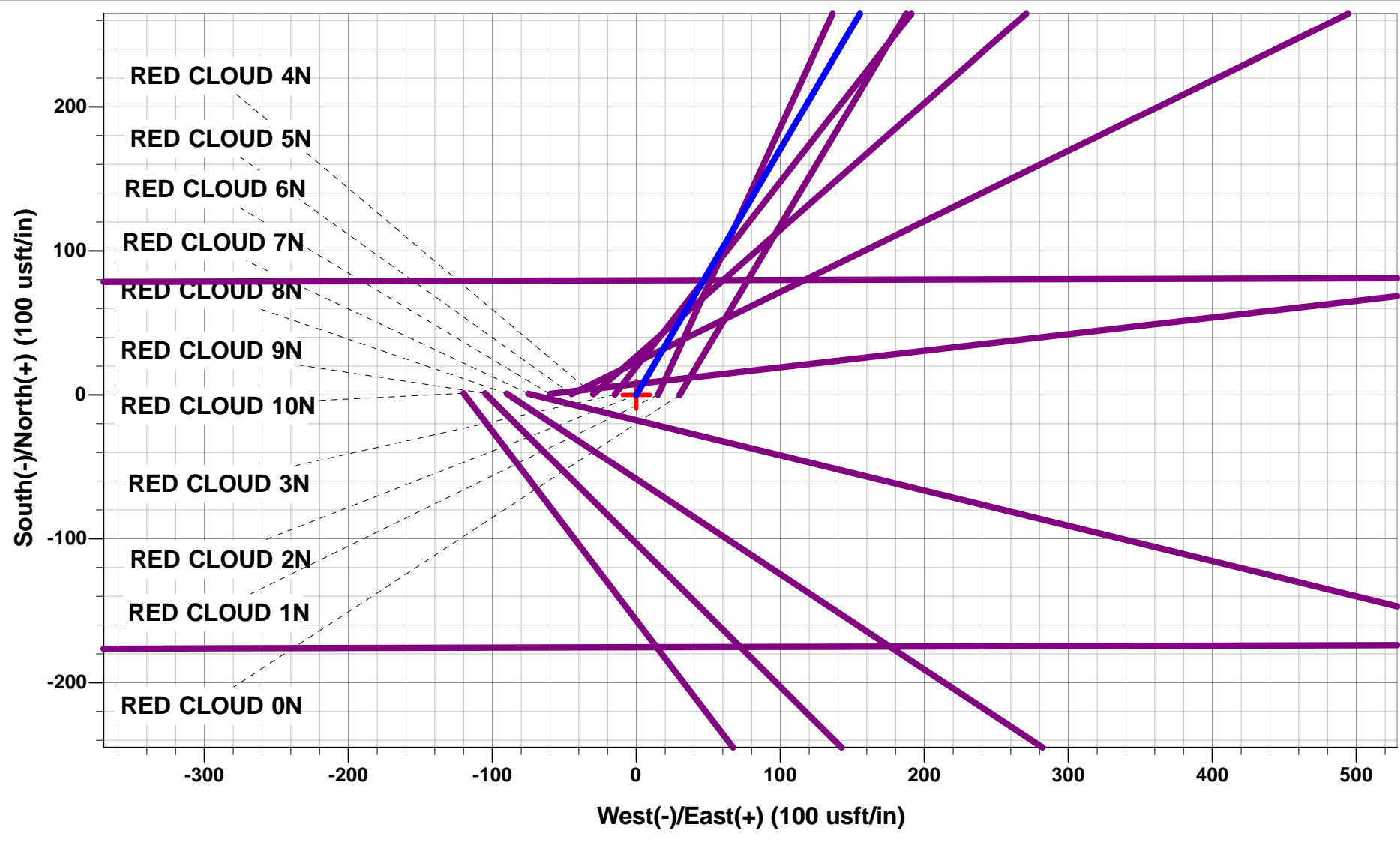




Project: WELD COUNTY, COLORADO (TRUE)
Site: SE NE SEC. 1 T4N R64W 6th P.M. (RED CLOUD)
Well: RED CLOUD 2N
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL #2

ANNOTATIONS									
TVD	MD	Inc	Azi	+N-S	+E-W	VSec	Dep	Annotation	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	SHL: 1529ft FNL & 659ft FEL of Sec 1	
500.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	START NUDGE (2°/100ft BUR)	
1309.72	1320.91	16.42	30.39	100.77	59.09	-47.68	116.81	EOB TO 16.42° INC	
4849.08	5010.72	16.42	30.39	1000.41	586.64	-473.41	1159.73	END OF TANGENT	
5658.80	5831.63	0.00	0.00	1101.17	645.73	-521.09	1276.54	EOD TO VERTICAL	
5858.80	6031.63	0.00	0.00	1101.17	645.73	-521.09	1276.54	KOP (8°/100ft BUR)	
6575.00	7156.63	90.00	269.84	1099.18	-70.46	190.56	1992.74	EP: 430ft FNL & 737ft FEL of Sec 1	
6575.01	11748.63	90.00	269.84	1086.38	-4662.45	4753.45	6584.74	END OF TANGENT	
6575.02	11987.29	90.00	277.00	1100.61	-4900.52	4991.65	6823.39	EOT TO 277° AZ	
6575.02	12017.29	90.00	277.00	1104.27	-4930.30	5021.65	6853.39	END OF TANGENT	
6575.02	12255.95	90.00	269.84	1118.49	-5168.38	5259.86	7092.06	EOT TO 269.84° AZ	
6575.02	12494.62	90.00	262.68	1102.94	-5406.39	5494.72	7330.72	EOT TO 262.68° AZ	
6575.02	12524.62	90.00	262.68	1099.11	-5436.14	5523.88	7360.72	END OF TANGENT	
6575.02	12763.37	90.00	269.84	1083.56	-5674.22	5758.82	7599.47	EOT TO 269.84° AZ	
6575.00	16810.73	90.00	269.84	1072.42	-9721.57	9780.54	11646.83	BHL: 430ft FNL & 50ft FWL of Sec 2	

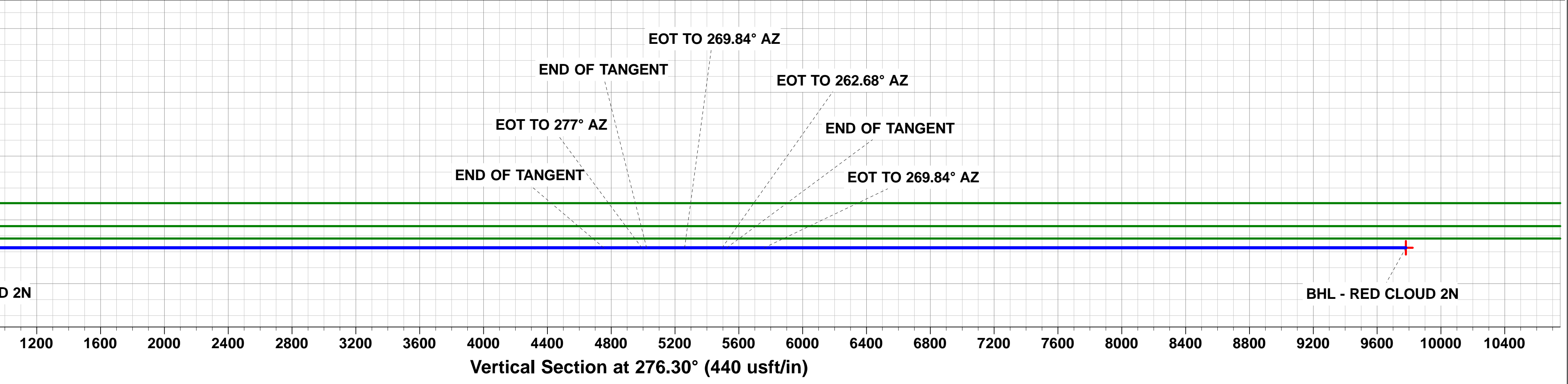
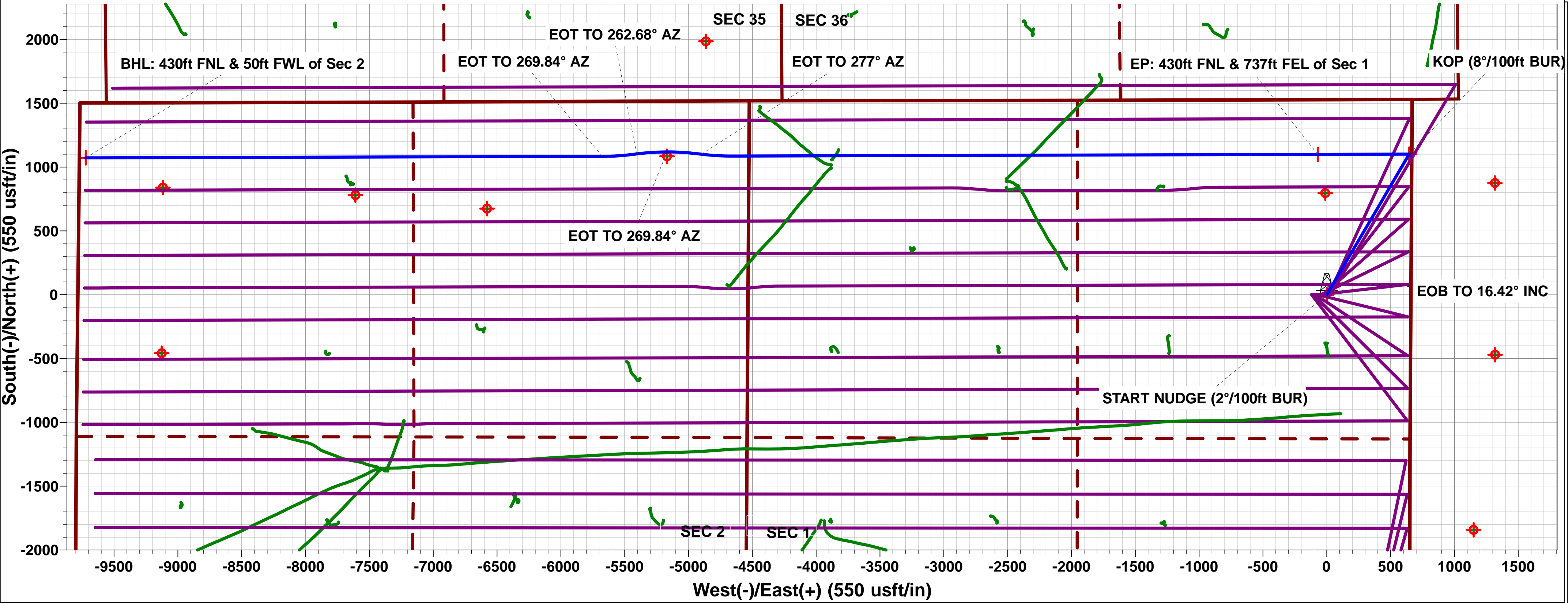
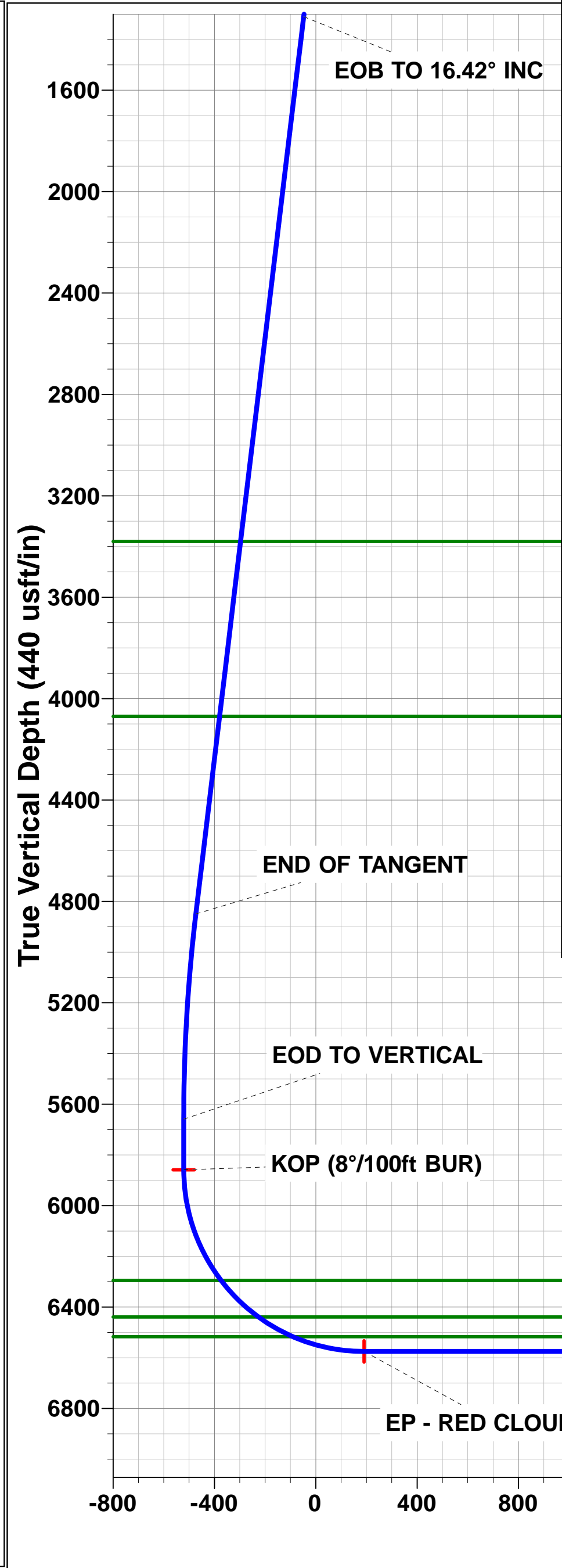
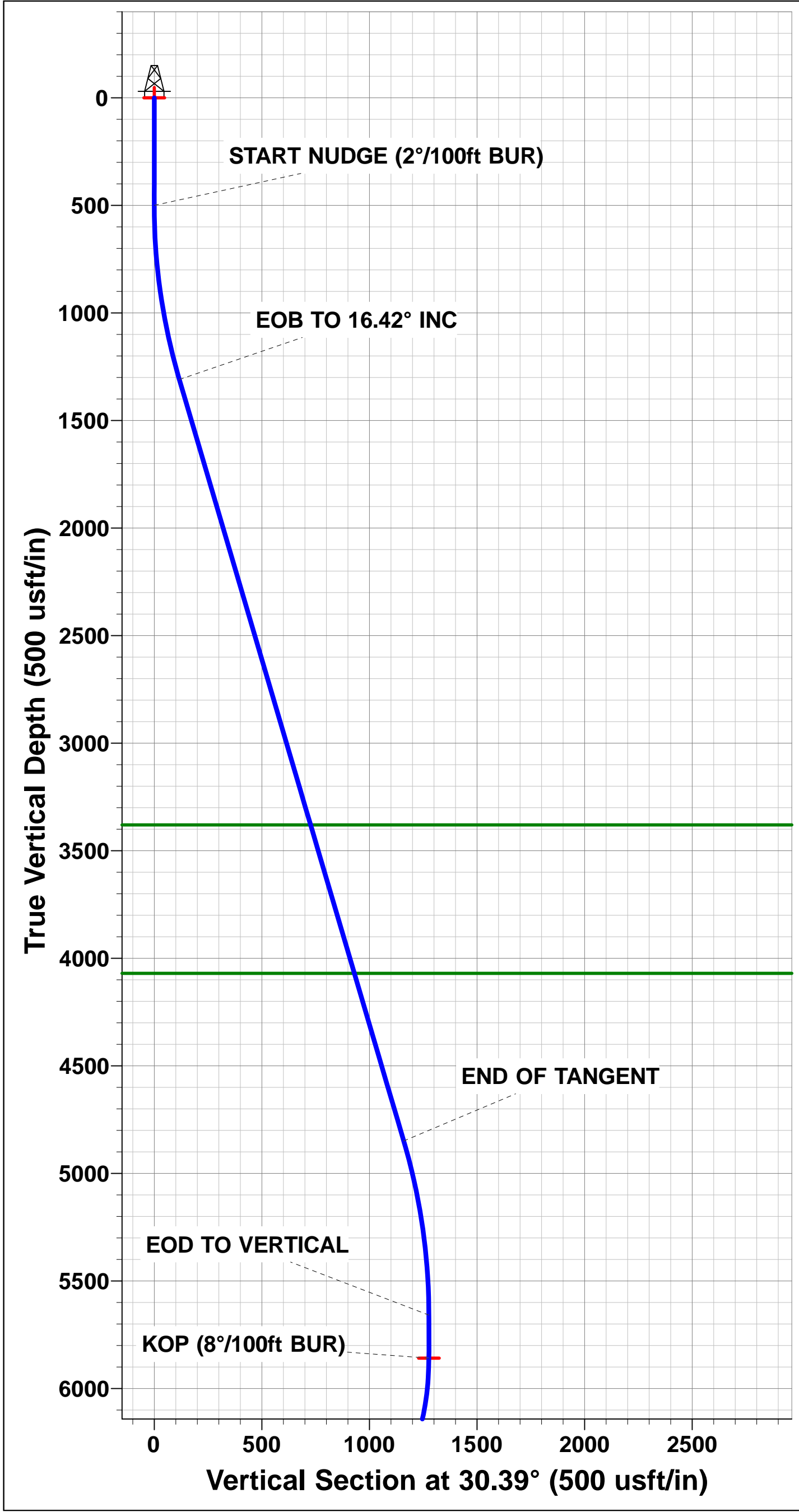
WELLBORE TARGET DETAILS (LAT/LONG)					
Name	TVD	+N-S	+E-W	Latitude	Longitude
KOP - RED CLOUD 2N	5858.80	1101.17	645.73	40.347504	-104.489583
EP - RED CLOUD 2N	6575.00	1099.18	-70.46	40.347499	-104.492153
BHL - RED CLOUD 2N	6575.00	1072.42	-9721.57	40.347420	-104.526777
SHL - RED CLOUD 2N	0.00	0.00	0.00	40.344482	-104.491900



PROPOSED LOCAL COORDINATES:
SHL: 1529ft FNL & 659ft FEL of Sec 1
EP: 430ft FNL & 737ft FEL of Sec 1
BHL: 430ft 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 2N**

**ORIGINAL WELLBORE
PROPOSAL #2**

Anticollision Report

13 August, 2018



Anticollision Report



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well RED CLOUD 2N
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 2N	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	16,810.73	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 -	10,834.00	11,055.00	1,424.42	1,179.58	5.818	CC
EXIST HZ SOONER STATE B #36-63HN - Wellbore #1 -	10,900.00	11,055.00	1,425.95	1,179.27	5.781	ES
EXIST HZ SOONER STATE B #36-63HN - Wellbore #1 -	11,100.00	11,055.00	1,449.04	1,196.81	5.745	SF
EXIST VERT ROTHE #4-6 - Wellbore #1 - Design #1	6,031.63	5,841.80	708.76	575.58	5.322	CC
EXIST VERT ROTHE #4-6 - Wellbore #1 - Design #1	6,050.00	5,860.17	708.98	565.05	4.926	ES, SF
EXIST VERT ROTHE #5-6 - Wellbore #1 - Design #1	1,831.27	1,782.27	1,375.30	1,333.55	32.940	CC
EXIST VERT ROTHE #5-6 - Wellbore #1 - Design #1	2,300.00	2,231.89	1,381.67	1,328.28	25.879	ES
EXIST VERT ROTHE #5-6 - Wellbore #1 - Design #1	6,250.00	6,056.80	1,722.76	1,578.84	11.971	SF
RED CLOUD 0N - ORIGINAL WELLBORE - PROPOSAL	300.00	300.00	29.97	28.89	27.950	CC
RED CLOUD 0N - ORIGINAL WELLBORE - PROPOSAL	16,600.00	17,188.44	545.02	-18.25	0.968	Level 1, ES, SF
RED CLOUD 10N - ORIGINAL WELLBORE - PROPOSAL	500.00	500.00	119.98	118.01	60.867	CC, ES
RED CLOUD 10N - ORIGINAL WELLBORE - PROPOSAL	16,810.73	16,802.88	2,089.54	1,522.63	3.686	SF
RED CLOUD 1N - ORIGINAL WELLBORE - PROPOSAL	400.00	400.00	15.00	13.48	9.855	CC
RED CLOUD 1N - ORIGINAL WELLBORE - PROPOSAL	16,810.73	16,824.82	285.30	-273.23	0.511	Level 1, ES, SF
RED CLOUD 3N - ORIGINAL WELLBORE - PROPOSAL	500.00	500.00	15.00	13.03	7.609	CC
RED CLOUD 3N - ORIGINAL WELLBORE - PROPOSAL	16,810.73	16,684.51	265.77	-278.50	0.488	Level 1, ES, SF
RED CLOUD 4N - ORIGINAL WELLBORE - PROPOSAL	500.00	500.00	30.00	28.03	15.217	CC
RED CLOUD 4N - ORIGINAL WELLBORE - PROPOSAL	16,810.73	16,719.86	509.90	-57.13	0.899	Level 1, ES, SF
RED CLOUD 5N - ORIGINAL WELLBORE - PROPOSAL	500.00	500.00	44.99	43.02	22.826	CC, ES
RED CLOUD 5N - ORIGINAL WELLBORE - PROPOSAL	16,810.73	16,628.66	768.50	204.22	1.362	Level 3, SF
RED CLOUD 6N - ORIGINAL WELLBORE - PROPOSAL	500.00	500.00	59.99	58.02	30.434	CC, ES
RED CLOUD 6N - ORIGINAL WELLBORE - PROPOSAL	16,810.73	16,696.25	1,019.77	452.53	1.798	SF
RED CLOUD 7N - ORIGINAL WELLBORE - PROPOSAL	500.00	500.00	74.99	73.02	38.042	CC, ES
RED CLOUD 7N - ORIGINAL WELLBORE - PROPOSAL	16,810.73	16,615.71	1,277.25	711.31	2.257	SF
RED CLOUD 8N - ORIGINAL WELLBORE - PROPOSAL	500.00	500.00	89.99	88.01	45.650	CC, ES
RED CLOUD 8N - ORIGINAL WELLBORE - PROPOSAL	16,810.73	16,698.15	1,579.68	1,012.94	2.787	SF
RED CLOUD 9N - ORIGINAL WELLBORE - PROPOSAL	500.00	500.00	104.98	103.01	53.259	CC, ES
RED CLOUD 9N - ORIGINAL WELLBORE - PROPOSAL	16,810.73	16,672.18	1,836.33	1,270.03	3.243	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 2N
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 2N	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	7,862.26	6,465.08	979.80	941.13	25.338	CC
ABDN VERT ROTHE STATE B #36-15 - Wellbore #1 - W	7,900.00	6,463.40	980.52	940.95	24.776	ES
ABDN VERT ROTHE STATE B #36-15 - Wellbore #1 - W	8,500.00	6,438.80	1,168.76	1,113.98	21.333	SF
ABDN VERT ROTHE STATE B #36-16 - Wellbore #1 - W	6,781.94	6,417.79	1,245.49	1,224.83	60.286	CC, ES
ABDN VERT ROTHE STATE B #36-16 - Wellbore #1 - W	12,100.00	6,304.74	5,422.36	5,269.36	35.439	SF
EXIST DD ECKHARDT B #35-13 - Wellbore #1 - Wellbor	16,023.74	6,680.89	967.31	703.18	3.662	CC, ES
EXIST DD ECKHARDT B #35-13 - Wellbore #1 - Wellbor	16,100.00	6,680.49	970.31	704.04	3.644	SF
EXIST VERT BAKER STATE B #36-13 - Wellbore #1 - W	10,768.55	6,528.15	1,126.22	1,009.75	9.670	CC
EXIST VERT BAKER STATE B #36-13 - Wellbore #1 - W	10,800.00	6,526.40	1,126.66	1,009.32	9.602	ES
EXIST VERT BAKER STATE B #36-13 - Wellbore #1 - W	11,100.00	6,510.37	1,173.84	1,048.18	9.342	SF
EXIST VERT BAKER STATE B #36-14 - Wellbore #1 - W	9,381.98	6,516.88	986.87	908.53	12.596	CC
EXIST VERT BAKER STATE B #36-14 - Wellbore #1 - W	9,400.00	6,516.61	987.04	908.20	12.520	ES
EXIST VERT BAKER STATE B #36-14 - Wellbore #1 - W	9,700.00	6,512.09	1,036.84	949.80	11.913	SF
EXIST VERT HOSHIKO #2 - Wellbore #1 - Wellbore #1	13,344.31	6,612.05	1,132.11	943.92	6.016	CC
EXIST VERT HOSHIKO #2 - Wellbore #1 - Wellbore #1	13,400.00	6,612.48	1,133.48	943.73	5.974	ES
EXIST VERT HOSHIKO #2 - Wellbore #1 - Wellbore #1	13,500.00	6,613.26	1,142.76	950.22	5.935	SF
EXIST VERT HOSHIKO #35-16H4 - Wellbore #1 - Desig	12,045.65	6,585.02	882.96	602.71	3.151	CC, ES
EXIST VERT HOSHIKO #35-16H4 - Wellbore #1 - Desig	12,100.00	6,585.02	885.40	603.50	3.141	SF
EXIST VERT HOSHIKO B #35-14 - Wellbore #1 - Wellbo	14,854.18	6,583.77	1,047.44	817.14	4.548	CC
EXIST VERT HOSHIKO B #35-14 - Wellbore #1 - Wellbo	14,900.00	6,583.32	1,048.44	816.86	4.527	ES
EXIST VERT HOSHIKO B #35-14 - Wellbore #1 - Wellbo	15,000.00	6,582.33	1,057.54	823.15	4.512	SF

Anticollision Report



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well RED CLOUD 2N
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 2N	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	16,810.73	6,555.86	4,919.41	4,633.74	17.220	CC, ES, SF
ABDN VERT BOOY HILLS FARM #2-12 - Wellbore #1 -	16,073.04	6,650.00	2,701.72	2,437.25	10.216	CC
ABDN VERT BOOY HILLS FARM #2-12 - Wellbore #1 -	16,100.00	6,650.00	2,701.85	2,436.63	10.187	ES
ABDN VERT BOOY HILLS FARM #2-12 - Wellbore #1 -	16,810.73	6,650.00	2,800.62	2,515.47	9.822	SF
ABDN VERT FHA #10-1 - Wellbore #1 - Wellbore #1	0.00	0.00	2,201.72			
ABDN VERT FHA #10-1 - Wellbore #1 - Wellbore #1	500.00	483.55	2,202.53	2,201.20	1,657.427	ES
ABDN VERT FHA #10-1 - Wellbore #1 - Wellbore #1	13,100.00	6,600.00	5,518.06	5,336.83	30.448	SF
ABDN VERT FHA #15-1 - Wellbore #1 - Wellbore #1	0.00	0.00	3,366.32			
ABDN VERT FHA #15-1 - Wellbore #1 - Wellbore #1	500.98	491.14	3,366.59	3,365.31	2,625.085	ES
ABDN VERT FHA #15-1 - Wellbore #1 - Wellbore #1	16,810.73	6,335.02	9,448.60	9,163.98	33.198	SF
ABDN VERT HOSHIKO C #2-8 - Wellbore #1 - Wellbore	12,661.78	6,619.78	1,615.58	1,447.04	9.586	CC
ABDN VERT HOSHIKO C #2-8 - Wellbore #1 - Wellbore	12,700.00	6,621.29	1,616.41	1,446.50	9.513	ES
ABDN VERT HOSHIKO C #2-8 - Wellbore #1 - Wellbore	13,000.00	6,634.13	1,665.43	1,486.79	9.323	SF
ABDN VERT SAND CREEK RANCH C #2-3X - Wellbore	14,771.05	6,576.27	149.64	-78.56	0.656	Level 1, CC, ES, SF
ABDN VERT SAND CREEK RANCH CO #2-3 - Wellbore	14,699.69	6,581.01	298.01	-56.09	0.842	Level 1, CC
ABDN VERT SAND CREEK RANCH CO #2-3 - Wellbore	14,700.00	6,581.01	298.01	-56.10	0.842	Level 1, ES, SF
ABDN VERT SHAKLEE #1 - Wellbore #1 - Wellbore #1	16,305.06	6,555.65	4,138.83	3,867.86	15.274	CC
ABDN VERT SHAKLEE #1 - Wellbore #1 - Wellbore #1	16,400.00	6,555.83	4,139.92	3,866.29	15.129	ES
ABDN VERT SHAKLEE #1 - Wellbore #1 - Wellbore #1	16,810.73	6,556.59	4,169.61	3,884.45	14.622	SF
ABDN VERT SHAKLEE #2 - Wellbore #1 - Wellbore #1	14,971.30	6,560.14	4,110.41	3,876.79	17.594	CC
ABDN VERT SHAKLEE #2 - Wellbore #1 - Wellbore #1	15,100.00	6,564.10	4,112.43	3,875.19	17.335	ES
ABDN VERT SHAKLEE #2 - Wellbore #1 - Wellbore #1	16,810.73	6,618.99	4,502.76	4,217.52	15.786	SF
ABDN VERT SHAKLEE #3 - Wellbore #1 - Wellbore #1	14,931.25	6,600.00	2,840.78	2,608.30	12.219	CC
ABDN VERT SHAKLEE #3 - Wellbore #1 - Wellbore #1	15,000.00	6,600.00	2,841.62	2,607.21	12.122	ES
ABDN VERT SHAKLEE #3 - Wellbore #1 - Wellbore #1	15,900.00	6,582.86	3,001.36	2,741.72	11.560	SF
EXIST DD HOFFMAN C #2-20D - Wellbore #1 - Wellbore	15,507.93	6,730.31	2,127.16	1,857.78	7.897	CC
EXIST DD HOFFMAN C #2-20D - Wellbore #1 - Wellbore	15,600.00	6,731.58	2,129.16	1,857.19	7.829	ES
EXIST DD HOFFMAN C #2-20D - Wellbore #1 - Wellbore	16,000.00	6,737.02	2,183.33	1,900.14	7.710	SF
EXIST DD HOFFMAN C #2-25D - Wellbore #1 - Wellbore	15,578.21	6,861.57	3,535.42	3,261.60	12.912	CC
EXIST DD HOFFMAN C #2-25D - Wellbore #1 - Wellbore	15,700.00	6,861.56	3,537.52	3,260.28	12.760	ES
EXIST DD HOFFMAN C #2-25D - Wellbore #1 - Wellbore	16,810.73	6,861.42	3,744.10	3,435.71	12.141	SF
EXIST DD HOFFMAN C #2-33D - Wellbore #1 - Wellbore	16,810.73	7,344.66	3,542.71	3,205.65	10.511	CC, ES, SF
EXIST DD HOFFMAN C 2-21D - Wellbore #1 - Wellbore	14,326.97	6,600.94	2,066.74	1,839.51	9.095	CC
EXIST DD HOFFMAN C 2-21D - Wellbore #1 - Wellbore	14,400.00	6,601.04	2,068.03	1,838.76	9.020	ES
EXIST DD HOFFMAN C 2-21D - Wellbore #1 - Wellbore	14,900.00	6,601.74	2,144.71	1,901.42	8.816	SF
EXIST DD MARLEY C #1-18D - Wellbore #1 - Wellbore #	9,126.99	6,680.63	890.77	804.98	10.383	CC, ES
EXIST DD MARLEY C #1-18D - Wellbore #1 - Wellbore #	9,400.00	6,683.32	931.67	838.45	9.995	SF
EXIST DD MARLEY C #1-24D - Wellbore #1 - Wellbore #	8,940.50	7,100.42	3,601.80	3,492.73	33.023	CC
EXIST DD MARLEY C #1-24D - Wellbore #1 - Wellbore #	9,000.00	7,100.10	3,602.29	3,491.62	32.550	ES
EXIST DD MARLEY C #1-24D - Wellbore #1 - Wellbore #	11,987.29	7,083.20	4,728.56	4,534.14	24.321	SF
EXIST DD MARLEY C #1-28D - Wellbore #1 - Wellbore #	8,862.04	6,686.45	617.95	536.03	7.543	CC, ES
EXIST DD MARLEY C #1-28D - Wellbore #1 - Wellbore #	9,000.00	6,687.68	633.16	547.54	7.395	SF
EXIST DD MARLEY C #1-30D - Wellbore #1 - Wellbore #	11,525.68	6,638.66	388.13	235.43	2.542	CC, ES, SF
EXIST DD MARLEY C #1-31D - Wellbore #1 - Wellbore #	11,772.61	6,793.01	1,009.25	845.67	6.170	CC
EXIST DD MARLEY C #1-31D - Wellbore #1 - Wellbore #	11,800.00	6,793.29	1,009.82	845.54	6.147	ES
EXIST DD MARLEY C #1-31D - Wellbore #1 - Wellbore #	11,900.00	6,794.37	1,021.46	854.85	6.131	SF
EXIST DD MARLEY C #1-33D - Wellbore #1 - Wellbore #	11,490.74	6,693.33	3,500.67	3,349.65	23.180	CC
EXIST DD MARLEY C #1-33D - Wellbore #1 - Wellbore #	11,600.00	6,692.83	3,502.37	3,348.31	22.734	ES
EXIST DD MARLEY C #1-33D - Wellbore #1 - Wellbore #	13,800.00	6,683.91	4,192.12	3,976.81	19.470	SF
EXIST DD PANTHER C #11-27D - Wellbore #1 - Wellbor	12,990.38	6,715.03	4,798.84	4,605.97	24.881	CC
EXIST DD PANTHER C #11-27D - Wellbore #1 - Wellbor	13,100.00	6,714.47	4,800.09	4,604.15	24.498	ES
EXIST DD PANTHER C #11-27D - Wellbore #1 - Wellbor	16,300.00	6,698.86	5,829.42	5,543.86	20.414	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 2N
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 2N	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 DD PANTHER C #11-28D - Wellbore #1 - Wellbor	14,347.75	7,101.15	4,777.69	4,523.00	18.759	CC
EXIST DD PANTHER C #11-28D - Wellbore #1 - Wellbor	14,500.00	7,099.23	4,780.11	4,521.16	18.459	ES
EXIST DD PANTHER C #11-28D - Wellbore #1 - Wellbor	16,810.73	7,072.97	5,375.10	5,051.38	16.604	SF
EXIST DD PANTHER C #2-23D - Wellbore #1 - Wellbore	12,963.29	6,728.18	3,507.73	3,315.42	18.241	CC
EXIST DD PANTHER C #2-23D - Wellbore #1 - Wellbore	13,100.00	6,726.79	3,510.39	3,314.27	17.899	ES
EXIST DD PANTHER C #2-23D - Wellbore #1 - Wellbore	14,800.00	6,709.26	3,959.46	3,715.78	16.249	SF
EXIST HZ BOBCAT C #12-69HN - Wellbore #1 - Wellbor	7,522.92	11,078.00	4,705.99	4,542.84	28.844	CC
EXIST HZ BOBCAT C #12-69HN - Wellbore #1 - Wellbor	7,600.00	11,049.49	4,706.42	4,542.39	28.694	ES
EXIST HZ BOBCAT C #12-69HN - Wellbore #1 - Wellbor	16,100.00	5,949.00	6,089.33	5,816.50	22.318	SF
EXIST HZ HOFFMAN C #02-65HN - Wellbore #1 - Wellb	6,963.52	13,691.00	2,032.75	1,806.39	8.980	CC
EXIST HZ HOFFMAN C #02-65HN - Wellbore #1 - Wellb	7,000.00	13,691.00	2,033.05	1,806.31	8.967	ES
EXIST HZ HOFFMAN C #02-65HN - Wellbore #1 - Wellb	7,050.00	13,691.00	2,034.42	1,807.12	8.950	SF
EXIST HZ TOBY C #12-79HN - Wellbore #1 - Wellbore #	11,567.47	6,057.00	4,902.93	4,747.49	31.543	CC
EXIST HZ TOBY C #12-79HN - Wellbore #1 - Wellbore #	11,700.00	6,057.00	4,904.72	4,745.62	30.829	ES
EXIST HZ TOBY C #12-79HN - Wellbore #1 - Wellbore #	15,900.00	6,057.00	6,541.02	6,265.68	23.756	SF
EXIST VERT AMIGO #1 - Wellbore #1 - Wellbore #1	10,917.32	6,350.00	1,555.09	1,435.69	13.024	CC
EXIST VERT AMIGO #1 - Wellbore #1 - Wellbore #1	11,000.00	6,350.00	1,557.29	1,435.61	12.798	ES
EXIST VERT AMIGO #1 - Wellbore #1 - Wellbore #1	11,500.00	6,350.00	1,660.67	1,525.20	12.258	SF
EXIST VERT AMIGO #2 - Wellbore #1 - Wellbore #1	9,667.99	6,575.99	1,498.76	1,412.29	17.332	CC
EXIST VERT AMIGO #2 - Wellbore #1 - Wellbore #1	9,700.00	6,576.54	1,499.10	1,411.75	17.162	ES
EXIST VERT AMIGO #2 - Wellbore #1 - Wellbore #1	10,400.00	6,589.01	1,667.92	1,561.28	15.640	SF
EXIST VERT AMIGO FARMS #1-12 - Wellbore #1 - Well	10,978.83	6,566.09	2,846.53	2,724.33	23.295	CC
EXIST VERT AMIGO FARMS #1-12 - Wellbore #1 - Well	11,100.00	6,565.91	2,849.10	2,723.54	22.691	ES
EXIST VERT AMIGO FARMS #1-12 - Wellbore #1 - Well	12,800.00	6,563.38	3,377.66	3,204.90	19.551	SF
EXIST VERT FEIT #1 - Wellbore #1 - Wellbore #1	9,503.17	6,556.15	240.30	158.74	2.946	CC, ES, SF
EXIST VERT FEIT #1-4 - Wellbore #1 - Wellbore #1	10,910.88	6,350.00	208.27	156.75	4.043	CC, ES, SF
EXIST VERT FHA #2-1 - Wellbore #1 - Wellbore #1	14,934.94	6,607.23	1,520.92	1,288.31	6.538	CC
EXIST VERT FHA #2-1 - Wellbore #1 - Wellbore #1	15,000.00	6,607.10	1,522.31	1,287.88	6.493	ES
EXIST VERT FHA #2-1 - Wellbore #1 - Wellbore #1	15,200.00	6,606.69	1,543.85	1,303.80	6.432	SF
EXIST VERT FOOS #1-1614 - Wellbore #1 - Wellbore #1	0.00	0.00	2,781.41			
EXIST VERT FOOS #1-1614 - Wellbore #1 - Wellbore #1	300.00	275.89	2,781.97	2,781.24	3,793.641	ES
EXIST VERT FOOS #1-1614 - Wellbore #1 - Wellbore #1	16,700.00	6,900.00	9,945.75	9,664.29	35.337	SF
EXIST VERT FUEGO C #1-19 - Wellbore #1 - Wellbore #	10,328.89	6,550.00	730.80	626.52	7.008	CC, ES
EXIST VERT FUEGO C #1-19 - Wellbore #1 - Wellbore #	10,500.00	6,550.00	750.56	641.55	6.885	SF
EXIST VERT HAPPY AMIGO C #1-25 - Wellbore #1 - W	10,336.86	6,600.00	3,806.21	3,701.45	36.333	CC
EXIST VERT HAPPY AMIGO C #1-25 - Wellbore #1 - W	10,400.00	6,600.00	3,806.73	3,700.23	35.742	ES
EXIST VERT HAPPY AMIGO C #1-25 - Wellbore #1 - W	14,200.00	6,572.38	5,421.05	5,208.78	25.538	SF
EXIST VERT HAPPY TALK #1 - Wellbore #1 - Wellbore	9,725.95	6,567.45	2,824.41	2,736.39	32.088	CC
EXIST VERT HAPPY TALK #1 - Wellbore #1 - Wellbore	9,800.00	6,566.67	2,825.38	2,735.33	31.375	ES
EXIST VERT HAPPY TALK #1 - Wellbore #1 - Wellbore	11,900.00	6,547.24	3,568.85	3,420.36	24.035	SF
EXIST VERT HAPPY TALK #2 - Wellbore #1 - Wellbore	358.94	346.96	3,963.87	3,962.93	4,229.647	CC
EXIST VERT HAPPY TALK #2 - Wellbore #1 - Wellbore	500.00	481.72	3,964.08	3,962.73	2,936.262	ES
EXIST VERT HAPPY TALK #2 - Wellbore #1 - Wellbore	15,200.00	6,600.00	6,881.95	6,641.96	28.676	SF
EXIST VERT HOFFMAN C #11-29 - Wellbore #1 - Wellb	15,655.84	6,700.00	4,557.63	4,304.59	18.011	CC
EXIST VERT HOFFMAN C #11-29 - Wellbore #1 - Wellb	15,800.00	6,700.00	4,559.91	4,302.83	17.737	ES
EXIST VERT HOFFMAN C #11-29 - Wellbore #1 - Wellb	16,810.73	6,700.00	4,701.68	4,416.25	16.472	SF
EXIST VERT HOSHIKO #1-2 - Wellbore #1 - Design #1	12,256.35	6,573.02	33.98	-251.86	0.119	Level 1, CC, ES, SF
EXIST VERT HOSHIKO #2-2 - Wellbore #1 - Design #1	13,668.67	6,597.01	406.79	81.41	1.250	Level 3, CC, ES, SF
EXIST VERT HOSHIKO #7-2 - Wellbore #1 - Wellbore #1	13,754.00	6,593.20	1,315.72	1,116.14	6.593	CC
EXIST VERT HOSHIKO #7-2 - Wellbore #1 - Wellbore #1	13,800.00	6,593.39	1,316.52	1,115.66	6.554	ES
EXIST VERT HOSHIKO #7-2 - Wellbore #1 - Wellbore #1	14,000.00	6,594.24	1,338.52	1,132.06	6.483	SF
EXIST VERT MCDERMED #1-1 - Wellbore #1 - Design #	7,099.30	6,558.71	303.16	152.24	2.009	CC

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 2N
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 2N	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 #1-1 - Wellbore #1 - Design #	7,100.00	6,558.76	303.16	152.23	2.009	ES, SF
EXIST VERT MCDERMED #2-1 - Wellbore #1 - Wellbore	8,363.95	6,556.05	245.46	194.27	4.795	CC, ES
EXIST VERT MCDERMED #2-1 - Wellbore #1 - Wellbore	8,400.00	6,555.98	248.09	195.97	4.759	SF
EXIST VERT MCFERREN #4-2 - Wellbore #1 - Design #	16,207.50	4,629.00	1,964.12	1,874.10	21.820	CC, ES
EXIST VERT MCFERREN #4-2 - Wellbore #1 - Design #	16,500.00	4,629.00	1,985.78	1,893.43	21.504	SF
EXIST VERT MCFERREN #5-2 - Wellbore #1 - Design #	16,219.90	6,601.00	1,531.96	1,250.56	5.444	CC
EXIST VERT MCFERREN #5-2 - Wellbore #1 - Design #	16,300.00	6,601.00	1,534.05	1,250.41	5.408	ES
EXIST VERT MCFERREN #5-2 - Wellbore #1 - Design #	16,500.00	6,601.00	1,557.36	1,268.10	5.384	SF
EXIST VERT MINOR #1 - Wellbore #1 - Wellbore #1	11,010.67	6,400.00	4,280.78	4,157.89	34.834	CC
EXIST VERT MINOR #1 - Wellbore #1 - Wellbore #1	11,100.00	6,400.00	4,281.72	4,156.34	34.152	ES
EXIST VERT MINOR #1 - Wellbore #1 - Wellbore #1	15,200.00	6,400.00	5,987.62	5,747.93	24.981	SF
EXIST VERT REIN #1 - Wellbore #1 - Wellbore #1	542.26	524.30	1,316.82	1,315.30	866.227	CC, ES
EXIST VERT REIN #1 - Wellbore #1 - Wellbore #1	9,400.00	6,534.48	1,779.75	1,700.44	22.442	SF
EXIST VERT REIN #1-8 - Wellbore #1 - Wellbore #1	505.66	483.45	469.50	468.20	362.081	CC, ES
EXIST VERT REIN #1-8 - Wellbore #1 - Wellbore #1	11,800.00	6,472.21	4,940.56	4,795.54	34.070	SF
EXIST VERT ROTHE #1 - Wellbore #1 - Wellbore #1	12,613.90	6,584.62	2,772.00	2,605.54	16.653	CC, ES
EXIST VERT ROTHE #1 - Wellbore #1 - Wellbore #1	13,700.00	6,600.00	3,049.82	2,851.79	15.401	SF
EXIST VERT ROTHE #2 - Wellbore #1 - Wellbore #1	13,629.09	6,531.41	4,150.73	3,954.75	21.180	CC
EXIST VERT ROTHE #2 - Wellbore #1 - Wellbore #1	13,700.00	6,531.00	4,151.33	3,953.38	20.971	ES
EXIST VERT ROTHE #2 - Wellbore #1 - Wellbore #1	16,100.00	6,517.77	4,830.50	4,565.30	18.215	SF
EXIST VERT ROTHE #2-10 - Wellbore #1 - Wellbore #1	13,453.04	6,100.00	2,701.52	2,513.32	14.354	CC
EXIST VERT ROTHE #2-10 - Wellbore #1 - Wellbore #1	13,500.00	6,100.00	2,701.93	2,512.43	14.258	ES
EXIST VERT ROTHE #2-10 - Wellbore #1 - Wellbore #1	14,500.00	6,100.00	2,897.30	2,680.20	13.345	SF
EXIST VERT ROTHE #3 - Wellbore #1 - Wellbore #1	12,633.39	6,566.57	4,154.46	3,986.98	24.805	CC
EXIST VERT ROTHE #3 - Wellbore #1 - Wellbore #1	12,700.00	6,566.27	4,156.16	3,986.22	24.456	ES
EXIST VERT ROTHE #3 - Wellbore #1 - Wellbore #1	15,300.00	6,554.97	5,083.28	4,840.17	20.909	SF
EXIST VERT SPIKE STATE #CC6-12 - Wellbore #1 - De	500.00	477.00	2,171.51	2,163.31	264.648	CC
EXIST VERT SPIKE STATE #CC6-12 - Wellbore #1 - De	600.00	576.98	2,172.32	2,161.87	207.706	ES
EXIST VERT SPIKE STATE #CC6-12 - Wellbore #1 - De	7,050.00	6,544.08	3,145.35	2,995.25	20.956	SF
EXIST VERT SPIKE STATE #CC6-13 - Wellbore #1 - We	294.87	273.88	3,453.15	3,452.52	5,506.570	CC
EXIST VERT SPIKE STATE #CC6-13 - Wellbore #1 - We	500.00	477.19	3,453.34	3,452.14	2,878.296	ES
EXIST VERT SPIKE STATE #CC6-13 - Wellbore #1 - We	14,900.00	6,362.73	9,945.91	9,714.55	42.990	SF
LINDSEY 10N - ORIGINAL WELLBORE - PROPOSAL #	264.16	271.16	3,435.06	3,434.14	3,706.589	CC
LINDSEY 10N - ORIGINAL WELLBORE - PROPOSAL #	300.00	300.00	3,435.07	3,434.00	3,203.956	ES
LINDSEY 10N - ORIGINAL WELLBORE - PROPOSAL #	16,810.73	16,473.16	4,752.95	4,186.18	8.386	SF
LINDSEY 1C - ORIGINAL WELLBORE - PROPOSAL #1	4,611.93	5,466.59	2,360.18	2,325.05	67.187	CC
LINDSEY 1C - ORIGINAL WELLBORE - PROPOSAL #1	16,810.73	17,061.79	2,374.06	1,809.21	4.203	ES, SF
LINDSEY 2N - ORIGINAL WELLBORE - PROPOSAL #1	4,415.28	5,247.70	2,585.11	2,551.91	77.850	CC
LINDSEY 2N - ORIGINAL WELLBORE - PROPOSAL #1	16,810.73	16,856.65	2,631.74	2,065.62	4.649	ES, SF
LINDSEY 3N - ORIGINAL WELLBORE - PROPOSAL #1	4,389.42	5,200.00	2,855.28	2,823.33	89.367	CC
LINDSEY 3N - ORIGINAL WELLBORE - PROPOSAL #1	16,810.73	16,822.59	2,897.22	2,330.87	5.116	ES, SF
LINDSEY 4N - ORIGINAL WELLBORE - PROPOSAL #1	4,257.59	5,064.90	3,094.90	3,064.61	102.191	CC
LINDSEY 4N - ORIGINAL WELLBORE - PROPOSAL #1	16,810.73	16,701.63	3,159.68	2,593.40	5.580	ES, SF
LINDSEY 5N - ORIGINAL WELLBORE - PROPOSAL #1	1,269.28	2,024.80	3,315.34	3,307.38	416.754	CC
LINDSEY 5N - ORIGINAL WELLBORE - PROPOSAL #1	16,810.73	16,694.71	3,425.26	2,858.79	6.047	ES, SF
LINDSEY 6N - ORIGINAL WELLBORE - PROPOSAL #1	1,107.89	1,712.49	3,375.07	3,368.67	526.890	CC
LINDSEY 6N - ORIGINAL WELLBORE - PROPOSAL #1	16,810.73	16,594.46	3,691.41	3,125.05	6.518	ES, SF
LINDSEY 7N - ORIGINAL WELLBORE - PROPOSAL #1	500.00	508.00	3,391.43	3,389.44	1,704.939	CC, ES
LINDSEY 7N - ORIGINAL WELLBORE - PROPOSAL #1	16,810.73	16,630.53	3,956.99	3,390.23	6.982	SF
LINDSEY 8N - ORIGINAL WELLBORE - PROPOSAL #1	500.00	508.00	3,405.97	3,403.98	1,712.250	CC, ES
LINDSEY 8N - ORIGINAL WELLBORE - PROPOSAL #1	16,810.73	16,558.58	4,219.48	3,652.49	7.442	SF
LINDSEY 9N - ORIGINAL WELLBORE - PROPOSAL #1	364.16	371.16	3,420.52	3,419.14	2,485.341	CC

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 2N
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 2N	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 9N - ORIGINAL WELLBORE - PROPOSAL #1	500.00	500.00	3,420.65	3,418.69	1,745.832	ES
LINDSEY 9N - ORIGINAL WELLBORE - PROPOSAL #1	16,810.73	16,608.36	4,485.12	3,917.71	7.904	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	23.79	1,795.48	791.51	1,962.21				
100.00	100.00	99.00	99.00	0.09	0.11	23.79	1,795.48	791.51	1,962.21	1,962.01	0.19	N/A	
200.00	200.00	199.00	199.00	0.31	0.22	23.79	1,795.48	791.51	1,962.21	1,961.68	0.53	3,728.008	
300.00	300.00	299.00	299.00	0.54	0.32	23.79	1,795.48	791.51	1,962.21	1,961.35	0.86	2,283.844	
400.00	400.00	399.00	399.00	0.76	0.43	23.79	1,795.48	791.51	1,962.21	1,961.01	1.19	1,646.153	
500.00	500.00	499.00	499.00	0.99	0.54	23.79	1,795.48	791.51	1,962.21	1,960.68	1.52	1,286.843	
600.00	599.98	599.43	599.43	1.21	0.68	-6.61	1,795.50	791.46	1,960.47	1,958.58	1.89	1,036.691	
700.00	699.84	703.09	703.08	1.44	0.89	-6.66	1,795.73	790.69	1,955.17	1,952.84	2.34	837.179	
800.00	799.45	808.00	807.99	1.67	1.10	-6.74	1,795.73	789.77	1,946.17	1,943.39	2.78	701.116	
900.00	898.70	905.43	905.42	1.93	1.30	-6.83	1,795.60	788.89	1,933.58	1,930.37	3.21	602.612	
1,000.00	997.47	1,006.45	1,006.44	2.23	1.51	-6.96	1,795.57	787.88	1,917.63	1,913.97	3.65	524.773	
1,100.00	1,095.62	1,108.45	1,108.43	2.57	1.72	-7.11	1,795.36	786.76	1,898.08	1,893.97	4.10	462.513	
1,200.00	1,193.06	1,204.65	1,204.62	2.97	1.93	-7.29	1,795.17	785.49	1,875.06	1,870.51	4.55	412.400	
1,300.00	1,289.64	1,250.98	1,250.95	3.42	2.03	-7.42	1,795.60	785.17	1,849.99	1,845.10	4.89	378.128	
1,320.91	1,309.72	1,260.33	1,260.29	3.52	2.05	-7.44	1,795.82	785.22	1,844.67	1,839.71	4.96	371.571	
1,400.00	1,385.59	1,300.00	1,299.93	3.92	2.13	-7.49	1,797.23	785.82	1,825.36	1,820.11	5.25	347.749	
1,500.00	1,481.51	1,339.75	1,339.60	4.44	2.22	-7.54	1,799.58	786.87	1,803.45	1,797.85	5.60	322.040	
1,600.00	1,577.43	1,392.00	1,391.60	4.98	2.34	-7.61	1,804.27	788.64	1,784.51	1,778.54	5.97	298.687	
1,700.00	1,673.35	1,465.78	1,464.88	5.52	2.51	-7.73	1,812.54	790.93	1,767.63	1,761.22	6.41	275.630	
1,800.00	1,769.28	1,525.63	1,524.23	6.07	2.65	-7.86	1,820.06	792.38	1,751.99	1,745.16	6.83	256.497	
1,900.00	1,865.20	1,577.00	1,574.99	6.62	2.78	-7.97	1,827.82	794.11	1,738.96	1,731.73	7.24	240.326	
2,000.00	1,961.12	1,637.36	1,634.37	7.18	2.95	-8.11	1,838.33	796.62	1,728.42	1,720.75	7.67	225.455	
2,100.00	2,057.04	1,694.74	1,690.56	7.74	3.13	-8.24	1,849.60	799.33	1,720.21	1,712.12	8.10	212.492	
2,200.00	2,152.97	1,761.00	1,755.05	8.30	3.36	-8.41	1,864.37	803.07	1,714.65	1,706.10	8.55	200.519	
2,300.00	2,248.89	1,847.54	1,838.98	8.86	3.68	-8.63	1,884.88	807.93	1,710.60	1,701.53	9.06	188.713	
2,400.00	2,344.81	1,909.90	1,899.33	9.43	3.93	-8.81	1,900.19	811.29	1,707.44	1,697.91	9.53	179.239	
2,500.00	2,440.73	1,978.96	1,965.76	9.99	4.22	-9.00	1,918.60	815.60	1,706.54	1,696.53	10.01	170.465	
2,600.00	2,536.66	2,122.81	2,103.97	10.56	4.87	-9.44	1,957.65	823.54	1,706.36	1,695.66	10.70	159.517	
2,700.00	2,632.58	2,244.91	2,222.25	11.13	5.37	-9.81	1,987.38	829.21	1,702.78	1,691.46	11.32	150.456	
2,800.00	2,728.50	2,327.00	2,301.88	11.70	5.72	-10.06	2,006.98	832.99	1,698.91	1,687.07	11.84	143.471	
2,900.00	2,824.42	2,407.25	2,379.52	12.27	6.08	-10.29	2,026.79	837.36	1,696.18	1,683.81	12.37	137.128	
2,995.14	2,915.68	2,473.66	2,443.45	12.81	6.41	-10.46	2,044.17	841.98	1,695.38	1,682.53	12.85	131.937	
3,000.00	2,920.35	2,477.08	2,446.73	12.84	6.43	-10.47	2,045.10	842.21	1,695.38	1,682.51	12.87	131.684	
3,100.00	3,016.27	2,558.48	2,524.69	13.41	6.84	-10.71	2,067.95	847.42	1,696.21	1,682.79	13.42	126.384	
3,200.00	3,112.19	2,653.44	2,615.48	13.98	7.35	-11.02	2,095.29	852.65	1,697.55	1,683.53	14.02	121.102	
3,300.00	3,208.11	2,752.03	2,709.62	14.55	7.88	-11.36	2,124.13	857.56	1,699.23	1,684.60	14.63	116.146	
3,400.00	3,304.04	2,859.45	2,812.28	15.13	8.45	-11.75	2,155.40	862.32	1,700.67	1,685.40	15.27	111.359	
3,500.00	3,399.96	2,966.44	2,914.65	15.70	9.00	-12.16	2,186.20	866.57	1,701.71	1,685.81	15.91	106.962	
3,600.00	3,495.88	3,158.64	3,100.26	16.27	9.90	-12.84	2,235.48	873.51	1,699.34	1,682.56	16.78	101.294	
3,700.00	3,591.80	3,273.52	3,212.08	16.85	10.39	-13.18	2,261.25	878.62	1,694.39	1,676.98	17.41	97.331	

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