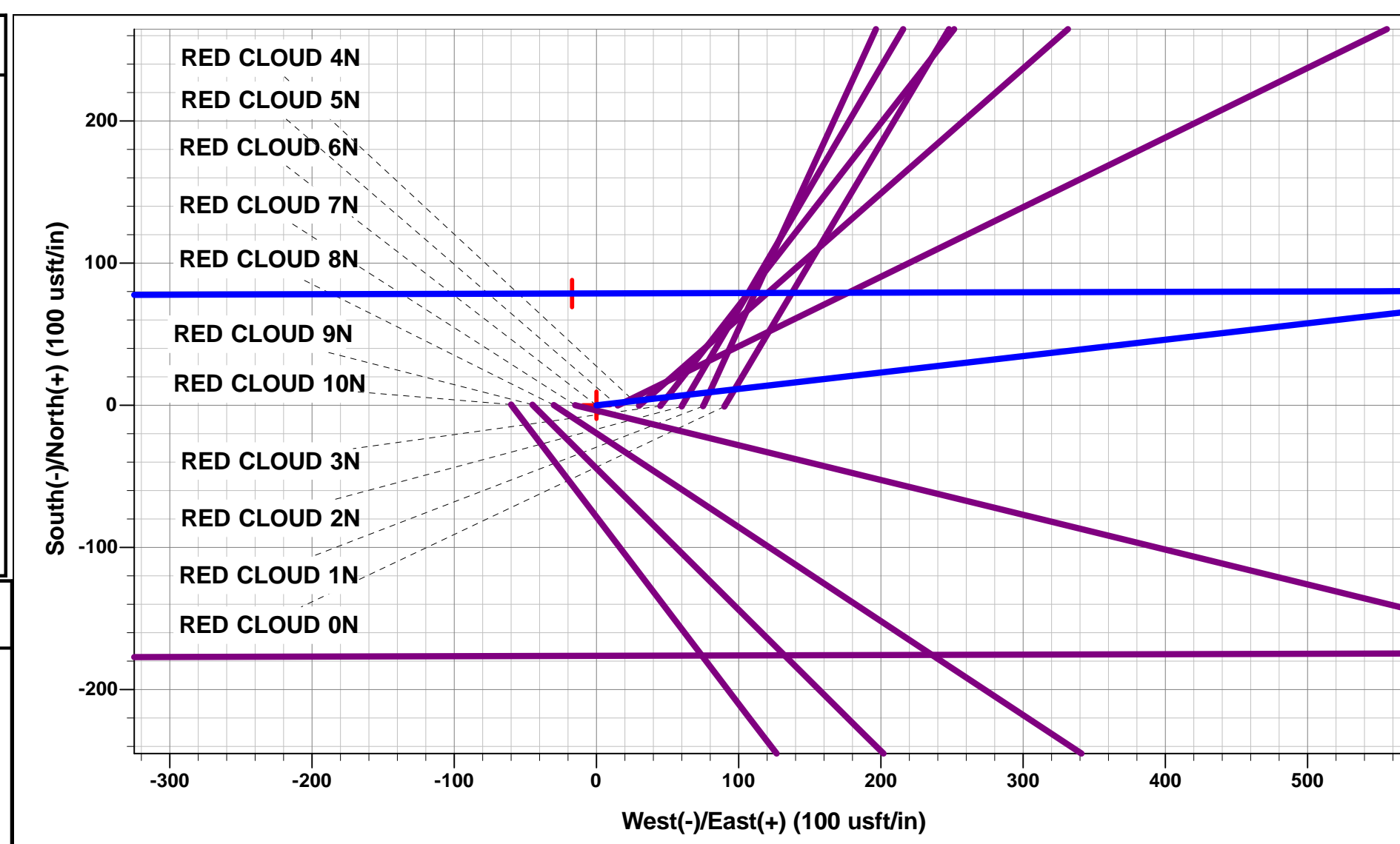




Project: WELD COUNTY, COLORADO (TRUE)
Site: SE NE SEC. 1 T4N R64W 6th P.M. (RED CLOUD)
Well: RED CLOUD 6N
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL #2

ANNOTATIONS									
TVD	MD	Inc	Azi	+N/-S	+E/-W	VSection	Dep	Annotation	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	SHL: 1529ft FNL & 719ft FEL of Sec 1	
900.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00	START NUDGE (2°/100ft BUR)	
1495.62	1500.00	12.00	83.42	7.18	62.19	-62.15	62.60	EOB TO 12° INC	
4217.04	4282.21	12.00	83.42	73.50	636.83	-636.43	641.06	END OF TANGENT	
4812.66	4882.21	0.00	0.00	80.67	699.02	-698.58	703.66	EOD TO VERTICAL	
5858.80	5928.35	0.00	0.00	80.67	699.02	-698.58	703.66	KOP (8°/100ft BUR)	
6575.00	7053.35	90.00	269.84	78.67	-17.17	17.59	1419.85	EP: 1450ft FNL & 737ft FEL of Sec 1	
6575.04	11259.35	90.00	269.84	66.90	-4223.15	4223.45	5625.85	END OF TANGENT	
6575.04	11439.01	90.00	264.45	57.96	-4402.52	4402.77	5805.51	EOT TO 264.45° AZ	
6575.04	11469.01	90.00	264.45	55.06	-4432.38	4432.61	5835.51	END OF TANGENT	
6575.04	11648.67	90.00	269.84	46.11	-4611.76	4611.94	6015.18	EOT TO 269.84° AZ	
6575.04	11830.67	90.00	275.30	54.27	-4793.51	4793.73	6197.18	EOT TO 275.3° AZ	
6575.04	11860.67	90.00	275.30	57.04	-4823.38	4823.62	6227.18	END OF TANGENT	
6575.04	12042.78	90.00	269.84	65.20	-5005.24	5005.52	6409.29	EOT TO 269.84° AZ	
6575.00	16710.28	90.00	269.84	51.89	-9672.72	9672.86	11076.79	BHL: 1450ft FNL & 50ft FWL of Sec 2	

WELLBORE TARGET DETAILS (LAT/LONG)					
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - RED CLOUD 6N	5858.80	80.67	699.02	40.344705	-104.489607
EP - RED CLOUD 6N	6575.00	78.67	-17.17	40.344699	-104.492177
BHL - RED CLOUD 6N	6575.00	51.89	-9672.72	40.344621	-104.526815
SHL - RED CLOUD 6N	0.00	0.00	0.00	40.344483	-104.492115



PROPOSED LOCAL COORDINATES:

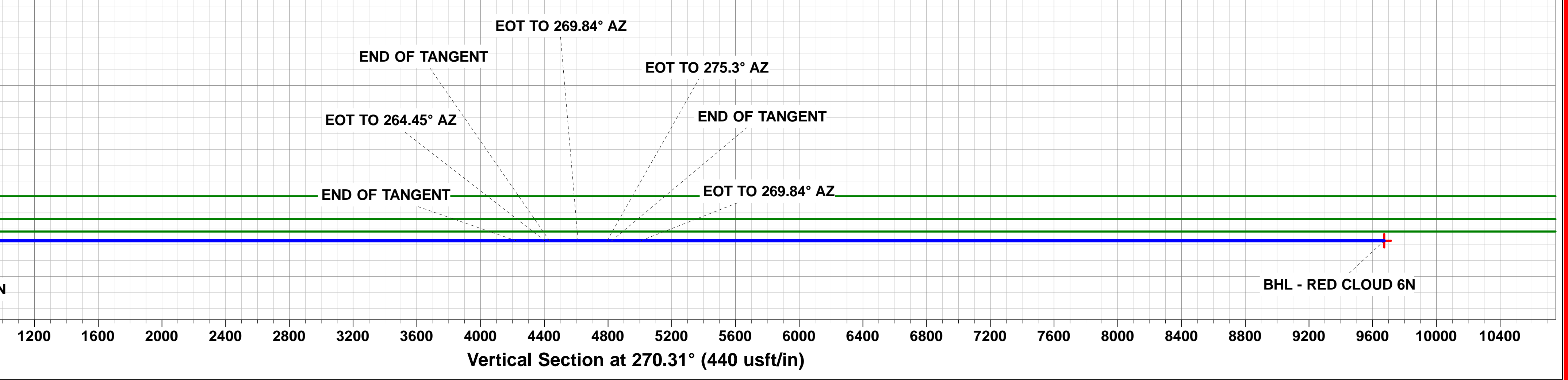
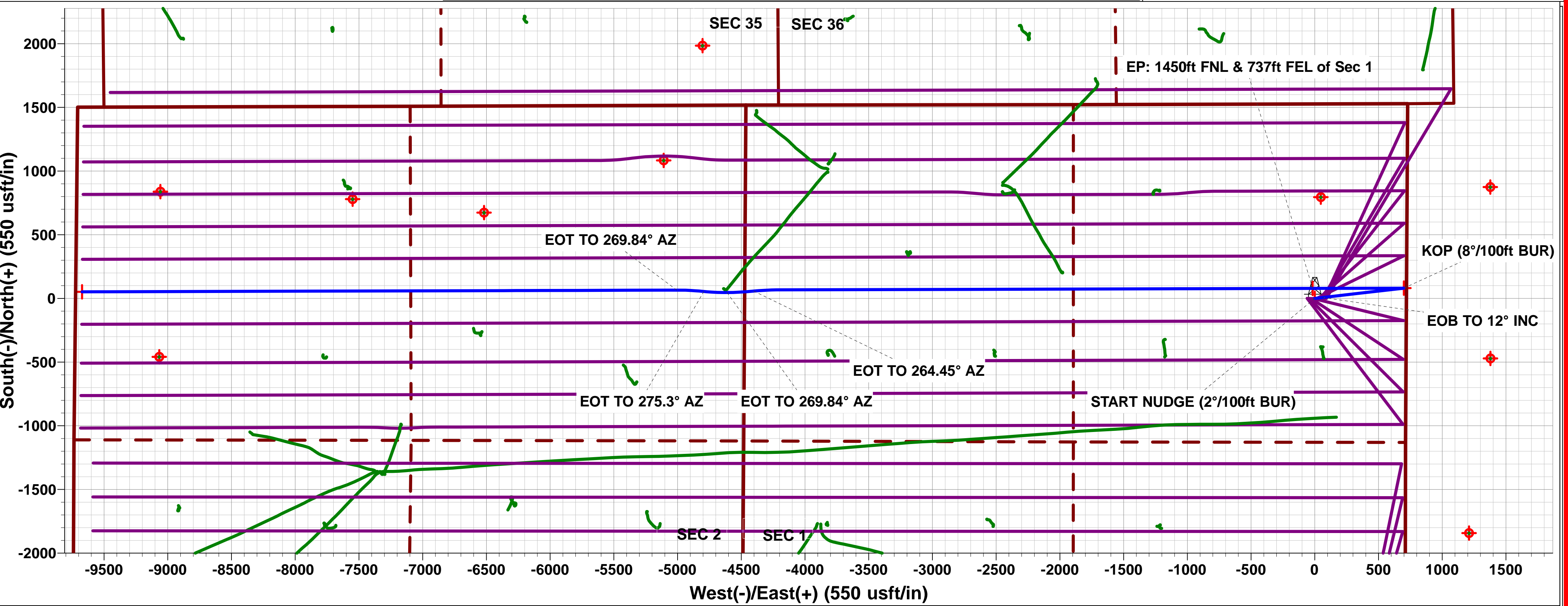
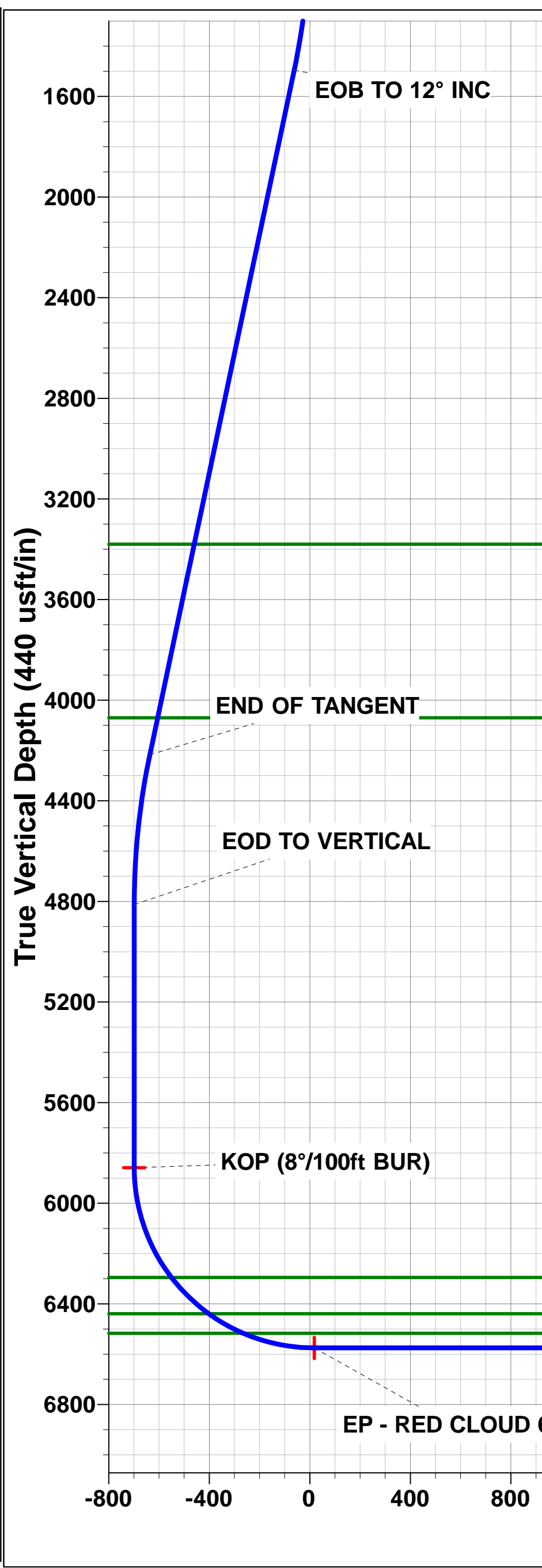
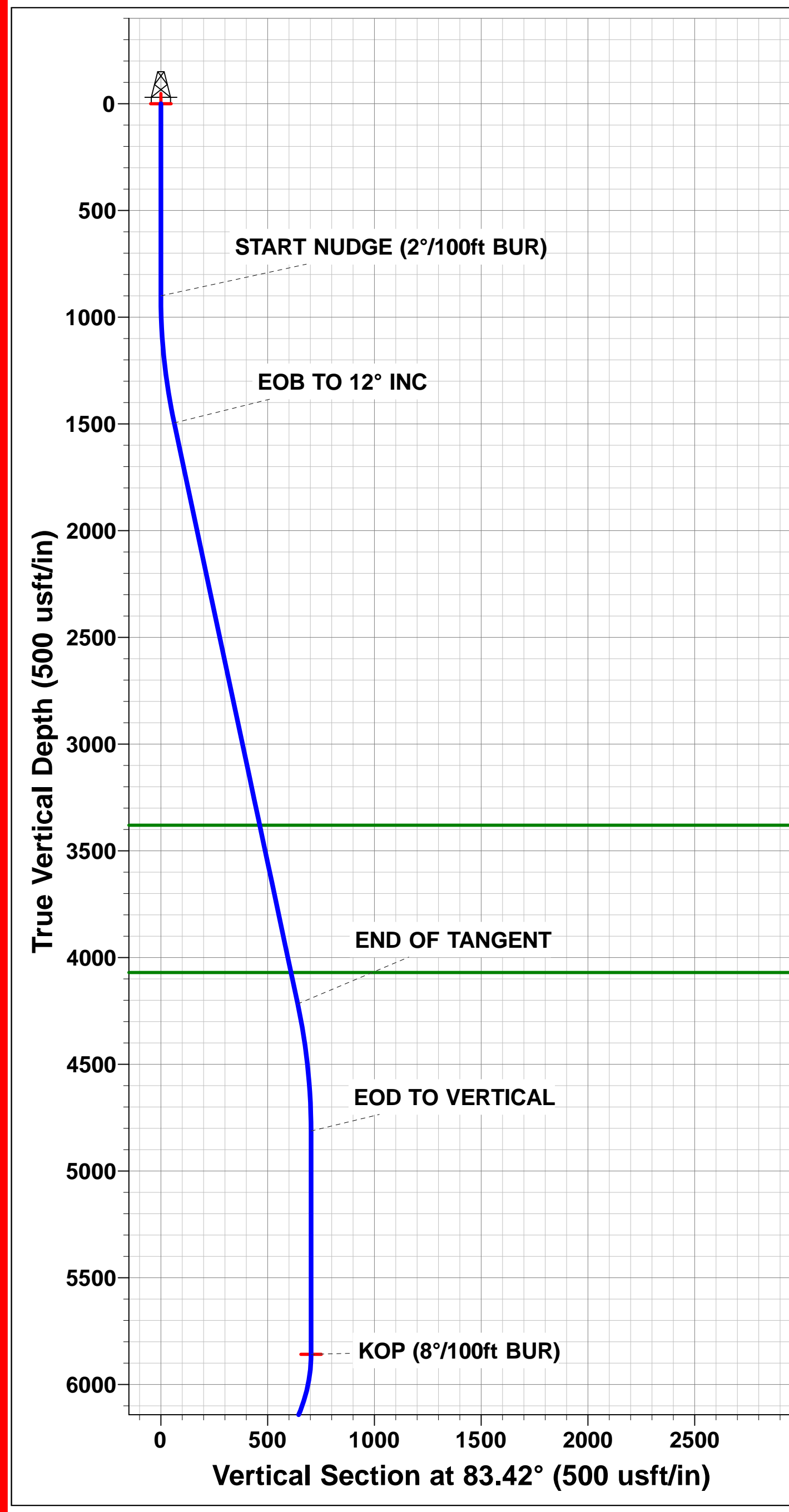
SHL: 1529ft FNL & 719ft FEL of Sec 1

EP: 1450ft FNL & 737ft FEL of Sec 1

BHL: 1450ft 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 6N**

**ORIGINAL WELLBORE
PROPOSAL #2**

Anticollision Report

13 August, 2018



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well RED CLOUD 6N
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 6N	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	16,710.19	PROPOSAL #2 (ORIGINAL WELLBORE)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
SE NE SEC. 1 T4N R64W 6th P.M. (RED CLOUD)						
EXIST HZ SOONER STATE B #36-63HN - Wellbore #1 -	1,604.52	1,392.00	1,960.92	1,954.92	327.070	CC, ES
EXIST HZ SOONER STATE B #36-63HN - Wellbore #1 -	11,259.35	11,055.00	2,502.74	2,242.87	9.631	SF
EXIST VERT ROTHE #4-6 - Wellbore #1 - Design #1	5,928.35	5,841.80	1,044.32	911.00	7.833	CC
EXIST VERT ROTHE #4-6 - Wellbore #1 - Design #1	5,950.00	5,863.45	1,044.54	910.96	7.820	ES
EXIST VERT ROTHE #4-6 - Wellbore #1 - Design #1	6,000.00	5,913.33	1,046.66	912.32	7.791	SF
EXIST VERT ROTHE #5-6 - Wellbore #1 - Design #1	5,928.35	5,841.80	875.29	742.02	6.568	CC
EXIST VERT ROTHE #5-6 - Wellbore #1 - Design #1	5,950.00	5,863.45	875.54	741.95	6.554	ES
EXIST VERT ROTHE #5-6 - Wellbore #1 - Design #1	6,000.00	5,913.33	878.06	743.80	6.540	SF
RED CLOUD 0N - ORIGINAL WELLBORE - PROPOSAL	300.00	300.00	89.96	88.88	83.904	CC, ES
RED CLOUD 0N - ORIGINAL WELLBORE - PROPOSAL	16,600.00	17,188.44	1,568.87	1,001.90	2.767	SF
RED CLOUD 10N - ORIGINAL WELLBORE - PROPOSAL	900.00	900.00	59.99	56.22	15.915	CC, ES
RED CLOUD 10N - ORIGINAL WELLBORE - PROPOSAL	16,710.29	16,816.88	1,069.79	501.92	1.884	SF
RED CLOUD 1N - ORIGINAL WELLBORE - PROPOSAL	400.00	400.00	74.99	73.47	49.279	CC, ES
RED CLOUD 1N - ORIGINAL WELLBORE - PROPOSAL	16,710.29	16,824.82	1,300.98	733.53	2.293	SF
RED CLOUD 2N - ORIGINAL WELLBORE - PROPOSAL	500.00	500.00	59.99	58.02	30.434	CC, ES
RED CLOUD 2N - ORIGINAL WELLBORE - PROPOSAL	16,710.29	16,810.73	1,019.86	452.23	1.797	SF
RED CLOUD 3N - ORIGINAL WELLBORE - PROPOSAL	600.00	600.00	44.99	42.57	18.586	CC, ES
RED CLOUD 3N - ORIGINAL WELLBORE - PROPOSAL	16,710.29	16,688.00	768.54	203.08	1.359	Level 3, SF
RED CLOUD 4N - ORIGINAL WELLBORE - PROPOSAL	700.00	700.00	29.99	27.12	10.450	CC
RED CLOUD 4N - ORIGINAL WELLBORE - PROPOSAL	16,710.29	16,726.85	509.91	-57.89	0.898	Level 1, ES, SF
RED CLOUD 5N - ORIGINAL WELLBORE - PROPOSAL	800.00	800.00	15.00	11.68	4.518	CC
RED CLOUD 5N - ORIGINAL WELLBORE - PROPOSAL	16,710.29	16,639.13	265.76	-281.47	0.486	Level 1, ES, SF
RED CLOUD 7N - ORIGINAL WELLBORE - PROPOSAL	900.00	900.00	15.00	11.23	3.979	CC
RED CLOUD 7N - ORIGINAL WELLBORE - PROPOSAL	16,710.29	16,629.66	267.23	-276.47	0.491	Level 1, ES, SF
RED CLOUD 8N - ORIGINAL WELLBORE - PROPOSAL	900.00	900.00	29.99	26.23	7.958	CC
RED CLOUD 8N - ORIGINAL WELLBORE - PROPOSAL	16,710.29	16,712.09	559.97	-7.67	0.986	Level 1, ES, SF
RED CLOUD 9N - ORIGINAL WELLBORE - PROPOSAL	900.00	900.00	44.99	41.22	11.936	CC, ES
RED CLOUD 9N - ORIGINAL WELLBORE - PROPOSAL	16,710.29	16,686.13	818.73	253.39	1.448	Level 3, SF

Company:	PDC ENERGY	Local Co-ordinate Reference:	Well RED CLOUD 6N
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 6N	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	Offset	Distance		Separation Factor	Warning
	Measured Depth (usft)	Measured Depth (usft)	Between Centres (usft)	Between Ellipses (usft)		
SE NE SEC. 36 T5N R64W 6th P.M. (PYRAMID)						
ABDN VERT ROTHE STATE B #36-15 - Wellbore #1 - W	7,752.66	6,377.86	1,996.13	1,957.72	51.969	CC
ABDN VERT ROTHE STATE B #36-15 - Wellbore #1 - W	7,800.00	6,376.41	1,996.69	1,957.13	50.479	ES
ABDN VERT ROTHE STATE B #36-15 - Wellbore #1 - W	10,800.00	6,300.00	3,641.87	3,521.92	30.362	SF
ABDN VERT ROTHE STATE B #36-16 - Wellbore #1 - W	4,800.19	4,700.00	2,240.09	2,221.44	120.116	CC, ES
ABDN VERT ROTHE STATE B #36-16 - Wellbore #1 - W	16,400.00	6,158.07	9,953.70	9,679.77	36.338	SF
EXIST DD ECKHARDT B #35-13 - Wellbore #1 - Wellbor	15,909.09	6,695.32	1,986.91	1,722.57	7.517	CC
EXIST DD ECKHARDT B #35-13 - Wellbore #1 - Wellbor	16,000.00	6,694.85	1,988.98	1,722.10	7.453	ES
EXIST DD ECKHARDT B #35-13 - Wellbore #1 - Wellbor	16,300.00	6,693.29	2,024.99	1,749.69	7.355	SF
EXIST VERT BAKER STATE B #36-13 - Wellbore #1 - W	10,657.10	6,502.57	2,145.72	2,029.18	18.412	CC
EXIST VERT BAKER STATE B #36-13 - Wellbore #1 - W	10,700.00	6,500.32	2,146.14	2,028.42	18.230	ES
EXIST VERT BAKER STATE B #36-13 - Wellbore #1 - W	12,000.00	6,430.24	2,529.58	2,375.94	16.465	SF
EXIST VERT BAKER STATE B #36-14 - Wellbore #1 - W	9,269.82	6,475.01	2,005.84	1,927.52	25.614	CC
EXIST VERT BAKER STATE B #36-14 - Wellbore #1 - W	9,300.00	6,474.51	2,006.06	1,926.93	25.350	ES
EXIST VERT BAKER STATE B #36-14 - Wellbore #1 - W	10,700.00	6,452.71	2,463.39	2,345.71	20.933	SF
EXIST VERT HOSHIKO #2 - Wellbore #1 - Wellbore #1	13,229.78	6,620.98	2,151.50	1,963.13	11.421	CC
EXIST VERT HOSHIKO #2 - Wellbore #1 - Wellbore #1	13,300.00	6,621.58	2,152.65	1,962.31	11.310	ES
EXIST VERT HOSHIKO #2 - Wellbore #1 - Wellbore #1	13,900.00	6,626.98	2,253.47	2,046.34	10.879	SF
EXIST VERT HOSHIKO #35-16H4 - Wellbore #1 - Desig	11,939.73	6,585.04	1,924.48	1,644.37	6.870	CC, ES
EXIST VERT HOSHIKO #35-16H4 - Wellbore #1 - Desig	12,200.00	6,585.04	1,953.12	1,665.56	6.792	SF
EXIST VERT HOSHIKO B #35-14 - Wellbore #1 - Wellbo	14,739.67	6,576.70	2,066.99	1,836.53	8.969	CC
EXIST VERT HOSHIKO B #35-14 - Wellbore #1 - Wellbo	14,800.00	6,576.13	2,067.87	1,835.72	8.908	ES
EXIST VERT HOSHIKO B #35-14 - Wellbore #1 - Wellbo	15,300.00	6,571.46	2,141.59	1,895.42	8.700	SF

Company:	PDC ENERGY	Local Co-ordinate Reference:	Well RED CLOUD 6N
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 6N	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)						
ABDN DD MERCER C #11-30D - Wellbore #1 - Wellbore	16,710.29	6,569.41	3,899.68	3,613.40	13.622	CC, ES, SF
ABDN VERT BOOY HILLS FARM #2-12 - Wellbore #1 -	15,958.52	6,628.09	1,682.42	1,417.86	6.359	CC
ABDN VERT BOOY HILLS FARM #2-12 - Wellbore #1 -	16,000.00	6,628.65	1,682.94	1,417.21	6.333	ES
ABDN VERT BOOY HILLS FARM #2-12 - Wellbore #1 -	16,300.00	6,632.68	1,716.72	1,442.59	6.262	SF
ABDN VERT FHA #10-1 - Wellbore #1 - Wellbore #1	8,279.82	6,569.02	1,864.73	1,812.99	36.046	CC
ABDN VERT FHA #10-1 - Wellbore #1 - Wellbore #1	8,300.00	6,569.27	1,864.84	1,812.58	35.685	ES
ABDN VERT FHA #10-1 - Wellbore #1 - Wellbore #1	10,200.00	6,592.63	2,676.51	2,572.63	25.767	SF
ABDN VERT FHA #15-1 - Wellbore #1 - Wellbore #1	8,224.63	6,473.44	3,170.59	3,120.36	63.115	CC
ABDN VERT FHA #15-1 - Wellbore #1 - Wellbore #1	8,300.00	6,471.85	3,171.49	3,119.29	60.758	ES
ABDN VERT FHA #15-1 - Wellbore #1 - Wellbore #1	14,100.00	6,384.89	6,674.41	6,462.20	31.453	SF
ABDN VERT HOSHIKO C #2-8 - Wellbore #1 - Wellbore	12,460.48	6,582.76	591.67	424.77	3.545	CC, ES
ABDN VERT HOSHIKO C #2-8 - Wellbore #1 - Wellbore	12,500.00	6,584.00	592.99	424.99	3.530	SF
ABDN VERT SAND CREEK RANCH C #2-3X - Wellbore	14,656.19	6,556.85	869.75	641.43	3.809	CC
ABDN VERT SAND CREEK RANCH C #2-3X - Wellbore	14,700.00	6,557.75	870.85	641.31	3.794	ES, SF
ABDN VERT SAND CREEK RANCH CO #2-3 - Wellbore	14,585.23	6,581.02	721.56	367.29	2.037	CC
ABDN VERT SAND CREEK RANCH CO #2-3 - Wellbore	14,600.00	6,581.02	721.71	367.02	2.035	ES, SF
ABDN VERT SHAKLEE #1 - Wellbore #1 - Wellbore #1	16,190.98	6,558.49	3,119.12	2,847.95	11.503	CC
ABDN VERT SHAKLEE #1 - Wellbore #1 - Wellbore #1	16,300.00	6,558.70	3,121.03	2,846.80	11.381	ES
ABDN VERT SHAKLEE #1 - Wellbore #1 - Wellbore #1	16,710.29	6,559.50	3,162.05	2,876.32	11.066	SF
ABDN VERT SHAKLEE #2 - Wellbore #1 - Wellbore #1	14,857.30	6,562.35	3,090.83	2,857.01	13.219	CC
ABDN VERT SHAKLEE #2 - Wellbore #1 - Wellbore #1	14,900.00	6,563.73	3,091.12	2,856.10	13.153	ES
ABDN VERT SHAKLEE #2 - Wellbore #1 - Wellbore #1	16,000.00	6,600.00	3,295.04	3,029.18	12.394	SF
ABDN VERT SHAKLEE #3 - Wellbore #1 - Wellbore #1	14,817.25	6,586.06	1,821.23	1,588.58	7.828	CC
ABDN VERT SHAKLEE #3 - Wellbore #1 - Wellbore #1	14,900.00	6,585.06	1,823.11	1,588.14	7.759	ES
ABDN VERT SHAKLEE #3 - Wellbore #1 - Wellbore #1	15,200.00	6,581.58	1,861.01	1,617.62	7.646	SF
EXIST DD HOFFMAN C #2-20D - Wellbore #1 - Wellbore	15,393.48	6,718.91	1,107.59	838.07	4.110	CC
EXIST DD HOFFMAN C #2-20D - Wellbore #1 - Wellbore	15,400.00	6,719.00	1,107.61	837.91	4.107	ES
EXIST DD HOFFMAN C #2-20D - Wellbore #1 - Wellbore	15,500.00	6,720.45	1,112.70	840.20	4.083	SF
EXIST DD HOFFMAN C #2-25D - Wellbore #1 - Wellbore	15,464.07	6,864.58	2,515.77	2,241.76	9.181	CC
EXIST DD HOFFMAN C #2-25D - Wellbore #1 - Wellbore	15,500.00	6,864.57	2,516.03	2,241.01	9.148	ES
EXIST DD HOFFMAN C #2-25D - Wellbore #1 - Wellbore	16,100.00	6,864.47	2,594.90	2,303.05	8.891	SF
EXIST DD HOFFMAN C #2-33D - Wellbore #1 - Wellbore	16,710.29	7,359.13	2,524.57	2,186.89	7.476	CC, ES, SF
EXIST DD HOFFMAN C 2-21D - Wellbore #1 - Wellbore	14,212.70	6,607.82	1,047.23	819.80	4.605	CC, ES
EXIST DD HOFFMAN C 2-21D - Wellbore #1 - Wellbore	14,300.00	6,607.90	1,050.87	820.99	4.571	SF
EXIST DD MARLEY C #1-18D - Wellbore #1 - Wellbore #	9,014.10	6,672.79	129.00	43.20	1.503	CC, ES, SF
EXIST DD MARLEY C #1-24D - Wellbore #1 - Wellbore #	8,827.75	7,092.23	2,582.04	2,472.96	23.673	CC
EXIST DD MARLEY C #1-24D - Wellbore #1 - Wellbore #	8,900.00	7,091.82	2,583.05	2,472.03	23.266	ES
EXIST DD MARLEY C #1-24D - Wellbore #1 - Wellbore #	10,500.00	7,082.57	3,076.24	2,921.29	19.853	SF
EXIST DD MARLEY C #1-28D - Wellbore #1 - Wellbore #	8,748.78	6,641.58	1,636.64	1,554.89	20.019	CC
EXIST DD MARLEY C #1-28D - Wellbore #1 - Wellbore #	8,800.00	6,642.17	1,637.44	1,554.31	19.697	ES
EXIST DD MARLEY C #1-28D - Wellbore #1 - Wellbore #	9,700.00	6,651.11	1,892.96	1,785.30	17.582	SF
EXIST DD MARLEY C #1-30D - Wellbore #1 - Wellbore #	11,347.64	6,627.90	1,411.45	1,260.88	9.374	CC, ES
EXIST DD MARLEY C #1-30D - Wellbore #1 - Wellbore #	11,900.00	6,629.09	1,493.99	1,327.80	8.990	SF
EXIST DD MARLEY C #1-31D - Wellbore #1 - Wellbore #	11,673.41	6,783.09	30.31	-133.50	0.185	Level 1, CC, ES, SF
EXIST DD MARLEY C #1-33D - Wellbore #1 - Wellbore #	11,530.83	6,684.11	2,469.51	2,314.23	15.903	CC, ES
EXIST DD MARLEY C #1-33D - Wellbore #1 - Wellbore #	12,500.00	6,680.44	2,722.67	2,540.38	14.936	SF
EXIST DD PANTHER C #11-27D - Wellbore #1 - Wellbor	12,876.39	6,709.11	3,779.46	3,586.43	19.579	CC
EXIST DD PANTHER C #11-27D - Wellbore #1 - Wellbor	13,000.00	6,708.49	3,781.48	3,584.99	19.245	ES
EXIST DD PANTHER C #11-27D - Wellbore #1 - Wellbor	15,000.00	6,698.72	4,335.20	4,082.70	17.170	SF
EXIST DD PANTHER C #11-28D - Wellbore #1 - Wellbor	14,233.73	7,101.29	3,758.16	3,503.28	14.745	CC
EXIST DD PANTHER C #11-28D - Wellbore #1 - Wellbor	14,300.00	7,100.46	3,758.74	3,502.01	14.641	ES
EXIST DD PANTHER C #11-28D - Wellbore #1 - Wellbor	15,800.00	7,082.85	4,071.44	3,772.66	13.627	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 6N
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 6N	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 #2-23D - Wellbore #1 - Wellbore	12,849.21	6,721.44	2,488.35	2,295.90	12.929	CC
EXIST DD PANTHER C #2-23D - Wellbore #1 - Wellbore	12,900.00	6,720.93	2,488.87	2,295.00	12.838	ES
EXIST DD PANTHER C #2-23D - Wellbore #1 - Wellbore	13,700.00	6,712.65	2,629.77	2,413.52	12.161	SF
EXIST HZ BOBCAT C #12-69HN - Wellbore #1 - Wellbor	7,410.12	11,078.00	3,686.34	3,523.33	22.613	CC
EXIST HZ BOBCAT C #12-69HN - Wellbore #1 - Wellbor	7,500.00	11,038.16	3,686.99	3,523.11	22.498	ES
EXIST HZ BOBCAT C #12-69HN - Wellbore #1 - Wellbor	14,600.00	5,996.00	4,468.03	4,233.98	19.090	SF
EXIST HZ HOFFMAN C #02-65HN - Wellbore #1 - Wellb	6,850.23	13,691.00	1,013.75	788.06	4.492	CC, ES
EXIST HZ HOFFMAN C #02-65HN - Wellbore #1 - Wellb	6,900.00	13,691.00	1,014.87	788.62	4.486	SF
EXIST HZ TOBY C #12-79HN - Wellbore #1 - Wellbore #	11,584.20	6,057.00	3,879.59	3,721.47	24.536	CC
EXIST HZ TOBY C #12-79HN - Wellbore #1 - Wellbore #	11,648.67	6,057.00	3,881.19	3,720.96	24.222	ES
EXIST HZ TOBY C #12-79HN - Wellbore #1 - Wellbore #	14,200.00	6,057.00	4,765.41	4,534.88	20.671	SF
EXIST VERT AMIGO #1 - Wellbore #1 - Wellbore #1	10,804.51	6,350.00	560.46	446.38	4.913	CC, ES
EXIST VERT AMIGO #1 - Wellbore #1 - Wellbore #1	10,900.00	6,350.00	568.54	451.97	4.877	SF
EXIST VERT AMIGO #2 - Wellbore #1 - Wellbore #1	9,554.88	6,558.72	479.10	392.62	5.540	CC, ES
EXIST VERT AMIGO #2 - Wellbore #1 - Wellbore #1	9,600.00	6,559.48	481.22	393.50	5.486	SF
EXIST VERT AMIGO FARMS #1-12 - Wellbore #1 - Well	10,866.04	6,564.79	1,826.71	1,704.42	14.938	CC
EXIST VERT AMIGO FARMS #1-12 - Wellbore #1 - Well	10,900.00	6,564.73	1,827.03	1,703.79	14.826	ES
EXIST VERT AMIGO FARMS #1-12 - Wellbore #1 - Well	11,648.67	6,563.46	1,968.95	1,824.97	13.676	SF
EXIST VERT FEIT #1 - Wellbore #1 - Wellbore #1	9,391.05	6,533.00	779.24	697.66	9.552	CC
EXIST VERT FEIT #1 - Wellbore #1 - Wellbore #1	9,400.00	6,532.73	779.29	697.47	9.524	ES
EXIST VERT FEIT #1 - Wellbore #1 - Wellbore #1	9,600.00	6,526.58	806.74	719.45	9.241	SF
EXIST VERT FEIT #1-4 - Wellbore #1 - Wellbore #1	10,798.05	6,350.00	1,086.51	967.38	9.120	CC
EXIST VERT FEIT #1-4 - Wellbore #1 - Wellbore #1	10,800.00	6,350.00	1,086.52	967.33	9.116	ES
EXIST VERT FEIT #1-4 - Wellbore #1 - Wellbore #1	11,100.00	6,350.00	1,127.69	1,000.30	8.852	SF
EXIST VERT FHA #2-1 - Wellbore #1 - Wellbore #1	14,820.63	6,591.64	501.45	268.69	2.154	CC, ES, SF
EXIST VERT FOOS #1-1614 - Wellbore #1 - Wellbore #1	0.00	0.00	2,775.05			
EXIST VERT FOOS #1-1614 - Wellbore #1 - Wellbore #1	300.00	275.59	2,775.64	2,774.91	3,779.140	ES
EXIST VERT FOOS #1-1614 - Wellbore #1 - Wellbore #1	16,300.00	6,900.00	9,327.68	9,054.94	34.199	SF
EXIST VERT FUEGO C #1-19 - Wellbore #1 - Wellbore #	10,216.06	6,549.02	289.10	184.72	2.770	CC, ES, SF
EXIST VERT HAPPY AMIGO C #1-25 - Wellbore #1 - W	10,224.07	6,599.83	2,786.45	2,681.62	26.582	CC
EXIST VERT HAPPY AMIGO C #1-25 - Wellbore #1 - W	10,300.00	6,598.99	2,787.48	2,680.56	26.070	ES
EXIST VERT HAPPY AMIGO C #1-25 - Wellbore #1 - W	12,300.00	6,578.45	3,474.24	3,311.75	21.382	SF
EXIST VERT HAPPY TALK #1 - Wellbore #1 - Wellbore	9,613.18	6,563.42	1,804.61	1,716.53	20.488	CC
EXIST VERT HAPPY TALK #1 - Wellbore #1 - Wellbore	9,700.00	6,562.62	1,806.70	1,716.23	19.971	ES
EXIST VERT HAPPY TALK #1 - Wellbore #1 - Wellbore	10,600.00	6,554.72	2,056.79	1,941.45	17.833	SF
EXIST VERT HAPPY TALK #2 - Wellbore #1 - Wellbore	9,567.50	6,600.00	3,094.36	3,007.96	35.812	CC
EXIST VERT HAPPY TALK #2 - Wellbore #1 - Wellbore	9,700.00	6,600.00	3,097.20	3,007.15	34.396	ES
EXIST VERT HAPPY TALK #2 - Wellbore #1 - Wellbore	12,700.00	6,595.23	4,402.49	4,229.15	25.398	SF
EXIST VERT HOFFMAN C #11-29 - Wellbore #1 - Wellb	15,541.66	15,541.66	3,538.46	3,283.39	13.873	CC
EXIST VERT HOFFMAN C #11-29 - Wellbore #1 - Wellb	15,600.00	15,600.00	3,538.94	3,282.23	13.786	ES
EXIST VERT HOFFMAN C #11-29 - Wellbore #1 - Wellb	16,710.29	6,700.00	3,726.40	3,440.51	13.034	SF
EXIST VERT HOSHIKO #1-2 - Wellbore #1 - Design #1	12,143.38	6,573.04	1,018.90	733.04	3.564	CC
EXIST VERT HOSHIKO #1-2 - Wellbore #1 - Design #1	12,200.00	6,573.04	1,020.47	733.03	3.550	ES, SF
EXIST VERT HOSHIKO #2-2 - Wellbore #1 - Design #1	13,554.23	6,597.03	612.68	287.12	1.882	CC, ES
EXIST VERT HOSHIKO #2-2 - Wellbore #1 - Design #1	13,600.00	6,597.03	614.38	287.55	1.880	SF
EXIST VERT HOSHIKO #7-2 - Wellbore #1 - Wellbore #1	13,639.55	6,574.13	296.44	96.75	1.484	Level 3, CC, ES, SF
EXIST VERT MCDERMED #1-1 - Wellbore #1 - Design #	6,986.44	6,557.88	716.62	566.04	4.759	CC
EXIST VERT MCDERMED #1-1 - Wellbore #1 - Design #	7,000.00	6,559.01	716.75	565.96	4.753	ES
EXIST VERT MCDERMED #1-1 - Wellbore #1 - Design #	7,053.35	6,561.00	719.73	568.11	4.747	SF
EXIST VERT MCDERMED #2-1 - Wellbore #1 - Wellbore	8,251.15	6,535.99	774.14	723.02	15.144	CC, ES
EXIST VERT MCDERMED #2-1 - Wellbore #1 - Wellbore	8,600.00	6,535.72	849.11	788.79	14.076	SF
EXIST VERT MCFERREN #4-2 - Wellbore #1 - Design #	16,093.05	4,629.00	2,101.95	1,947.59	13.617	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 6N
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 6N	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 #4-2 - Wellbore #1 - Design #	16,100.00	4,629.00	2,101.96	1,947.51	13.609	ES
EXIST VERT MCFERREN #4-2 - Wellbore #1 - Design #	16,500.00	4,629.00	2,140.98	1,981.53	13.427	SF
EXIST VERT MCFERREN #5-2 - Wellbore #1 - Design #	16,105.57	6,601.01	512.25	230.67	1.819	CC, ES, SF
EXIST VERT MINOR #1 - Wellbore #1 - Wellbore #1	10,897.88	6,400.00	3,261.96	3,138.93	26.515	CC
EXIST VERT MINOR #1 - Wellbore #1 - Wellbore #1	11,000.00	6,400.00	3,263.55	3,137.70	25.930	ES
EXIST VERT MINOR #1 - Wellbore #1 - Wellbore #1	13,300.00	6,400.00	4,050.53	3,860.65	21.332	SF
EXIST VERT REIN #1 - Wellbore #1 - Wellbore #1	8,210.94	6,543.24	397.70	347.16	7.869	CC, ES
EXIST VERT REIN #1 - Wellbore #1 - Wellbore #1	8,300.00	6,542.73	407.55	354.69	7.709	SF
EXIST VERT REIN #1-8 - Wellbore #1 - Wellbore #1	6,973.87	6,558.74	460.47	437.81	20.326	CC, ES
EXIST VERT REIN #1-8 - Wellbore #1 - Wellbore #1	7,100.00	6,560.89	477.57	453.02	19.457	SF
EXIST VERT ROTHE #1 - Wellbore #1 - Wellbore #1	12,283.01	6,576.52	1,738.34	1,576.59	10.747	CC
EXIST VERT ROTHE #1 - Wellbore #1 - Wellbore #1	12,300.00	6,576.79	1,738.42	1,576.19	10.716	ES
EXIST VERT ROTHE #1 - Wellbore #1 - Wellbore #1	12,800.00	6,584.60	1,813.57	1,637.37	10.293	SF
EXIST VERT ROTHE #2 - Wellbore #1 - Wellbore #1	13,514.96	6,539.22	3,131.30	2,935.13	15.962	CC
EXIST VERT ROTHE #2 - Wellbore #1 - Wellbore #1	13,600.00	6,538.70	3,132.46	2,933.91	15.777	ES
EXIST VERT ROTHE #2 - Wellbore #1 - Wellbore #1	14,900.00	6,531.01	3,423.93	3,188.97	14.572	SF
EXIST VERT ROTHE #2-10 - Wellbore #1 - Wellbore #1	13,345.06	6,200.00	1,702.97	1,515.49	9.084	CC
EXIST VERT ROTHE #2-10 - Wellbore #1 - Wellbore #1	13,400.00	6,200.00	1,703.86	1,514.88	9.016	ES
EXIST VERT ROTHE #2-10 - Wellbore #1 - Wellbore #1	13,800.00	6,200.00	1,762.69	1,562.77	8.817	SF
EXIST VERT ROTHE #3 - Wellbore #1 - Wellbore #1	12,236.88	6,567.09	3,121.09	2,960.33	19.415	CC
EXIST VERT ROTHE #3 - Wellbore #1 - Wellbore #1	12,300.00	6,566.81	3,121.72	2,959.21	19.209	ES
EXIST VERT ROTHE #3 - Wellbore #1 - Wellbore #1	13,900.00	6,559.77	3,536.54	3,329.26	17.062	SF
EXIST VERT SPIKE STATE #CC6-12 - Wellbore #1 - De	5,928.35	5,835.80	1,989.95	1,861.36	15.475	CC
EXIST VERT SPIKE STATE #CC6-12 - Wellbore #1 - De	6,000.00	5,907.33	1,990.86	1,856.08	14.771	ES
EXIST VERT SPIKE STATE #CC6-12 - Wellbore #1 - De	6,300.00	6,190.99	2,015.99	1,876.89	14.494	SF
EXIST VERT SPIKE STATE #CC6-13 - Wellbore #1 - We	4,440.91	4,332.98	3,383.83	3,366.58	196.196	CC
EXIST VERT SPIKE STATE #CC6-13 - Wellbore #1 - We	4,500.00	4,390.07	3,383.87	3,366.45	194.180	ES
EXIST VERT SPIKE STATE #CC6-13 - Wellbore #1 - We	15,200.00	6,347.03	9,927.00	9,683.98	40.848	SF
LINDSEY 10N - ORIGINAL WELLBORE - PROPOSAL #	264.16	271.16	3,439.93	3,439.01	3,711.844	CC
LINDSEY 10N - ORIGINAL WELLBORE - PROPOSAL #	16,710.29	16,473.16	3,733.99	3,166.73	6.582	ES, SF
LINDSEY 1C - ORIGINAL WELLBORE - PROPOSAL #1	11,652.76	12,091.08	1,349.40	1,064.30	4.733	CC
LINDSEY 1C - ORIGINAL WELLBORE - PROPOSAL #1	16,700.00	17,061.79	1,361.59	800.13	2.425	ES
LINDSEY 1C - ORIGINAL WELLBORE - PROPOSAL #1	16,710.29	17,061.79	1,362.18	800.43	2.425	SF
LINDSEY 2N - ORIGINAL WELLBORE - PROPOSAL #1	11,655.10	11,887.51	1,608.39	1,322.37	5.623	CC
LINDSEY 2N - ORIGINAL WELLBORE - PROPOSAL #1	16,700.00	16,856.65	1,612.89	1,046.64	2.848	ES
LINDSEY 2N - ORIGINAL WELLBORE - PROPOSAL #1	16,710.29	16,856.65	1,613.37	1,046.83	2.848	SF
LINDSEY 3N - ORIGINAL WELLBORE - PROPOSAL #1	11,655.10	11,853.50	1,873.74	1,587.48	6.546	CC
LINDSEY 3N - ORIGINAL WELLBORE - PROPOSAL #1	16,700.00	16,822.59	1,877.99	1,311.36	3.314	ES
LINDSEY 3N - ORIGINAL WELLBORE - PROPOSAL #1	16,710.29	16,822.59	1,878.39	1,311.47	3.313	SF
LINDSEY 4N - ORIGINAL WELLBORE - PROPOSAL #1	11,655.10	11,729.81	2,136.47	1,850.42	7.469	CC
LINDSEY 4N - ORIGINAL WELLBORE - PROPOSAL #1	16,700.00	16,701.63	2,140.46	1,573.95	3.778	ES
LINDSEY 4N - ORIGINAL WELLBORE - PROPOSAL #1	16,710.29	16,701.63	2,140.80	1,574.00	3.777	SF
LINDSEY 5N - ORIGINAL WELLBORE - PROPOSAL #1	11,655.10	11,722.93	2,401.97	2,115.79	8.393	CC
LINDSEY 5N - ORIGINAL WELLBORE - PROPOSAL #1	16,700.00	16,694.71	2,405.82	1,839.08	4.245	ES
LINDSEY 5N - ORIGINAL WELLBORE - PROPOSAL #1	16,710.29	16,694.71	2,406.11	1,839.08	4.243	SF
LINDSEY 6N - ORIGINAL WELLBORE - PROPOSAL #1	11,655.10	11,622.74	2,668.28	2,382.23	9.328	CC
LINDSEY 6N - ORIGINAL WELLBORE - PROPOSAL #1	16,710.29	16,594.46	2,672.28	2,105.37	4.714	ES, SF
LINDSEY 7N - ORIGINAL WELLBORE - PROPOSAL #1	11,655.10	11,656.06	2,933.87	2,647.53	10.246	CC
LINDSEY 7N - ORIGINAL WELLBORE - PROPOSAL #1	16,710.29	16,630.53	2,937.67	2,370.34	5.178	ES, SF
LINDSEY 8N - ORIGINAL WELLBORE - PROPOSAL #1	11,655.10	11,584.16	3,196.47	2,909.90	11.154	CC
LINDSEY 8N - ORIGINAL WELLBORE - PROPOSAL #1	16,710.29	16,558.58	3,200.18	2,632.62	5.638	ES, SF
LINDSEY 9N - ORIGINAL WELLBORE - PROPOSAL #1	364.16	371.16	3,425.41	3,424.03	2,488.892	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 6N
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 6N	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	16,710.29	16,608.36	3,465.68	2,897.70	6.102	ES, SF

Offset Design		SE NE SEC. 1 T4N R64W 6th P.M. (RED CLOUD) - EXIST HZ SOONER STATE B #36-63HN - Wellbo										Offset Site Error: 0.00 usft		
Survey Program: 572-MWD												Offset Well Error: 0.00 usft		
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	25.38	1,794.79	851.49	1,986.53					
100.00	100.00	99.00	99.00	0.09	0.11	25.38	1,794.79	851.49	1,986.53	1,986.34	0.19	N/A		
200.00	200.00	199.00	199.00	0.31	0.22	25.38	1,794.79	851.49	1,986.53	1,986.00	0.53	3,774.219		
300.00	300.00	299.00	299.00	0.54	0.32	25.38	1,794.79	851.49	1,986.53	1,985.67	0.86	2,312.153		
400.00	400.00	399.00	399.00	0.76	0.43	25.38	1,794.79	851.49	1,986.53	1,985.34	1.19	1,666.558		
500.00	500.00	499.00	499.00	0.99	0.54	25.38	1,794.79	851.49	1,986.53	1,985.00	1.52	1,302.794		
600.00	600.00	599.66	599.66	1.21	0.68	25.38	1,794.80	851.45	1,986.52	1,984.64	1.89	1,052.033		
700.00	700.00	703.83	703.82	1.44	0.89	25.36	1,795.04	850.66	1,986.40	1,984.08	2.33	853.657		
800.00	800.00	809.22	809.21	1.66	1.10	25.33	1,795.03	849.75	1,986.03	1,983.27	2.76	719.517		
900.00	900.00	907.37	907.35	1.88	1.30	25.31	1,794.90	848.85	1,985.52	1,982.33	3.19	623.229		
1,000.00	999.98	1,009.99	1,009.98	2.10	1.52	-58.20	1,794.87	847.82	1,984.14	1,980.53	3.62	548.755		
1,100.00	1,099.84	1,114.01	1,113.99	2.31	1.74	-58.42	1,794.65	846.68	1,980.73	1,976.69	4.04	489.905		
1,200.00	1,199.45	1,208.00	1,207.97	2.53	1.94	-58.74	1,794.47	845.43	1,975.44	1,970.98	4.46	442.659		
1,300.00	1,298.70	1,254.05	1,254.01	2.78	2.03	-58.99	1,794.97	845.17	1,969.93	1,965.13	4.80	410.482		
1,400.00	1,397.47	1,300.00	1,299.93	3.06	2.13	-59.25	1,796.54	845.80	1,965.47	1,960.31	5.16	381.076		
1,500.00	1,495.62	1,340.50	1,340.35	3.38	2.22	-59.50	1,798.93	846.88	1,962.12	1,956.58	5.54	354.162		
1,600.00	1,593.44	1,392.00	1,391.60	3.74	2.34	-59.78	1,803.57	848.62	1,960.92	1,954.94	5.98	327.935		
1,604.52	1,597.86	1,392.00	1,391.60	3.75	2.34	-59.78	1,803.57	848.62	1,960.92	1,954.92	6.00	327.070	CC, ES	
1,700.00	1,691.25	1,461.20	1,460.33	4.11	2.50	-60.17	1,811.31	850.80	1,961.89	1,955.41	6.48	302.546		
1,800.00	1,789.07	1,520.49	1,519.15	4.51	2.64	-60.53	1,818.66	852.21	1,964.18	1,957.19	6.98	281.280		
1,900.00	1,886.88	1,577.00	1,574.99	4.91	2.78	-60.87	1,827.12	854.10	1,969.09	1,961.60	7.49	262.929		
2,000.00	1,984.70	1,623.25	1,620.51	5.33	2.91	-61.15	1,835.06	855.99	1,976.47	1,968.49	7.98	247.543		
2,100.00	2,082.51	1,669.00	1,665.39	5.75	3.05	-61.43	1,843.69	858.05	1,986.22	1,977.74	8.48	234.100		
2,200.00	2,180.33	1,727.38	1,722.39	6.17	3.25	-61.78	1,855.94	861.07	1,998.35	1,989.32	9.03	221.341		
2,300.00	2,278.14	1,795.31	1,788.32	6.60	3.49	-62.20	1,871.80	865.09	2,012.87	2,003.27	9.60	209.655		
2,400.00	2,375.96	1,878.13	1,868.64	7.04	3.80	-62.71	1,891.52	869.49	2,028.02	2,017.81	10.22	198.491		
2,500.00	2,473.77	1,946.00	1,934.10	7.48	4.07	-63.13	1,908.97	873.49	2,045.14	2,034.34	10.80	189.333		
2,600.00	2,571.59	2,002.28	1,988.13	7.92	4.33	-63.47	1,924.32	877.02	2,064.01	2,052.64	11.37	181.540		
2,700.00	2,669.40	2,173.81	2,153.32	8.36	5.08	-64.54	1,969.60	885.72	2,082.40	2,070.17	12.23	170.273		
2,800.00	2,767.22	2,281.70	2,257.94	8.80	5.52	-65.18	1,995.44	890.96	2,098.38	2,085.45	12.92	162.400		
2,900.00	2,865.03	2,359.97	2,333.83	9.25	5.87	-65.64	2,014.28	894.52	2,114.66	2,101.11	13.55	156.054		
3,000.00	2,962.84	2,423.00	2,394.71	9.70	6.16	-65.99	2,030.11	898.43	2,132.52	2,118.38	14.15	150.745		
3,100.00	3,060.66	2,484.05	2,453.43	10.15	6.46	-66.32	2,046.31	902.66	2,152.11	2,137.37	14.75	145.952		
3,200.00	3,158.47	2,558.26	2,524.47	10.60	6.84	-66.74	2,067.19	907.39	2,173.28	2,157.89	15.39	141.246		
3,300.00	3,256.29	2,646.63	2,608.97	11.05	7.31	-67.24	2,092.61	912.28	2,195.09	2,179.02	16.07	136.559		
3,400.00	3,354.10	2,737.58	2,695.83	11.50	7.80	-67.77	2,119.20	916.85	2,217.45	2,200.67	16.77	132.209		
3,500.00	3,451.92	2,841.84	2,795.44	11.95	8.35	-68.37	2,149.60	921.57	2,239.82	2,222.31	17.51	127.921		
3,600.00	3,549.73	2,946.39	2,895.45	12.40	8.90	-68.97	2,179.76	925.76	2,262.01	2,243.76	18.24	123.983		
3,700.00	3,647.55	3,173.19	3,114.40	12.86	9.96	-70.23	2,238.15	933.98	2,281.10	2,261.80	19.29	118.231		
3,800.00	3,745.36	3,293.92	3,231.97	13.31	10.48	-70.83	2,264.91	939.94	2,297.29	2,277.24	20.05	114.584		
3,900.00	3,843.18	3,377.00	3,312.79	13.76	10.84	-71.17	2,283.03	946.35	2,313.77	2,293.07	20.71	111.730		

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