



Project: WELD COUNTY, COLORADO  
Site: SW SE SEC. 33 T4N R65W 6th P.M. (LORY)  
Well: LORY 8N  
Wellbore: ORIGINAL WELLBORE  
Design: PROPOSAL #1

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Departure	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	SHL: 481ft FSL & 2210ft FEL of Sec 33
500.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	START NUDGE (2°/100ft BUR)
1095.78	1100.16	12.00	120.61	-31.89	53.91	-27.71	62.64	EOB TO 12° INC
4739.02	4824.84	12.00	120.61	-426.33	720.57	-370.40	837.24	END OF TANGENT
5334.80	5425.00	0.00	0.00	-458.22	774.48	-398.11	899.88	EOD TO VERTICAL
6379.80	6470.00	0.00	0.00	-458.22	774.48	-398.11	899.88	KOP (8°/100ft BUR)
7096.00	7595.00	90.00	359.88	257.98	772.98	315.90	1616.08	EP: 1435ft FEL & 737ft FSL of Sec 33
7096.00	17230.86	90.00	359.88	9893.81	753.15	9922.44	11251.94	BHL: 1435ft FEL & 200ft FNL of Sec 28

PROPOSED LOCAL COORDINATES:

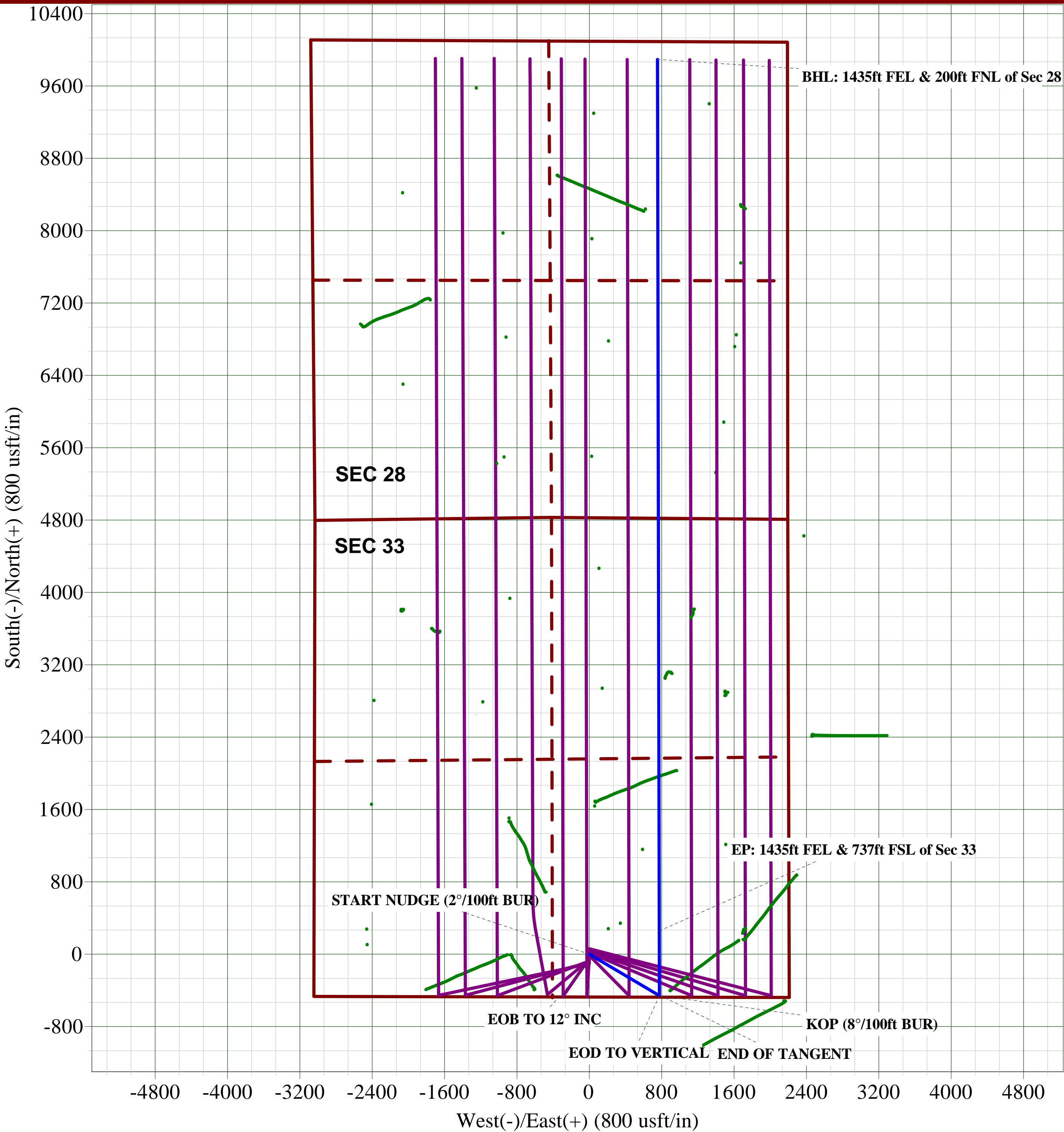
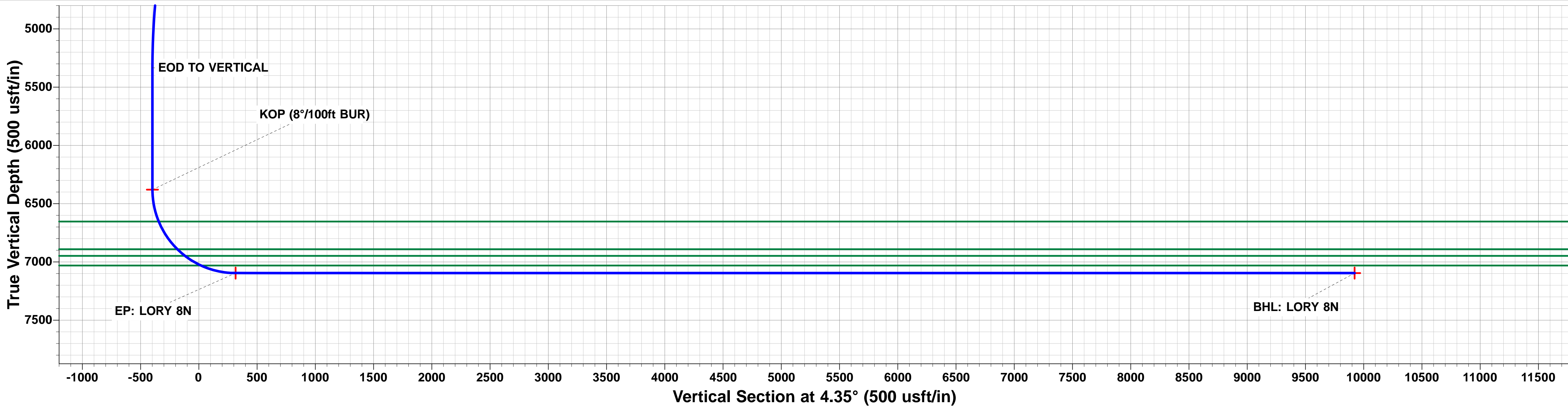
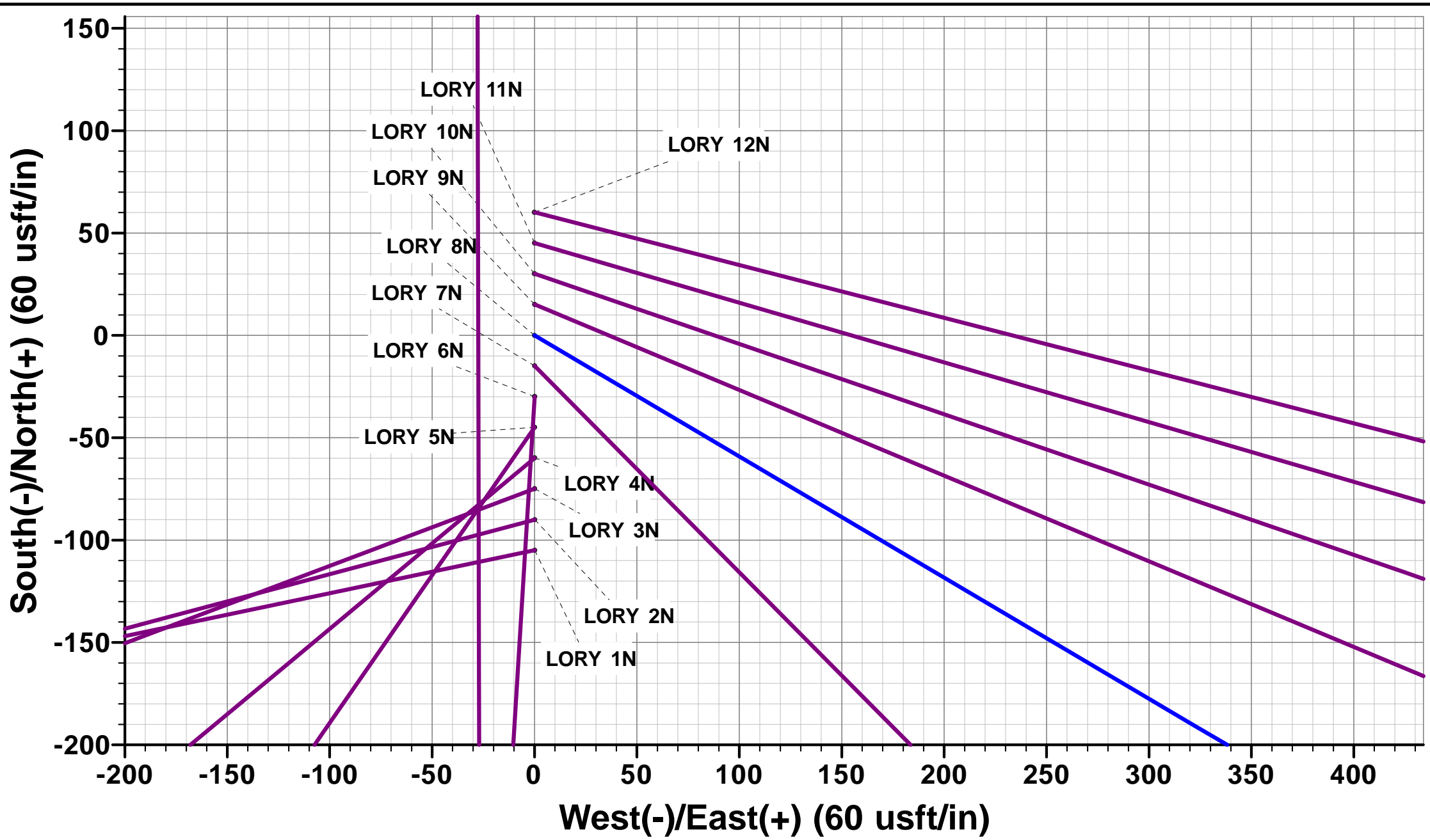
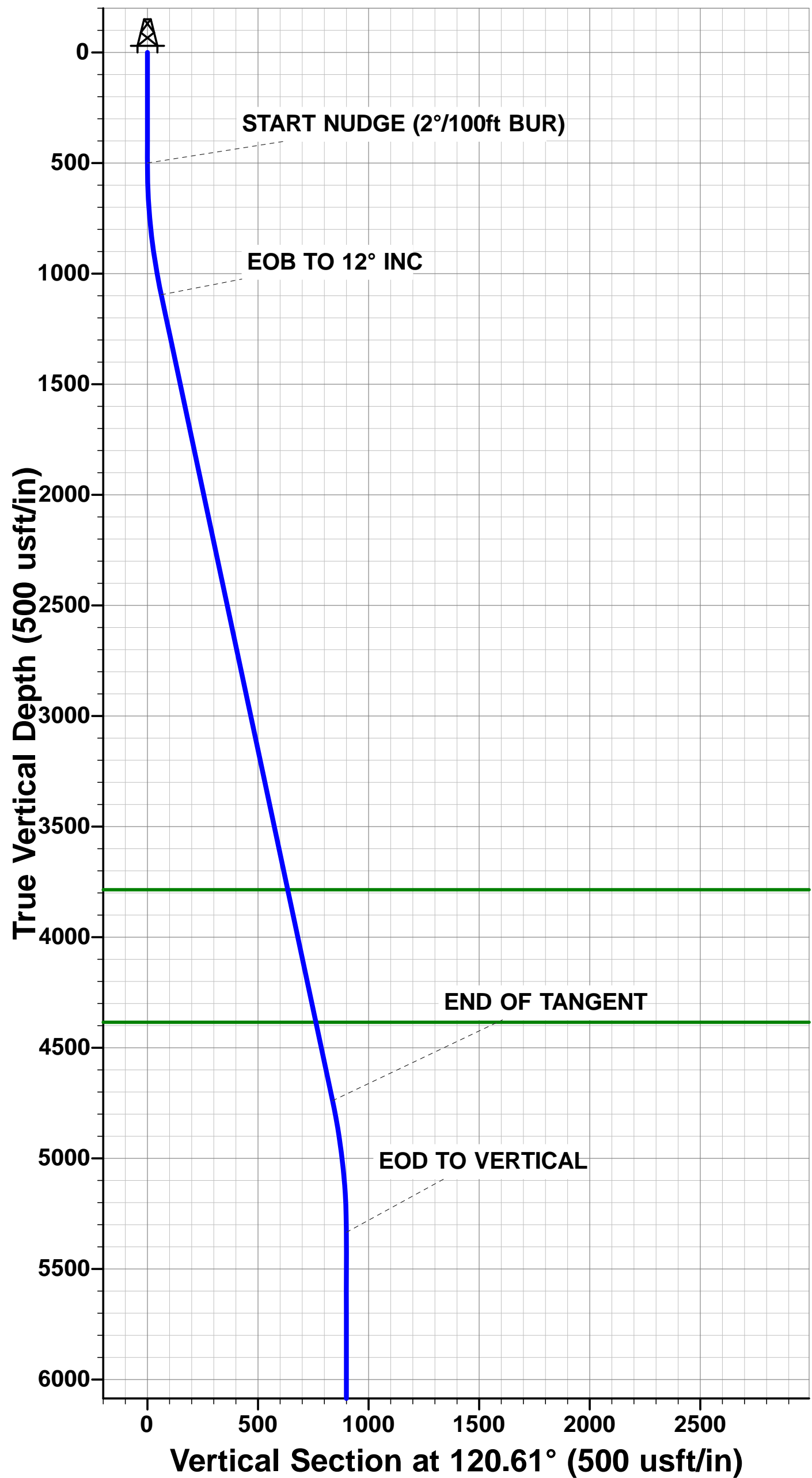
SHL: 481ft FSL & 2210ft FEL of Sec 33

EP: 1435ft FEL & 737ft FSL of Sec 33

BHL: 1435ft FEL & 200ft FNL of Sec 28

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP: LORY 8N	6379.80	-458.22	774.48	40.261674	-104.664025
EP: LORY 8N	7096.00	257.98	772.98	40.290090	-104.664030
BHL: LORY 8N	7096.00	9893.81	753.15	40.263640	-104.664100



# **PDC ENERGY**

**WELD COUNTY, COLORADO**

**SW SE SEC. 33 T4N R65W 6th P.M. (LORY)**

**LORY 8N**

**ORIGINAL WELLBORE**

**PROPOSAL #1**

## **Anticollision Report**

**30 November, 2017**



## Anticollision Report



<b>Company:</b>	PDC ENERGY	<b>Local Co-ordinate Reference:</b>	Well LORY 8N
<b>Project:</b>	WELD COUNTY, COLORADO	<b>TVD Reference:</b>	KB-EST @ 4841.00usft (Original Well Elev)
<b>Reference Site:</b>	SW SE SEC. 33 T4N R65W 6th P.M. (LORY)	<b>MD Reference:</b>	KB-EST @ 4841.00usft (Original Well Elev)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LORY 8N	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	ORIGINAL WELLBORE	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	PROPOSAL #1	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	PROPOSAL #1		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	MD + Stations Interval 100.00usft	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	Unlimited	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum center-center distance of 9,999.98 usft	<b>Error Surface:</b>	Elliptical Conic
<b>Warning Levels Evaluated at:</b>	2.00 Sigma	<b>Casing Method:</b>	Not applied

<b>Survey Tool Program</b>	<b>Date</b>	30/11/2017		
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.00	17,230.86	PROPOSAL #1 (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
SW SE SEC. 33 T4N R65W 6th P.M. (LORY)						
ABDN VERT BOHLENDER 33-2 - GYRO - Wellbore #1 -	10,195.35	7,050.00	731.37	670.15	11.947	CC
ABDN VERT BOHLENDER 33-2 - GYRO - Wellbore #1 -	10,200.00	7,050.00	731.38	670.08	11.930	ES
ABDN VERT BOHLENDER 33-2 - GYRO - Wellbore #1 -	10,400.00	7,050.00	759.46	694.47	11.686	SF
ABDN VERT BOHLENDER 33-6 - GYRO - Wellbore #1 -	11,277.86	7,096.00	1,644.38	1,549.35	17.302	CC
ABDN VERT BOHLENDER 33-6 - GYRO - Wellbore #1 -	11,300.00	7,096.00	1,644.53	1,549.08	17.229	ES
ABDN VERT BOHLENDER 33-6 - GYRO - Wellbore #1 -	11,800.00	7,096.00	1,725.29	1,620.43	16.452	SF
ABDN VERT CPC-BOHLENDER 33-3 - Wellbore #1 - W	11,058.47	7,098.57	356.30	279.24	4.624	CC, ES
ABDN VERT CPC-BOHLENDER 33-3 - Wellbore #1 - W	11,100.00	7,098.21	358.71	280.88	4.609	SF
ABDN VERT KRAUSE 1 - Wellbore #1 - Design #1	12,770.33	4,662.00	3,018.67	2,940.63	38.679	CC
ABDN VERT KRAUSE 1 - Wellbore #1 - Design #1	12,800.00	4,662.00	3,018.82	2,940.40	38.495	ES
ABDN VERT KRAUSE 1 - Wellbore #1 - Design #1	14,300.00	4,662.00	3,384.13	3,286.66	34.723	SF
ABDN VERT KRAUSE 28-3 - Wellbore #1 - Design #1	12,846.12	7,096.00	737.06	612.39	5.912	CC, ES
ABDN VERT KRAUSE 28-3 - Wellbore #1 - Design #1	12,900.00	7,096.00	739.03	613.34	5.880	SF
ABDN VERT KRAUSE 28-4 - Wellbore #1 - Design #1	14,120.79	7,096.00	547.51	398.60	3.677	CC, ES, SF
ABDN VERT OSTER PM G 28-8 - GYRO - Wellbore #1 -	15,578.23	6,950.00	976.67	814.49	6.022	CC
ABDN VERT OSTER PM G 28-8 - GYRO - Wellbore #1 -	15,600.00	6,950.00	976.91	814.32	6.008	ES
ABDN VERT OSTER PM G 28-8 - GYRO - Wellbore #1 -	15,700.00	6,950.00	984.23	819.74	5.983	SF
EXIST DD ANDERSEN 23-33 - Wellbore #1 - Wellbore #	8,026.69	7,215.17	1,253.67	1,211.10	29.448	CC, ES
EXIST DD ANDERSEN 23-33 - Wellbore #1 - Wellbore #	8,600.00	7,213.17	1,378.54	1,327.54	27.030	SF
EXIST DD ANDERSEN 24-33 - Wellbore #1 - Wellbore #	9,366.23	7,211.39	196.60	136.02	3.245	CC, ES, SF
EXIST DD ANDERSEN 33-34 - Wellbore #1 - Wellbore #	8,209.19	7,186.28	1,520.73	1,475.84	33.877	CC, ES
EXIST DD ANDERSEN 33-34 - Wellbore #1 - Wellbore #	9,100.00	7,183.25	1,762.43	1,703.15	29.732	SF
EXIST DD ANDERSEN 35-33 - Wellbore #1 - Wellbore #	0.00	10.89	907.40			
EXIST DD ANDERSEN 35-33 - Wellbore #1 - Wellbore #	300.00	307.97	907.92	907.04	1,034.054	ES
EXIST DD ANDERSEN 35-33 - Wellbore #1 - Wellbore #	16,600.00	6,820.00	9,995.68	9,800.84	51.300	SF
EXIST DD ANDERSEN 36-33 - Wellbore #1 - Wellbore #	527.31	549.46	874.07	872.42	531.665	CC, ES
EXIST DD ANDERSEN 36-33 - Wellbore #1 - Wellbore #	6,950.00	6,852.76	1,380.39	1,347.84	42.410	SF
EXIST DD ANDERSEN 37-33 - Wellbore #1 - Wellbore #	6,752.17	6,763.37	116.43	81.36	3.320	CC, ES, SF
EXIST DD ARISTOCRAT ANGUS 8-0-4 - Wellbore #1 - W	6,527.45	6,584.18	1,378.69	1,343.33	38.999	CC
EXIST DD ARISTOCRAT ANGUS 8-0-4 - Wellbore #1 - W	6,550.00	6,607.59	1,378.70	1,343.29	38.937	ES
EXIST DD ARISTOCRAT ANGUS 8-0-4 - Wellbore #1 - W	6,700.00	6,749.44	1,380.11	1,344.48	38.740	SF
EXIST DD KRAUSE 22-28 - Wellbore #1 - Wellbore #1	14,589.41	7,238.72	2,526.99	2,369.04	15.999	CC
EXIST DD KRAUSE 22-28 - Wellbore #1 - Wellbore #1	14,600.00	7,238.39	2,527.01	2,368.86	15.979	ES
EXIST DD KRAUSE 22-28 - Wellbore #1 - Wellbore #1	15,400.00	7,233.00	2,653.77	2,480.37	15.304	SF
EXIST DD MANTLE 4-2-28 - Wellbore #1 - Wellbore #1	15,950.62	7,209.32	1,106.70	921.47	5.975	CC, ES
EXIST DD MANTLE 4-2-28 - Wellbore #1 - Wellbore #1	16,100.00	7,208.22	1,116.74	928.65	5.937	SF
EXIST HZ MOSER PC G34-65HN - Wellbore #1 - Wellbo	9,755.00	6,440.00	1,862.48	1,800.58	30.086	CC

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

<b>Company:</b>	PDC ENERGY	<b>Local Co-ordinate Reference:</b>	Well LORY 8N
<b>Project:</b>	WELD COUNTY, COLORADO	<b>TVD Reference:</b>	KB-EST @ 4841.00usft (Original Well Elev)
<b>Reference Site:</b>	SW SE SEC. 33 T4N R65W 6th P.M. (LORY)	<b>MD Reference:</b>	KB-EST @ 4841.00usft (Original Well Elev)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LORY 8N	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	ORIGINAL WELLBORE	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	PROPOSAL #1	<b>Offset TVD Reference:</b>	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						
SW SE SEC. 33 T4N R65W 6th P.M. (LORY)						
EXIST HZ MOSER PC G34-65HN - Wellbore #1 - Wellbo	9,800.00	6,440.00	1,863.03	1,800.35	29.725	ES
EXIST HZ MOSER PC G34-65HN - Wellbore #1 - Wellbo	10,700.00	6,440.00	2,088.51	2,010.18	26.663	SF
EXIST VERT ANDERSEN 10-33 - Wellbore #1 - Design	8,979.36	7,096.00	711.29	658.21	13.400	CC
EXIST VERT ANDERSEN 10-33 - Wellbore #1 - Design	9,000.00	7,096.00	711.59	658.15	13.317	ES
EXIST VERT ANDERSEN 10-33 - Wellbore #1 - Design	9,100.00	7,096.00	721.45	666.28	13.078	SF
EXIST VERT BOHLENDER 33-22 - GYRO - Wellbore #1	11,138.57	7,108.77	2,836.98	2,758.55	36.173	CC
EXIST VERT BOHLENDER 33-22 - GYRO - Wellbore #1	11,200.00	7,108.38	2,837.65	2,758.07	35.658	ES
EXIST VERT BOHLENDER 33-22 - GYRO - Wellbore #1	13,100.00	7,100.00	3,449.00	3,333.52	29.866	SF
EXIST VERT BOHLENDER 33-5 - Wellbore #1 - Design	10,151.75	7,096.00	3,148.07	3,073.99	42.496	CC
EXIST VERT BOHLENDER 33-5 - Wellbore #1 - Design	10,200.00	7,096.00	3,148.44	3,073.47	41.998	ES
EXIST VERT BOHLENDER 33-5 - Wellbore #1 - Design	12,700.00	7,096.00	4,050.19	3,928.30	33.227	SF
EXIST VERT BOHLENDER 33-7 - Wellbore #1 - Design	10,134.60	7,096.00	1,945.38	1,871.62	26.373	CC
EXIST VERT BOHLENDER 33-7 - Wellbore #1 - Design	10,200.00	7,096.00	1,946.48	1,871.51	25.965	ES
EXIST VERT BOHLENDER 33-7 - Wellbore #1 - Design	11,100.00	7,096.00	2,171.75	2,080.05	23.683	SF
EXIST VERT CPC-BOHLENDER 33-1 - Wellbore #1 - De	11,607.33	7,096.00	658.69	557.45	6.507	CC, ES
EXIST VERT CPC-BOHLENDER 33-1 - Wellbore #1 - De	11,700.00	7,096.00	665.17	562.19	6.459	SF
EXIST VERT CPC-BOHLENDER 33-4 - Wellbore #1 - De	10,281.20	7,096.00	625.15	548.69	8.176	CC
EXIST VERT CPC-BOHLENDER 33-4 - Wellbore #1 - De	10,300.00	7,096.00	625.43	548.62	8.143	ES
EXIST VERT CPC-BOHLENDER 33-4 - Wellbore #1 - De	10,400.00	7,096.00	636.34	557.68	8.090	SF
EXIST VERT FRAZIER 33-15 - GYRO - Wellbore #1 - W	10,387.69	7,097.18	70.70	5.90	1.091	Level 2, CC, ES, SF
EXIST VERT FRAZIER 33-25 - Wellbore #1 - Wellbore #	10,943.12	7,112.83	2,503.79	2,428.80	33.387	CC
EXIST VERT FRAZIER 33-25 - Wellbore #1 - Wellbore #	11,000.00	7,112.65	2,504.44	2,428.38	32.929	ES
EXIST VERT FRAZIER 33-25 - Wellbore #1 - Wellbore #	12,500.00	7,108.03	2,948.37	2,844.05	28.262	SF
EXIST VERT HSR KRAUSE 14-28A - Wellbore #1 - Des	12,840.84	7,096.00	1,705.28	1,580.72	13.690	CC
EXIST VERT HSR KRAUSE 14-28A - Wellbore #1 - Des	12,900.00	7,096.00	1,706.31	1,580.62	13.576	ES
EXIST VERT HSR KRAUSE 14-28A - Wellbore #1 - Des	13,300.00	7,096.00	1,766.02	1,632.73	13.250	SF
EXIST VERT HSR MONTALI 14-33 - Wellbore #1 - Desig	500.00	500.00	1,519.29	1,517.32	770.745	CC, ES
EXIST VERT HSR MONTALI 14-33 - Wellbore #1 - Desig	10,700.00	7,096.00	3,579.72	3,495.49	42.499	SF
EXIST VERT HSR-HART 12-33 - Wellbore #1 - Design #	500.00	500.00	2,925.45	2,923.48	1,484.098	CC, ES
EXIST VERT HSR-HART 12-33 - Wellbore #1 - Design #	12,700.00	7,096.00	4,874.55	4,752.66	39.990	SF
EXIST VERT HSR-HEADLEY 9-33 - Wellbore #1 - Desig	8,551.25	7,096.00	737.60	691.63	16.046	CC, ES
EXIST VERT HSR-HEADLEY 9-33 - Wellbore #1 - Desig	8,700.00	7,096.00	752.45	704.07	15.554	SF
EXIST VERT HSR-LARSON 16-33A - GYRO - Wellbore	7,621.80	7,066.23	952.57	932.26	46.889	CC, ES
EXIST VERT HSR-LARSON 16-33A - GYRO - Wellbore	8,400.00	7,068.67	1,230.03	1,200.55	41.725	SF
EXIST VERT HSR-LEE 13-33 - Wellbore #1 - Design #1	500.00	500.00	2,477.46	2,475.49	1,256.828	CC, ES
EXIST VERT HSR-LEE 13-33 - Wellbore #1 - Design #1	15,700.00	7,096.00	8,699.99	8,520.94	48.590	SF
EXIST VERT HSR-MARLEY 15-33 - Wellbore #1 - Desig	952.94	951.05	350.50	346.47	86.861	CC
EXIST VERT HSR-MARLEY 15-33 - Wellbore #1 - Desig	1,000.00	997.47	350.59	346.31	81.855	ES
EXIST VERT HSR-MARLEY 15-33 - Wellbore #1 - Desig	7,700.00	7,096.00	569.11	534.05	16.232	SF
EXIST VERT HSR-MILTON 10-33 - Wellbore #1 - Design	8,498.85	7,096.00	182.33	137.20	4.040	CC
EXIST VERT HSR-MILTON 10-33 - Wellbore #1 - Design	8,500.00	7,096.00	182.34	137.18	4.038	ES, SF
EXIST VERT HSR-ROBERT 11-33 - Wellbore #1 - Desig	8,848.02	7,096.00	1,657.89	1,607.04	32.605	CC
EXIST VERT HSR-ROBERT 11-33 - Wellbore #1 - Desig	8,900.00	7,096.00	1,658.70	1,606.98	32.068	ES
EXIST VERT HSR-ROBERT 11-33 - Wellbore #1 - Desig	9,800.00	7,096.00	1,911.77	1,844.13	28.262	SF
EXIST VERT KRAUSE 1-J - Wellbore #1 - Design #1	13,648.29	7,096.00	2,819.65	2,679.74	20.153	CC
EXIST VERT KRAUSE 1-J - Wellbore #1 - Design #1	13,700.00	7,096.00	2,820.13	2,679.23	20.015	ES
EXIST VERT KRAUSE 1-J - Wellbore #1 - Design #1	14,700.00	7,096.00	3,009.41	2,849.46	18.814	SF
EXIST VERT KRAUSE 28-2 - Wellbore #1 - Design #1	14,166.84	7,096.00	1,680.19	1,530.40	11.217	CC
EXIST VERT KRAUSE 28-2 - Wellbore #1 - Design #1	14,200.00	7,096.00	1,680.52	1,530.10	11.172	ES
EXIST VERT KRAUSE 28-2 - Wellbore #1 - Design #1	14,500.00	7,096.00	1,712.91	1,556.77	10.970	SF
EXIST VERT MANTLE 1 - Wellbore #1 - Design #1	15,579.36	7,096.00	136.38	-40.36	0.772	Level 1, CC, ES, SF
EXIST VERT MANTLE 32-28 - Wellbore #1 - Design #1	15,252.32	7,096.00	728.79	558.29	4.274	CC, ES
EXIST VERT MANTLE 32-28 - Wellbore #1 - Design #1	15,300.00	7,096.00	730.35	558.94	4.261	SF

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



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<b>Reference Well:</b>	LORY 8N	<b>Survey Calculation Method:</b>	Minimum Curvature
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<b>Reference Design:</b>	PROPOSAL #1	<b>Offset TVD Reference:</b>	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						
SW SE SEC. 33 T4N R65W 6th P.M. (LORY)						
EXIST VERT MOSER G 34-30 - Wellbore #1 - Design #1	11,961.25	7,096.00	1,607.80	1,499.89	14.900	CC
EXIST VERT MOSER G 34-30 - Wellbore #1 - Design #1	12,000.00	7,096.00	1,608.26	1,499.62	14.803	ES
EXIST VERT MOSER G 34-30 - Wellbore #1 - Design #1	12,400.00	7,096.00	1,666.59	1,550.38	14.341	SF
EXIST VERT OGG 21-28 - Wellbore #1 - Design #1	16,921.62	7,096.00	2,003.68	1,801.27	9.899	CC, ES
EXIST VERT OGG 21-28 - Wellbore #1 - Design #1	17,230.86	7,096.00	2,027.40	1,819.08	9.732	SF
EXIST VERT OGG 22-28 - Wellbore #1 - Design #1	15,317.36	7,096.00	1,711.84	1,540.10	9.968	CC, ES
EXIST VERT OGG 22-28 - Wellbore #1 - Design #1	15,600.00	7,096.00	1,735.02	1,557.88	9.795	SF
EXIST VERT OGG 31-28 - Wellbore #1 - Design #1	16,639.90	7,096.00	705.88	508.87	3.583	CC, ES
EXIST VERT OGG 31-28 - Wellbore #1 - Design #1	16,700.00	7,096.00	708.44	510.27	3.575	SF
EXIST VERT OSTER 1 - Wellbore #1 - Design #1	13,221.30	7,096.00	724.66	592.87	5.499	CC, ES
EXIST VERT OSTER 1 - Wellbore #1 - Design #1	13,300.00	7,096.00	728.92	595.63	5.469	SF
EXIST VERT OSTER 43-28 - Wellbore #1 - Design #1	14,186.08	7,096.00	865.24	715.09	5.762	CC
EXIST VERT OSTER 43-28 - Wellbore #1 - Design #1	14,200.00	7,096.00	865.36	714.94	5.753	ES
EXIST VERT OSTER 43-28 - Wellbore #1 - Design #1	14,300.00	7,096.00	872.71	720.39	5.729	SF
EXIST VERT OSTER G 28-8A - Wellbore #1 - Design #1	14,981.26	7,096.00	916.20	750.88	5.542	CC
EXIST VERT OSTER G 28-8A - Wellbore #1 - Design #1	15,000.00	7,096.00	916.39	750.71	5.531	ES
EXIST VERT OSTER G 28-8A - Wellbore #1 - Design #1	15,100.00	7,096.00	923.86	756.27	5.513	SF
EXIST VERT OSTER G 28-9 - Wellbore #1 - Design #1	14,056.78	7,096.00	847.41	699.72	5.738	CC, ES
EXIST VERT OSTER G 28-9 - Wellbore #1 - Design #1	14,100.00	7,096.00	848.51	700.00	5.713	SF
EXIST VERT OSTER PM G 28-1 - Wellbore #1 - Design	16,741.90	7,096.00	570.93	371.97	2.869	CC, ES
EXIST VERT OSTER PM G 28-1 - Wellbore #1 - Design	16,800.00	7,096.00	573.88	373.80	2.868	SF
EXIST VERT OSTER PM G 28-13 - Wellbore #1 - Design	12,664.82	7,096.00	635.38	514.15	5.241	CC, ES
EXIST VERT OSTER PM G 28-13 - Wellbore #1 - Design	12,700.00	7,096.00	636.35	514.46	5.221	SF
EXIST VERT OSTER PM G 28-16 - Wellbore #1 - Design	12,664.82	7,096.00	635.38	514.15	5.241	CC, ES
EXIST VERT OSTER PM G 28-16 - Wellbore #1 - Design	12,700.00	7,096.00	636.35	514.46	5.221	SF
EXIST VERT PEARSON 1 - Wellbore #1 - Design #1	15,764.86	7,096.00	2,820.74	2,640.45	15.646	CC
EXIST VERT PEARSON 1 - Wellbore #1 - Design #1	15,800.00	7,096.00	2,820.96	2,640.00	15.589	ES
EXIST VERT PEARSON 1 - Wellbore #1 - Design #1	16,600.00	7,096.00	2,941.78	2,745.52	14.990	SF
EXIST VERT UPRR 36 PAN AM C #1 - Wellbore #1 - De	500.00	500.00	2,458.43	2,456.46	1,247.176	CC, ES
EXIST VERT UPRR 36 PAN AM C #1 - Wellbore #1 - De	16,600.00	4,707.00	9,990.72	9,832.10	62.986	SF
EXIST VERT UPRR 36 PAN AM C #2 - Wellbore #1 - De	1,373.53	1,363.17	472.02	465.43	71.678	CC
EXIST VERT UPRR 36 PAN AM C #2 - Wellbore #1 - De	1,400.00	1,389.06	472.05	465.29	69.868	ES
EXIST VERT UPRR 36 PAN AM C #2 - Wellbore #1 - De	4,000.00	3,932.22	721.91	700.70	34.031	SF
LORY 10N - ORIGINAL WELLBORE - PROPOSAL #1	528.66	528.97	28.56	26.49	13.787	CC, ES
LORY 10N - ORIGINAL WELLBORE - PROPOSAL #1	17,230.86	17,356.55	647.26	262.38	1.682	SF
LORY 11N - ORIGINAL WELLBORE - PROPOSAL #1	468.78	469.17	43.34	41.51	23.752	CC
LORY 11N - ORIGINAL WELLBORE - PROPOSAL #1	500.00	500.23	43.45	41.48	22.073	ES
LORY 11N - ORIGINAL WELLBORE - PROPOSAL #1	17,230.86	17,332.79	956.06	572.07	2.490	SF
LORY 12N - ORIGINAL WELLBORE - PROPOSAL #1	393.12	393.64	58.24	56.72	38.422	CC
LORY 12N - ORIGINAL WELLBORE - PROPOSAL #1	400.00	400.48	58.24	56.70	37.618	ES
LORY 12N - ORIGINAL WELLBORE - PROPOSAL #1	17,230.86	17,511.38	1,235.90	851.45	3.215	SF
LORY 1N - ORIGINAL WELLBORE - PROPOSAL #1	100.00	100.00	104.92	104.75	606.224	CC
LORY 1N - ORIGINAL WELLBORE - PROPOSAL #1	200.00	199.22	105.29	104.67	171.345	ES
LORY 1N - ORIGINAL WELLBORE - PROPOSAL #1	17,230.86	17,291.76	2,456.76	2,071.95	6.384	SF
LORY 2N - ORIGINAL WELLBORE - PROPOSAL #1	200.00	200.00	90.02	89.40	144.586	CC, ES
LORY 2N - ORIGINAL WELLBORE - PROPOSAL #1	17,230.86	17,305.93	2,161.99	1,776.10	5.603	SF
LORY 3N - ORIGINAL WELLBORE - PROPOSAL #1	300.00	300.00	74.86	73.79	69.827	CC, ES
LORY 3N - ORIGINAL WELLBORE - PROPOSAL #1	17,230.86	17,149.32	1,807.41	1,423.38	4.706	SF
LORY 4N - ORIGINAL WELLBORE - PROPOSAL #1	400.00	400.00	59.82	58.30	39.311	CC, ES
LORY 4N - ORIGINAL WELLBORE - PROPOSAL #1	17,230.86	17,185.90	1,408.78	1,023.31	3.655	SF
LORY 5N - ORIGINAL WELLBORE - PROPOSAL #1	500.00	500.00	44.88	42.91	22.769	CC, ES
LORY 5N - ORIGINAL WELLBORE - PROPOSAL #1	17,230.86	17,096.17	1,067.11	685.13	2.794	SF
LORY 6N - ORIGINAL WELLBORE - PROPOSAL #1	663.80	663.09	28.47	25.82	10.726	CC, ES

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

## Anticollision Report



<b>Company:</b>	PDC ENERGY	<b>Local Co-ordinate Reference:</b>	Well LORY 8N
<b>Project:</b>	WELD COUNTY, COLORADO	<b>TVD Reference:</b>	KB-EST @ 4841.00usft (Original Well Elev)
<b>Reference Site:</b>	SW SE SEC. 33 T4N R65W 6th P.M. (LORY)	<b>MD Reference:</b>	KB-EST @ 4841.00usft (Original Well Elev)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LORY 8N	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	ORIGINAL WELLBORE	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	PROPOSAL #1	<b>Offset TVD Reference:</b>	Offset Datum

## Summary

Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
<b>Offset Well - Wellbore - Design</b>						
SW SE SEC. 33 T4N R65W 6th P.M. (LORY)						
LORY 6N - ORIGINAL WELLBORE - PROPOSAL #1	17,230.86	17,183.83	800.65	417.79	2.091	SF
LORY 7N - ORIGINAL WELLBORE - PROPOSAL #1	687.29	686.99	13.42	10.67	4.877	CC
LORY 7N - ORIGINAL WELLBORE - PROPOSAL #1	17,230.86	17,106.20	347.99	-20.98	0.943	Level 1, ES, SF
LORY 9N - ORIGINAL WELLBORE - PROPOSAL #1	574.25	574.44	14.17	11.91	6.269	CC
LORY 9N - ORIGINAL WELLBORE - PROPOSAL #1	17,230.86	17,203.94	369.52	-6.19	0.984	Level 1, ES, SF

<b>Offset Design</b> SW SE SEC. 33 T4N R65W 6th P.M. (LORY) - ABDN VERT BOHLENDER 33-2 - GYRO - Wellbore #1												<b>Offset Site Error:</b>	0.00 usft
Survey Program: 100-GYD_CT												<b>Offset Well Error:</b>	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	27.88	2,895.56	1,531.92	3,275.83				
100.00	100.00	87.85	87.85	0.09	0.07	27.88	2,895.79	1,531.83	3,276.01	3,275.85	0.16	N/A	
200.00	200.00	197.54	197.54	0.31	0.22	27.87	2,896.24	1,531.61	3,276.28	3,275.75	0.53	6,192.255	
300.00	300.00	313.47	313.46	0.54	0.28	27.87	2,896.15	1,531.38	3,276.13	3,275.32	0.81	4,040.826	
400.00	400.00	429.06	429.05	0.76	0.36	27.86	2,895.54	1,530.70	3,275.37	3,274.25	1.12	2,923.013	
500.00	500.00	521.87	521.87	0.99	0.42	27.86	2,895.06	1,530.08	3,274.60	3,273.19	1.40	2,333.483	
600.00	599.98	619.68	619.67	1.19	0.47	-92.80	2,894.80	1,529.34	3,274.10	3,272.45	1.65	1,982.953	
700.00	699.84	732.09	732.07	1.39	0.53	-92.93	2,894.26	1,528.34	3,273.51	3,271.60	1.91	1,717.032	
800.00	799.45	831.63	831.61	1.62	0.58	-93.10	2,893.65	1,527.37	3,272.97	3,270.80	2.18	1,502.078	
900.00	898.70	929.26	929.23	1.88	0.63	-93.32	2,893.09	1,526.41	3,272.69	3,270.21	2.48	1,318.767	
935.85	934.17	963.75	963.71	1.98	0.64	-93.42	2,892.89	1,526.11	3,272.67	3,270.07	2.60	1,256.767	
1,000.00	997.47	1,023.37	1,023.34	2.18	0.67	-93.59	2,892.54	1,525.66	3,272.75	3,269.93	2.82	1,158.895	
1,100.00	1,095.62	1,112.53	1,112.49	2.54	0.71	-93.88	2,892.23	1,525.02	3,273.37	3,270.15	3.21	1,018.444	
1,100.16	1,095.78	1,112.68	1,112.64	2.54	0.71	-93.88	2,892.23	1,525.02	3,273.37	3,270.16	3.21	1,018.244	
1,200.00	1,193.44	1,208.37	1,208.32	2.93	0.75	-94.24	2,892.16	1,524.11	3,274.38	3,270.74	3.64	898.621	
1,300.00	1,291.25	1,305.87	1,305.82	3.35	0.79	-94.61	2,892.22	1,523.03	3,275.57	3,271.48	4.09	800.978	
1,400.00	1,389.06	1,413.54	1,413.48	3.77	0.83	-95.02	2,892.02	1,521.78	3,276.67	3,272.12	4.55	720.416	
1,500.00	1,486.88	1,500.00	1,499.94	4.21	0.86	-95.35	2,892.04	1,520.99	3,278.18	3,273.17	5.00	655.093	
1,600.00	1,584.69	1,602.04	1,601.98	4.65	0.90	-95.73	2,892.19	1,520.04	3,279.96	3,274.49	5.47	599.666	
1,700.00	1,682.50	1,704.10	1,704.03	5.09	0.94	-96.11	2,892.03	1,518.93	3,281.54	3,275.60	5.94	552.241	
1,800.00	1,780.32	1,800.00	1,799.92	5.54	0.98	-96.48	2,891.97	1,517.56	3,283.22	3,276.81	6.41	511.848	
1,900.00	1,878.13	1,879.63	1,879.54	6.00	1.01	-96.79	2,892.28	1,516.23	3,285.35	3,278.46	6.88	477.473	
2,000.00	1,975.95	1,970.32	1,970.21	6.45	1.04	-97.15	2,893.04	1,514.74	3,288.04	3,280.69	7.35	447.366	
2,100.00	2,073.76	2,063.97	2,063.83	6.91	1.07	-97.52	2,894.04	1,512.95	3,290.99	3,283.17	7.82	420.898	
2,200.00	2,171.57	2,156.49	2,156.33	7.36	1.11	-97.88	2,895.15	1,511.20	3,294.22	3,285.93	8.29	397.490	
2,300.00	2,269.39	2,242.01	2,241.83	7.82	1.13	-98.22	2,896.36	1,509.59	3,297.82	3,289.06	8.75	376.705	
2,400.00	2,367.20	2,327.66	2,327.45	8.28	1.16	-98.56	2,897.99	1,508.05	3,302.02	3,292.80	9.22	358.161	
2,500.00	2,465.01	2,425.94	2,425.71	8.74	1.19	-98.95	2,899.81	1,506.52	3,306.44	3,296.75	9.69	341.272	
2,600.00	2,562.83	2,515.91	2,515.65	9.20	1.22	-99.30	2,901.59	1,505.20	3,311.16	3,301.00	10.15	326.113	
2,700.00	2,660.64	2,610.37	2,610.08	9.66	1.24	-99.67	2,903.55	1,504.01	3,316.18	3,305.56	10.62	312.296	
2,800.00	2,758.45	2,716.11	2,715.80	10.12	1.27	-100.07	2,905.54	1,502.89	3,321.24	3,310.16	11.08	299.632	
2,900.00	2,856.27	2,815.80	2,815.46	10.58	1.30	-100.45	2,907.32	1,501.66	3,326.32	3,314.77	11.55	288.014	
3,000.00	2,954.08	2,924.29	2,923.93	11.05	1.34	-100.86	2,909.02	1,500.51	3,331.40	3,319.38	12.01	277.285	
3,100.00	3,051.90	3,043.29	3,042.92	11.51	1.37	-101.30	2,909.86	1,499.93	3,335.98	3,323.50	12.48	267.318	
3,200.00	3,149.71	3,163.19	3,162.82	11.97	1.40	-101.72	2,910.04	1,499.58	3,340.29	3,327.36	12.94	258.233	
3,300.00	3,247.52	3,283.00	3,282.63	12.43	1.41	-102.14	2,909.10	1,499.42	3,343.87	3,330.47	13.40	249.601	
3,400.00	3,345.34	3,420.30	3,419.91	12.90	1.43	-102.61	2,906.89	1,498.85	3,346.72	3,332.85	13.87	241.364	
3,500.00	3,443.15	3,524.90	3,524.48	13.36	1.45	-102.98	2,904.54	1,498.17	3,349.03	3,334.70	14.33	233.690	

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