



CONCHO

NM OIL CONSERVATION
ARTESIA DISTRICT

DEC 12 2018

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COG Operating L L C

Eddy County, NM (NAD 27 NME)

Sec. 05, T 26 S. , R 28 E

SRO 5 State Com 506H

Wellbore #1

Plan #1

30.015-45533

Anticollision Report

10 December, 2018



INTEGRITY
DIRECTIONAL



Anticollision Report



Company: COG Operating L L C
Project: Eddy County, NM (NAD 27 NME)
Reference Site: Sec. 05, T 26 S. , R 28 E
Site Error: 0.00 usft
Reference Well: SRO 5 State Com 506H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Plan #1

Local Co-ordinate Reference: Well SRO 5 State Com 506H
TVD Reference: KB=30' @ 3040.50usft (Nabors 894)
MD Reference: KB=30' @ 3040.50usft (Nabors 894)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1
Offset TVD Reference: Offset Datum

Reference Plan #1

Filter type: NO GLOBAL FILTER: Using user defined selection & filtering criteria
Interpolation Method: Stations
Depth Range: Unlimited
Results Limited by: Maximum center-center distance of 19,999.96 u
Warning Levels Evaluated at: 2.00 Sigma
Error Model: ISCWSA
Scan Method: Closest Approach 3D
Error Surface: Circular Conic
Casing Method: Not applied

Survey Tool Program Date 12/10/2018

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	18,183.20	Plan #1 (Wellbore #1)	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						
Sec. 05, T 26 S. , R 28 E						
SRO 5 State Com 507H - Wellbore #1 - Plan #1	5,600.00	5,598.90	30.10	5.22	1.210	Level 2, CC, ES, SF

Offset Design Sec. 05, T 26 S. , R 28 E - SRO 5 State Com 507H - Wellbore #1 - Plan #1

Survey Program: 0-MWD

Offset Site Error: 0.00 usft

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Offset Measured Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +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	-90.19	-0.10	-30.10	30.12				
100.00	100.00	98.90	98.90	-90.19	-0.10	-30.10	30.10	29.94	0.16	192.369	
200.00	200.00	198.90	198.90	-90.19	-0.10	-30.10	30.10	29.50	0.60	49.802	
300.00	300.00	298.90	298.90	-90.19	-0.10	-30.10	30.10	29.05	1.05	28.560	
400.00	400.00	398.90	398.90	-90.19	-0.10	-30.10	30.10	28.60	1.50	20.021	
500.00	500.00	498.90	498.90	-90.19	-0.10	-30.10	30.10	28.15	1.95	15.412	
600.00	600.00	598.90	598.90	-90.19	-0.10	-30.10	30.10	27.70	2.40	12.529	
700.00	700.00	698.90	698.90	-90.19	-0.10	-30.10	30.10	27.25	2.85	10.554	
800.00	800.00	798.90	798.90	-90.19	-0.10	-30.10	30.10	26.80	3.30	9.117	
900.00	900.00	898.90	898.90	-90.19	-0.10	-30.10	30.10	26.35	3.75	8.024	
1,000.00	1,000.00	998.90	998.90	-90.19	-0.10	-30.10	30.10	25.90	4.20	7.166	
1,100.00	1,100.00	1,098.90	1,098.90	-90.19	-0.10	-30.10	30.10	25.45	4.65	6.473	
1,200.00	1,200.00	1,198.90	1,198.90	-90.19	-0.10	-30.10	30.10	25.00	5.10	5.902	
1,300.00	1,300.00	1,298.90	1,298.90	-90.19	-0.10	-30.10	30.10	24.55	5.55	5.424	
1,400.00	1,400.00	1,398.90	1,398.90	-90.19	-0.10	-30.10	30.10	24.10	6.00	5.018	
1,500.00	1,500.00	1,498.90	1,498.90	-90.19	-0.10	-30.10	30.10	23.65	6.45	4.668	
1,600.00	1,600.00	1,598.90	1,598.90	-90.19	-0.10	-30.10	30.10	23.20	6.90	4.364	
1,700.00	1,700.00	1,698.90	1,698.90	-90.19	-0.10	-30.10	30.10	22.75	7.35	4.097	
1,800.00	1,800.00	1,798.90	1,798.90	-90.19	-0.10	-30.10	30.10	22.30	7.80	3.861	
1,900.00	1,900.00	1,898.90	1,898.90	-90.19	-0.10	-30.10	30.10	21.85	8.25	3.650	
2,000.00	2,000.00	1,998.90	1,998.90	-90.19	-0.10	-30.10	30.10	21.40	8.70	3.461	
2,100.00	2,100.00	2,098.90	2,098.90	-90.19	-0.10	-30.10	30.10	20.95	9.15	3.291	
2,200.00	2,200.00	2,198.90	2,198.90	-90.19	-0.10	-30.10	30.10	20.51	9.60	3.137	
2,300.00	2,300.00	2,298.90	2,298.90	-90.19	-0.10	-30.10	30.10	20.06	10.04	2.997	
2,400.00	2,400.00	2,398.90	2,398.90	-90.19	-0.10	-30.10	30.10	19.61	10.49	2.868	
2,500.00	2,500.00	2,498.90	2,498.90	-90.19	-0.10	-30.10	30.10	19.16	10.94	2.750	

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



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Database: EDM 5000.1
Offset TVD Reference: Offset Datum

Offset Design Sec. 05, T 26 S. , R 28 E - SRO 5 State Com 507H - Wellbore #1 - Plan #1													Offset Site Error: 0.00 usft
Survey Program: 0-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	
2,600.00	2,600.00	2,598.90	2,598.90	5.70	5.70	-90.19	-0.10	-30.10	30.10	18.71	11.39	2.642	
2,700.00	2,700.00	2,698.90	2,698.90	5.92	5.92	-90.19	-0.10	-30.10	30.10	18.26	11.84	2.542	
2,800.00	2,800.00	2,798.90	2,798.90	6.15	6.14	-90.19	-0.10	-30.10	30.10	17.81	12.29	2.449	
2,900.00	2,900.00	2,898.90	2,898.90	6.37	6.37	-90.19	-0.10	-30.10	30.10	17.36	12.74	2.362	
3,000.00	3,000.00	2,998.90	2,998.90	6.60	6.59	-90.19	-0.10	-30.10	30.10	16.91	13.19	2.282	
3,100.00	3,100.00	3,098.90	3,098.90	6.82	6.82	-90.19	-0.10	-30.10	30.10	16.46	13.64	2.207	
3,200.00	3,200.00	3,198.90	3,198.90	7.05	7.04	-90.19	-0.10	-30.10	30.10	16.01	14.09	2.136	
3,300.00	3,300.00	3,298.90	3,298.90	7.27	7.27	-90.19	-0.10	-30.10	30.10	15.56	14.54	2.070	
3,400.00	3,400.00	3,398.90	3,398.90	7.50	7.49	-90.19	-0.10	-30.10	30.10	15.11	14.99	2.008	
3,500.00	3,500.00	3,498.90	3,498.90	7.72	7.72	-90.19	-0.10	-30.10	30.10	14.66	15.44	1.950	
3,600.00	3,600.00	3,598.90	3,598.90	7.95	7.94	-90.19	-0.10	-30.10	30.10	14.21	15.89	1.894	
3,700.00	3,700.00	3,698.90	3,698.90	8.17	8.17	-90.19	-0.10	-30.10	30.10	13.76	16.34	1.842	
3,800.00	3,800.00	3,798.90	3,798.90	8.40	8.39	-90.19	-0.10	-30.10	30.10	13.31	16.79	1.793	
3,900.00	3,900.00	3,898.90	3,898.90	8.62	8.62	-90.19	-0.10	-30.10	30.10	12.86	17.24	1.746	
4,000.00	4,000.00	3,998.90	3,998.90	8.84	8.84	-90.19	-0.10	-30.10	30.10	12.41	17.69	1.702	
4,100.00	4,100.00	4,098.90	4,098.90	9.07	9.07	-90.19	-0.10	-30.10	30.10	11.96	18.14	1.660	
4,200.00	4,200.00	4,198.90	4,198.90	9.29	9.29	-90.19	-0.10	-30.10	30.10	11.51	18.59	1.620	
4,300.00	4,300.00	4,298.90	4,298.90	9.52	9.52	-90.19	-0.10	-30.10	30.10	11.06	19.04	1.581	
4,400.00	4,400.00	4,398.90	4,398.90	9.74	9.74	-90.19	-0.10	-30.10	30.10	10.62	19.48	1.545	
4,500.00	4,500.00	4,498.90	4,498.90	9.97	9.97	-90.19	-0.10	-30.10	30.10	10.17	19.93	1.510	
4,600.00	4,600.00	4,598.90	4,598.90	10.19	10.19	-90.19	-0.10	-30.10	30.10	9.72	20.38	1.477	Level 3
4,700.00	4,700.00	4,698.90	4,698.90	10.42	10.42	-90.19	-0.10	-30.10	30.10	9.27	20.83	1.445	Level 3
4,800.00	4,800.00	4,798.90	4,798.90	10.64	10.64	-90.19	-0.10	-30.10	30.10	8.82	21.28	1.414	Level 3
4,900.00	4,900.00	4,898.90	4,898.90	10.87	10.86	-90.19	-0.10	-30.10	30.10	8.37	21.73	1.385	Level 3
5,000.00	5,000.00	4,998.90	4,998.90	11.09	11.09	-90.19	-0.10	-30.10	30.10	7.92	22.18	1.357	Level 3
5,100.00	5,100.00	5,098.90	5,098.90	11.32	11.31	-90.19	-0.10	-30.10	30.10	7.47	22.63	1.330	Level 3
5,200.00	5,200.00	5,198.90	5,198.90	11.54	11.54	-90.19	-0.10	-30.10	30.10	7.02	23.08	1.304	Level 3
5,300.00	5,300.00	5,298.90	5,298.90	11.77	11.76	-90.19	-0.10	-30.10	30.10	6.57	23.53	1.279	Level 3
5,400.00	5,400.00	5,398.90	5,398.90	11.99	11.99	-90.19	-0.10	-30.10	30.10	6.12	23.98	1.255	Level 3
5,500.00	5,500.00	5,498.90	5,498.90	12.22	12.21	-90.19	-0.10	-30.10	30.10	5.67	24.43	1.232	Level 2
5,600.00	5,600.00	5,598.90	5,598.90	12.44	12.44	-90.19	-0.10	-30.10	30.10	5.22	24.88	1.210	Level 2, CC, ES, SF
5,700.00	5,699.98	5,698.35	5,698.33	12.66	12.66	-141.49	1.37	-30.93	32.31	6.99	25.32	1.276	Level 3
5,800.00	5,799.84	5,797.49	5,797.33	12.88	12.88	-139.63	5.84	-33.43	38.99	13.23	25.76	1.514	
5,900.00	5,899.45	5,896.02	5,895.50	13.09	13.10	-137.57	13.23	-37.57	50.16	23.96	26.19	1.915	
6,000.00	5,998.70	5,994.69	5,993.57	13.31	13.32	-136.61	22.63	-42.83	65.18	38.54	26.64	2.447	
6,094.32	6,091.87	6,087.54	6,085.86	13.53	13.53	-137.46	31.52	-47.82	81.69	54.64	27.06	3.019	
6,100.00	6,097.47	6,093.12	6,091.40	13.54	13.54	-137.56	32.05	-48.12	82.76	55.67	27.08	3.056	
6,200.00	6,195.98	6,191.32	6,189.01	13.77	13.77	-138.92	41.48	-53.39	101.51	73.96	27.54	3.685	
6,300.00	6,294.50	6,289.52	6,286.62	14.01	14.00	-139.85	50.86	-58.66	120.29	92.28	28.01	4.295	
6,400.00	6,393.01	6,387.73	6,384.23	14.26	14.22	-140.53	60.27	-63.93	139.10	110.61	28.48	4.883	
6,500.00	6,491.53	6,485.93	6,481.84	14.51	14.46	-141.05	69.68	-69.20	157.92	128.95	28.97	5.452	
6,600.00	6,590.04	6,584.13	6,579.45	14.77	14.69	-141.46	79.08	-74.47	176.76	147.30	29.46	6.000	
6,700.00	6,688.56	6,682.34	6,677.06	15.03	14.93	-141.79	88.49	-79.74	195.60	165.64	29.96	6.529	
6,800.00	6,787.07	6,780.54	6,774.67	15.30	15.16	-142.06	97.89	-85.01	214.44	183.98	30.46	7.039	
6,900.00	6,885.59	6,878.74	6,872.28	15.57	15.40	-142.29	107.30	-90.28	233.29	202.31	30.98	7.531	
7,000.00	6,984.10	6,976.95	6,969.89	15.85	15.64	-142.49	116.71	-95.55	252.14	220.65	31.49	8.006	
7,100.00	7,082.62	7,075.15	7,067.50	16.13	15.89	-142.65	126.11	-100.82	270.99	238.98	32.02	8.464	
7,200.00	7,181.13	7,173.36	7,165.11	16.42	16.13	-142.80	135.52	-106.10	289.85	257.30	32.55	8.905	
7,300.00	7,279.65	7,271.56	7,262.72	16.71	16.38	-142.93	144.92	-111.37	308.71	275.63	33.08	9.331	
7,323.48	7,302.78	7,294.62	7,285.65	16.78	16.43	-142.95	147.13	-112.60	313.14	279.93	33.21	9.429	
7,350.00	7,328.93	7,320.62	7,311.49	16.85	16.50	-158.73	149.62	-114.00	318.31	284.96	33.35	9.546	
7,400.00	7,378.25	7,369.30	7,359.87	16.96	16.62	171.73	154.29	-116.61	328.97	295.38	33.59	9.795	

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



Anticollision Report



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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	
7,450.00	7,427.25	7,417.29	7,407.69	17.08	16.72	151.25	157.30	-119.20	340.88	307.08	33.80	10.085	
7,500.00	7,475.57	7,465.46	7,455.76	17.19	16.81	138.96	156.31	-121.80	354.03	320.04	33.99	10.415	
7,550.00	7,522.84	7,513.86	7,503.81	17.29	16.88	131.26	151.25	-124.42	368.32	334.14	34.17	10.778	
7,600.00	7,568.70	7,562.51	7,551.50	17.40	16.94	125.98	142.09	-127.02	383.62	349.27	34.34	11.170	
7,650.00	7,612.80	7,611.46	7,598.54	17.50	17.00	122.03	128.82	-129.60	399.82	365.31	34.51	11.587	
7,700.00	7,654.81	7,660.76	7,644.58	17.61	17.06	118.87	111.45	-132.13	416.80	382.13	34.67	12.023	
7,750.00	7,694.40	7,710.46	7,689.32	17.73	17.11	116.19	89.98	-134.60	434.43	399.59	34.83	12.471	
7,800.00	7,731.27	7,760.65	7,732.45	17.85	17.16	113.83	64.44	-136.98	452.57	417.56	35.01	12.926	
7,850.00	7,765.15	7,811.41	7,773.63	18.00	17.21	111.67	34.87	-139.28	471.10	435.89	35.21	13.380	
7,900.00	7,795.77	7,862.84	7,812.52	18.17	17.26	109.68	1.31	-141.45	489.88	454.45	35.43	13.826	
7,950.00	7,822.91	7,915.05	7,848.76	18.38	17.32	107.80	-36.18	-143.49	508.75	473.06	35.69	14.254	
8,000.00	7,846.34	7,968.14	7,881.96	18.62	17.38	106.04	-77.54	-145.37	527.58	491.58	36.01	14.653	
8,050.00	7,865.91	8,022.23	7,911.71	18.91	17.51	104.37	-122.66	-147.08	546.22	509.80	36.42	14.999	
8,100.00	7,881.46	8,077.42	7,937.55	19.24	17.70	102.79	-171.38	-148.58	564.50	527.56	36.94	15.283	
8,150.00	7,892.86	8,133.81	7,958.99	19.61	17.94	101.31	-223.49	-149.84	582.28	544.73	37.55	15.687	
8,200.00	7,900.04	8,191.47	7,975.53	20.03	18.23	99.92	-278.69	-150.85	599.40	561.14	38.26	15.667	
8,250.00	7,902.94	8,250.45	7,986.62	20.48	18.58	98.64	-336.59	-151.57	615.70	576.64	39.06	15.764	
8,258.16	7,903.00	8,260.20	7,987.88	20.55	18.65	98.44	-346.27	-151.66	618.27	579.07	39.20	15.772	
8,300.00	7,903.04	8,311.00	7,991.76	20.94	18.99	98.52	-396.89	-151.97	630.48	590.55	39.93	15.789	
8,400.00	7,903.13	8,412.08	7,992.17	21.87	19.79	98.10	-497.97	-152.20	653.55	611.88	41.66	15.687	
8,500.00	7,903.21	8,510.71	7,992.30	22.85	20.70	97.81	-596.60	-152.40	669.81	626.26	43.55	15.380	
8,600.00	7,903.30	8,610.23	7,992.43	23.87	21.72	97.65	-696.12	-152.61	679.22	633.63	45.59	14.897	
8,688.55	7,903.37	8,698.73	7,992.55	24.79	22.71	97.61	-784.62	-152.80	681.79	634.29	47.50	14.353	
8,700.00	7,903.38	8,710.18	7,992.56	24.92	22.85	97.61	-796.07	-152.82	681.77	634.01	47.76	14.274	
8,800.00	7,903.46	8,810.18	7,992.69	26.03	24.06	97.62	-896.07	-153.03	681.61	631.53	50.09	13.608	
8,900.00	7,903.54	8,910.18	7,992.83	27.21	25.35	97.62	-996.07	-153.24	681.46	628.90	52.56	12.966	
9,000.00	7,903.62	9,010.18	7,992.96	28.46	26.69	97.63	-1,096.07	-153.45	681.30	626.14	55.16	12.352	
9,100.00	7,903.70	9,110.18	7,993.09	29.77	28.10	97.63	-1,196.07	-153.66	681.14	623.27	57.87	11.770	
9,200.00	7,903.78	9,210.18	7,993.22	31.13	29.55	97.64	-1,296.07	-153.87	680.98	620.30	60.68	11.223	
9,300.00	7,903.86	9,310.18	7,993.35	32.53	31.04	97.65	-1,396.07	-154.08	680.82	617.25	63.57	10.710	
9,400.00	7,903.94	9,410.18	7,993.48	33.98	32.56	97.65	-1,496.07	-154.29	680.66	614.13	66.53	10.230	
9,500.00	7,904.02	9,510.18	7,993.61	35.45	34.11	97.66	-1,596.07	-154.50	680.51	610.94	69.56	9.782	
9,600.00	7,904.10	9,610.18	7,993.74	36.96	35.69	97.66	-1,696.07	-154.71	680.35	607.70	72.65	9.365	
9,700.00	7,904.18	9,710.18	7,993.87	38.50	37.29	97.67	-1,796.07	-154.92	680.19	604.40	75.79	8.975	
9,800.00	7,904.26	9,810.18	7,994.00	40.06	38.91	97.68	-1,896.07	-155.13	680.03	601.06	78.97	8.611	
9,900.00	7,904.34	9,910.18	7,994.14	41.64	40.55	97.68	-1,996.07	-155.34	679.87	597.69	82.19	8.272	
10,000.00	7,904.42	10,010.18	7,994.27	43.24	42.20	97.69	-2,096.07	-155.55	679.72	594.27	85.44	7.955	
10,100.00	7,904.50	10,110.18	7,994.40	44.86	43.87	97.70	-2,196.07	-155.75	679.56	590.83	88.73	7.659	
10,200.00	7,904.58	10,210.18	7,994.53	46.49	45.55	97.70	-2,296.07	-155.96	679.40	587.36	92.04	7.382	
10,300.00	7,904.66	10,310.18	7,994.66	48.14	47.24	97.71	-2,396.06	-156.17	679.24	583.87	95.38	7.122	
10,400.00	7,904.74	10,410.18	7,994.79	49.80	48.94	97.71	-2,496.06	-156.38	679.08	580.35	98.73	6.878	
10,500.00	7,904.82	10,510.18	7,994.92	51.47	50.65	97.72	-2,596.06	-156.59	678.93	576.81	102.11	6.649	
10,600.00	7,904.90	10,610.18	7,995.05	53.15	52.36	97.73	-2,696.06	-156.80	678.77	573.26	105.51	6.433	
10,700.00	7,904.98	10,710.18	7,995.18	54.84	54.09	97.73	-2,796.06	-157.01	678.61	569.69	108.92	6.230	
10,800.00	7,905.06	10,810.18	7,995.32	56.53	55.82	97.74	-2,896.06	-157.22	678.45	566.10	112.35	6.039	
10,900.00	7,905.15	10,910.18	7,995.45	58.24	57.55	97.74	-2,996.06	-157.43	678.29	562.50	115.79	5.858	
11,000.00	7,905.23	11,010.18	7,995.58	59.95	59.29	97.75	-3,096.06	-157.64	678.14	558.89	119.25	5.687	
11,100.00	7,905.31	11,110.18	7,995.71	61.67	61.04	97.76	-3,196.06	-157.85	677.98	555.26	122.71	5.525	
11,200.00	7,905.39	11,210.18	7,995.84	63.40	62.79	97.76	-3,296.06	-158.06	677.82	551.63	126.19	5.371	
11,300.00	7,905.47	11,310.18	7,995.97	65.13	64.55	97.77	-3,396.06	-158.27	677.66	547.99	129.67	5.226	
11,400.00	7,905.55	11,410.18	7,996.10	66.86	66.30	97.77	-3,496.06	-158.48	677.50	544.34	133.17	5.088	
11,500.00	7,905.63	11,510.18	7,996.23	68.60	68.07	97.78	-3,596.06	-158.69	677.35	540.67	136.67	4.956	

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



Anticollision Report



Company: COG Operating L L C
Project: Eddy County, NM (NAD 27 NME)
Reference Site: Sec. 05, T 26 S., R 28 E
Site Error: 0.00 usft
Reference Well: SRO 5 State Com 506H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Plan #1

Local Co-ordinate Reference: Well SRO 5 State Com 506H
TVD Reference: KB=30' @ 3040.50usft (Nabors 894)
MD Reference: KB=30' @ 3040.50usft (Nabors 894)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1
Offset TVD Reference: Offset Datum

Offset Design Sec. 05, T 26 S., R 28 E - SRO 5 State Com 507H - Wellbore #1 - Plan #1													Offset Site Error: 0.00 usft
Survey Program: 0-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
11,600.00	7,905.71	11,610.18	7,996.36	70.35	69.83	97.79	-3,696.06	-158.90	677.19	537.01	140.18	4.831	
11,700.00	7,905.79	11,710.18	7,996.49	72.10	71.60	97.79	-3,796.06	-159.11	677.03	533.33	143.70	4.712	
11,800.00	7,905.87	11,810.18	7,996.63	73.85	73.37	97.80	-3,896.06	-159.32	676.87	529.65	147.22	4.598	
11,900.00	7,905.95	11,910.18	7,996.76	75.60	75.15	97.81	-3,996.06	-159.52	676.71	525.96	150.75	4.489	
12,000.00	7,906.03	12,010.18	7,996.89	77.36	76.92	97.81	-4,096.06	-159.73	676.56	522.27	154.28	4.385	
12,100.00	7,906.11	12,110.18	7,997.02	79.12	78.70	97.82	-4,196.06	-159.94	676.40	518.57	157.83	4.286	
12,200.00	7,906.19	12,210.18	7,997.15	80.89	80.48	97.82	-4,296.06	-160.15	676.24	514.87	161.37	4.191	
12,300.00	7,906.27	12,310.18	7,997.28	82.66	82.26	97.83	-4,396.06	-160.36	676.08	511.16	164.92	4.099	
12,400.00	7,906.35	12,410.18	7,997.41	84.43	84.05	97.84	-4,496.06	-160.57	675.92	507.45	168.47	4.012	
12,500.00	7,906.43	12,510.18	7,997.54	86.20	85.83	97.84	-4,596.05	-160.78	675.77	503.73	172.03	3.928	
12,600.00	7,906.51	12,610.18	7,997.67	87.97	87.62	97.85	-4,696.05	-160.99	675.61	500.01	175.59	3.848	
12,700.00	7,906.59	12,710.18	7,997.81	89.75	89.41	97.86	-4,796.05	-161.20	675.45	496.29	179.16	3.770	
12,800.00	7,906.67	12,810.18	7,997.94	91.53	91.20	97.86	-4,896.05	-161.41	675.29	492.56	182.73	3.696	
12,900.00	7,906.75	12,910.18	7,998.07	93.31	92.99	97.87	-4,996.05	-161.62	675.13	488.83	186.30	3.624	
13,000.00	7,906.83	13,010.18	7,998.20	95.09	94.79	97.87	-5,096.05	-161.83	674.98	485.10	189.88	3.555	
13,100.00	7,906.91	13,110.18	7,998.33	96.87	96.58	97.88	-5,196.05	-162.04	674.82	481.37	193.45	3.488	
13,200.00	7,906.99	13,210.18	7,998.46	98.66	98.38	97.89	-5,296.05	-162.25	674.66	477.63	197.03	3.424	
13,300.00	7,907.07	13,310.18	7,998.59	100.44	100.17	97.89	-5,396.05	-162.46	674.50	473.89	200.62	3.362	
13,400.00	7,907.15	13,410.18	7,998.72	102.23	101.97	97.90	-5,496.05	-162.67	674.34	470.14	204.20	3.302	
13,500.00	7,907.24	13,510.18	7,998.85	104.02	103.77	97.90	-5,596.05	-162.88	674.19	466.40	207.79	3.245	
13,600.00	7,907.32	13,610.18	7,998.98	105.81	105.57	97.91	-5,696.05	-163.09	674.03	462.65	211.38	3.189	
13,700.00	7,907.40	13,710.17	7,999.12	107.60	107.37	97.92	-5,796.05	-163.30	673.87	458.90	214.97	3.135	
13,800.00	7,907.48	13,810.17	7,999.25	109.39	109.17	97.92	-5,896.05	-163.50	673.71	455.15	218.56	3.082	
13,900.00	7,907.56	13,910.17	7,999.38	111.19	110.97	97.93	-5,996.05	-163.71	673.56	451.40	222.16	3.032	
14,000.00	7,907.64	14,010.17	7,999.51	112.98	112.78	97.94	-6,096.05	-163.92	673.40	447.64	225.76	2.983	
14,100.00	7,907.72	14,110.17	7,999.64	114.78	114.58	97.94	-6,196.05	-164.13	673.24	443.88	229.36	2.935	
14,200.00	7,907.80	14,210.17	7,999.77	116.57	116.38	97.95	-6,296.05	-164.34	673.08	440.13	232.96	2.889	
14,300.00	7,907.88	14,310.17	7,999.90	118.37	118.19	97.95	-6,396.05	-164.55	672.92	436.37	236.56	2.845	
14,400.00	7,907.96	14,410.17	8,000.03	120.17	119.99	97.96	-6,496.05	-164.76	672.77	432.60	240.16	2.801	
14,500.00	7,908.04	14,510.17	8,000.16	121.97	121.80	97.97	-6,596.05	-164.97	672.61	428.84	243.77	2.759	
14,600.00	7,908.12	14,610.17	8,000.30	123.77	123.61	97.97	-6,696.05	-165.18	672.45	425.08	247.37	2.718	
14,700.00	7,908.20	14,710.17	8,000.43	125.57	125.41	97.98	-6,796.04	-165.39	672.29	421.31	250.98	2.679	
14,800.00	7,908.28	14,810.17	8,000.56	127.37	127.22	97.99	-6,896.04	-165.60	672.14	417.55	254.59	2.640	
14,900.00	7,908.36	14,910.17	8,000.69	129.17	129.03	97.99	-6,996.04	-165.81	671.98	413.78	258.20	2.603	
15,000.00	7,908.44	15,010.17	8,000.82	130.97	130.84	98.00	-7,096.04	-166.02	671.82	410.01	261.81	2.566	
15,100.00	7,908.52	15,110.17	8,000.95	132.78	132.65	98.00	-7,196.04	-166.23	671.66	406.24	265.42	2.531	
15,200.00	7,908.60	15,210.17	8,001.08	134.58	134.46	98.01	-7,296.04	-166.44	671.50	402.47	269.04	2.496	
15,300.00	7,908.68	15,310.17	8,001.21	136.38	136.27	98.02	-7,396.04	-166.65	671.35	398.70	272.65	2.462	
15,400.00	7,908.76	15,410.17	8,001.34	138.19	138.08	98.02	-7,496.04	-166.86	671.19	394.92	276.26	2.430	
15,500.00	7,908.84	15,510.17	8,001.47	139.99	139.89	98.03	-7,596.04	-167.07	671.03	391.15	279.88	2.398	
15,600.00	7,908.92	15,610.17	8,001.61	141.80	141.70	98.04	-7,696.04	-167.27	670.87	387.38	283.50	2.366	
15,700.00	7,909.00	15,710.17	8,001.74	143.60	143.51	98.04	-7,796.04	-167.48	670.72	383.60	287.12	2.336	
15,800.00	7,909.08	15,810.17	8,001.87	145.41	145.32	98.05	-7,896.04	-167.69	670.56	379.82	290.73	2.306	
15,900.00	7,909.16	15,910.17	8,002.00	147.22	147.13	98.05	-7,996.04	-167.90	670.40	376.05	294.35	2.278	
16,000.00	7,909.24	16,010.17	8,002.13	149.03	148.95	98.06	-8,096.04	-168.11	670.24	372.27	297.97	2.249	
16,100.00	7,909.33	16,110.17	8,002.26	150.83	150.76	98.07	-8,196.04	-168.32	670.09	368.49	301.59	2.222	
16,200.00	7,909.41	16,210.17	8,002.39	152.64	152.57	98.07	-8,296.04	-168.53	669.93	364.71	305.22	2.195	
16,300.00	7,909.49	16,310.17	8,002.52	154.45	154.39	98.08	-8,396.04	-168.74	669.77	360.93	308.84	2.169	
16,400.00	7,909.57	16,410.17	8,002.65	156.26	156.20	98.09	-8,496.04	-168.95	669.61	357.15	312.46	2.143	
16,500.00	7,909.65	16,510.17	8,002.79	158.07	158.01	98.09	-8,596.04	-169.16	669.46	353.37	316.08	2.118	
16,600.00	7,909.73	16,610.17	8,002.92	159.88	159.83	98.10	-8,696.04	-169.37	669.30	349.59	319.71	2.093	
16,700.00	7,909.81	16,710.17	8,003.05	161.69	161.64	98.10	-8,796.04	-169.58	669.14	345.81	323.33	2.070	

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

Company: COG Operating L L C
Project: Eddy County, NM (NAD 27 NME)
Reference Site: Sec. 05, T 26 S. , R 28 E
Site Error: 0.00 usft
Reference Well: SRO 5 State Com 506H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Plan #1

Local Co-ordinate Reference: Well SRO 5 State Com 506H
TVD Reference: KB=30' @ 3040.50usft (Nabors 894)
MD Reference: KB=30' @ 3040.50usft (Nabors 894)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1
Offset TVD Reference: Offset Datum

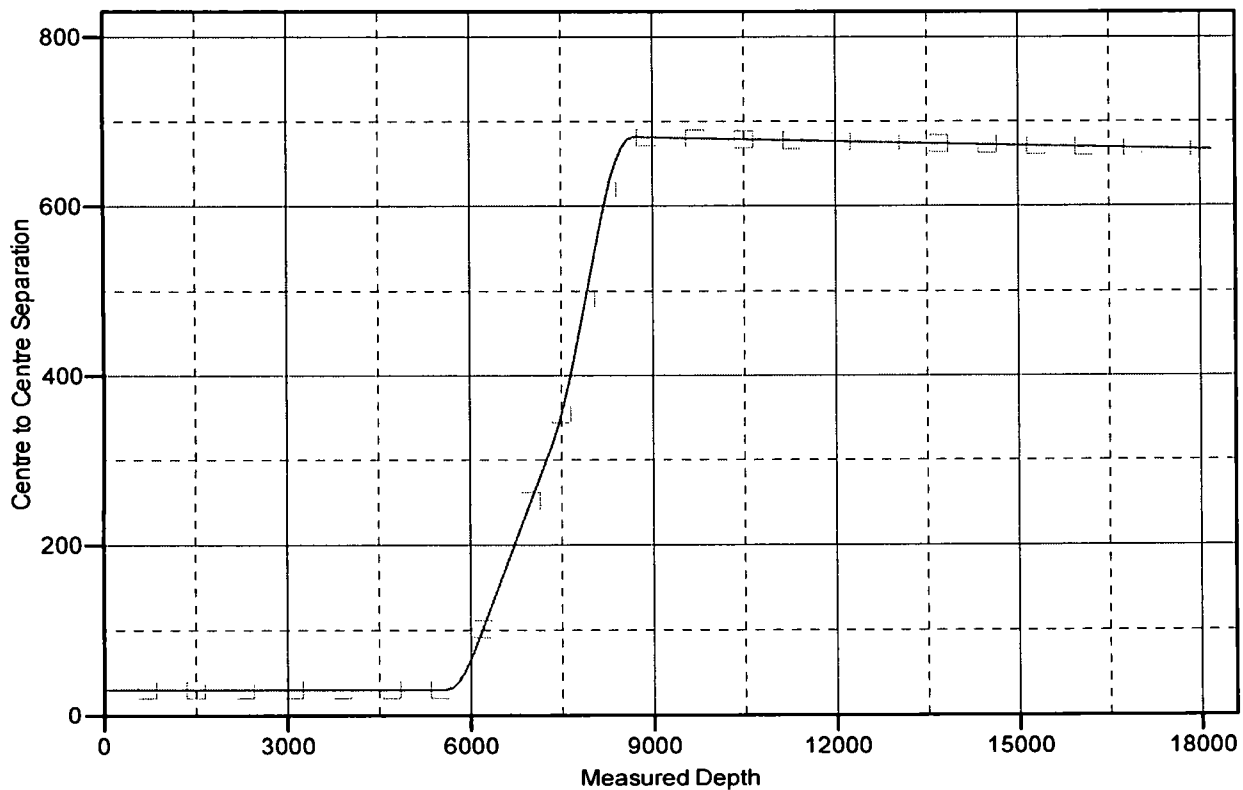
Offset Design Sec. 05, T 26 S. , R 28 E - SRO 5 State Com 507H - Wellbore #1 - Plan #1													Offset Site Error: 0.00 usft
Survey Program: 0-MWD													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)					
16,800.00	7,909.89	16,810.17	8,003.18	163.50	163.46	98.11	-8,896.04	-169.79	668.98	342.02	326.96	2.046	
16,900.00	7,909.97	16,910.17	8,003.31	165.31	165.27	98.12	-8,996.03	-170.00	668.82	338.24	330.58	2.023	
17,000.00	7,910.05	17,010.17	8,003.44	167.12	167.09	98.12	-9,096.03	-170.21	668.67	334.46	334.21	2.001	
17,100.00	7,910.13	17,110.17	8,003.57	168.93	168.90	98.13	-9,196.03	-170.42	668.51	330.67	337.84	1.979	
17,200.00	7,910.21	17,210.17	8,003.70	170.75	170.72	98.14	-9,296.03	-170.63	668.35	326.89	341.46	1.957	
17,300.00	7,910.29	17,310.17	8,003.83	172.56	172.53	98.14	-9,396.03	-170.84	668.19	323.10	345.09	1.936	
17,400.00	7,910.37	17,410.17	8,003.96	174.37	174.35	98.15	-9,496.03	-171.05	668.04	319.32	348.72	1.916	
17,500.00	7,910.45	17,510.17	8,004.10	176.18	176.17	98.16	-9,596.03	-171.25	667.88	315.53	352.35	1.896	
17,600.00	7,910.53	17,610.17	8,004.23	177.99	177.98	98.16	-9,696.03	-171.46	667.72	311.74	355.98	1.876	
17,700.00	7,910.61	17,710.17	8,004.36	179.81	179.80	98.17	-9,796.03	-171.67	667.56	307.96	359.61	1.856	
17,800.00	7,910.69	17,810.17	8,004.49	181.62	181.62	98.17	-9,896.03	-171.88	667.41	304.17	363.24	1.837	
17,900.00	7,910.77	17,910.17	8,004.62	183.43	183.43	98.18	-9,996.03	-172.09	667.25	300.38	366.87	1.819	
18,000.00	7,910.85	18,010.17	8,004.75	185.25	185.25	98.19	-10,096.03	-172.30	667.09	296.59	370.50	1.801	
18,100.00	7,910.93	18,110.17	8,004.88	187.06	187.07	98.19	-10,196.03	-172.51	666.93	292.80	374.13	1.783	
18,183.46	7,911.00	18,193.63	8,004.99	188.58	188.58	98.20	-10,279.49	-172.69	666.80	289.64	377.16	1.768	

Company: COG Operating L L C
Project: Eddy County, NM (NAD 27 NME)
Reference Site: Sec. 05, T 26 S., R 28 E
Site Error: 0.00 usft
Reference Well: SRO 5 State Com 506H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Plan #1

Local Co-ordinate Reference: Well SRO 5 State Com 506H
TVD Reference: KB=30' @ 3040.50usft (Nabors 894)
MD Reference: KB=30' @ 3040.50usft (Nabors 894)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1
Offset TVD Reference: Offset Datum

Reference Depths are relative to KB=30' @ 3040.50usft (Nabors 894) Coordinates are relative to: SRO 5 State Com 506H
 Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
 Central Meridian is -104.33334 Grid Convergence at Surface is: 0.12°

Ladder Plot



LEGEND

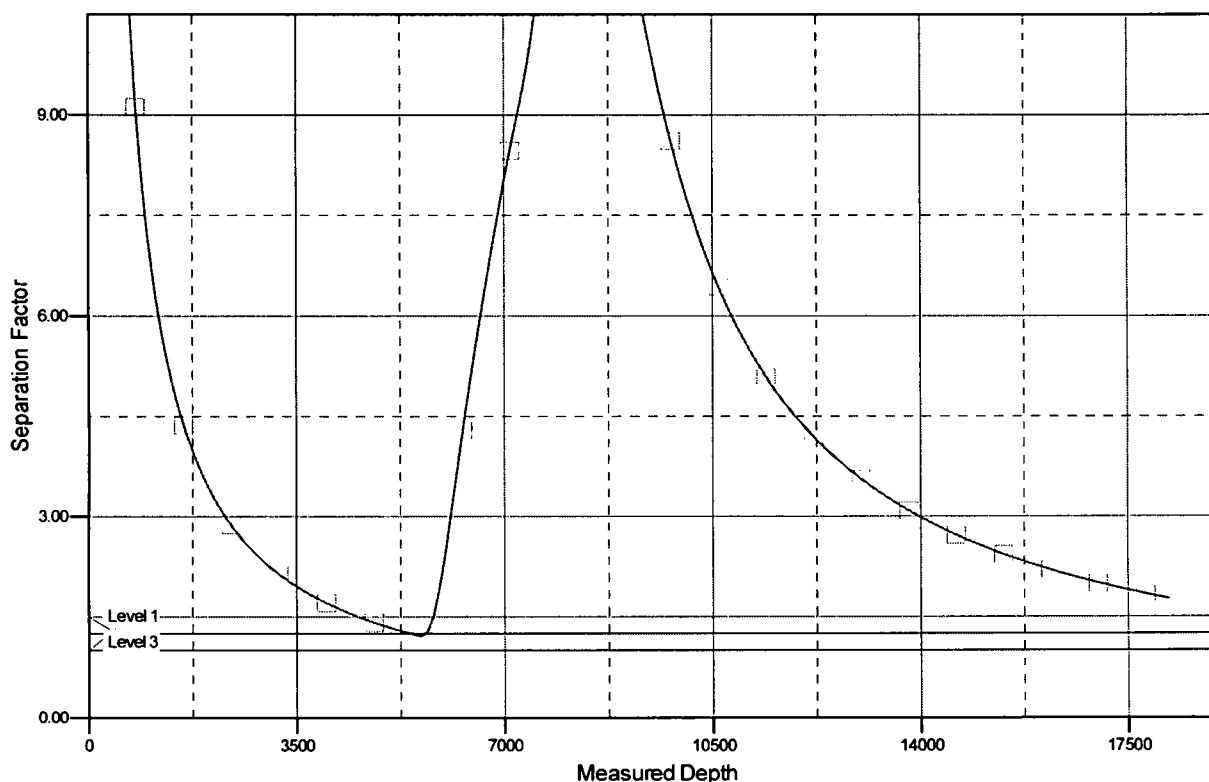
SRO 5 State Com 507H, Wellbore #1, Plan #1 V0

Company: COG Operating L L C
Project: Eddy County, NM (NAD 27 NME)
Reference Site: Sec. 05, T 26 S., R 28 E
Site Error: 0.00 usft
Reference Well: SRO 5 State Com 506H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Plan #1

Local Co-ordinate Reference: Well SRO 5 State Com 506H
TVD Reference: KB=30' @ 3040.50usft (Nabors 894)
MD Reference: KB=30' @ 3040.50usft (Nabors 894)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1
Offset TVD Reference: Offset Datum

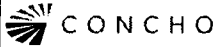
Reference Depths are relative to KB=30' @ 3040.50usft (Nabors 894) Coordinates are relative to: SRO 5 State Com 506H
 Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
 Central Meridian is -104.33334 Grid Convergence at Surface is: 0.12°

Separation Factor Plot



LEGEND

SRO 5 State Com 507H, Wellbore #1, Plan #1 V0



COG Operating L L C
Project: Eddy County, NM (NAD 27 NME)
Site: Sec. 05, T 26 S., R 28 E
Well: SRO 5 State Com 506H
Wellbore: Wellbore #1
Plan: Plan #1 (SRO 5 State Com 506H/Wellbore #1)
Nabors 894

WELL DETAILS: SRO 5 State Com 506H

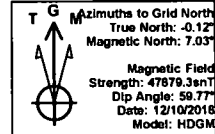
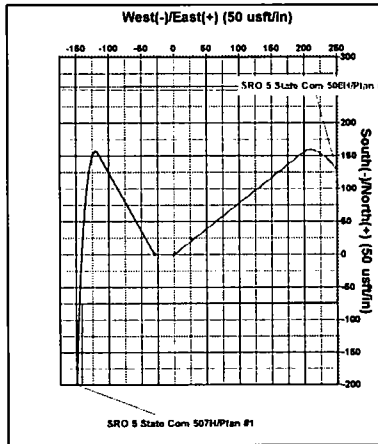
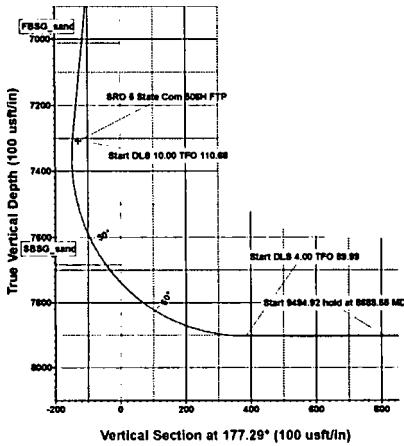
Ground Elevation:: 3010.50
RKB Elevation: KB=30' @ 3040.50usft (Nabors 894)
Rig Name: Nabors 894

Northing 392213.00 Easting 569975.00 Latitude 32.07811 Longitude -104.10741

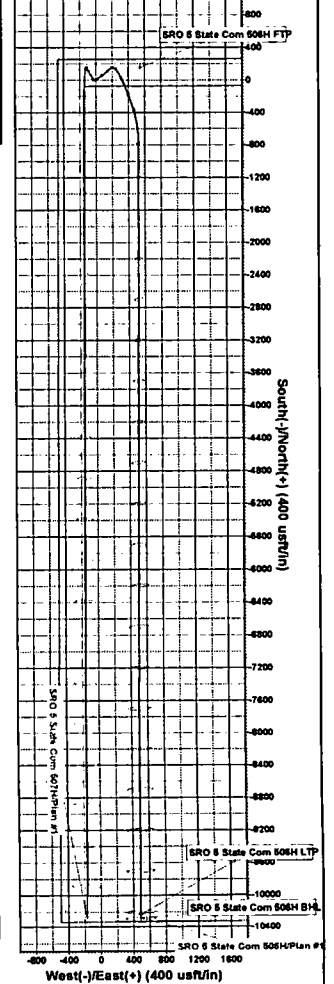


Planned Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Start Build 2.00
2	5600.00	0.00	0.00	5600.00	0.00	0.00	0.00	0.00	0.00	Start DLS 10.00 TFO 110.66
3	6094.32	9.89	52.06	6091.87	28.15	33.55	2.00	52.06	-24.54	Start DLS 4.00 TFO 89.99
4	7323.48	9.89	52.06	7302.78	155.90	200.00	0.00	0.00	-148.26	Start 9494.92 hold at 8688.55 MD
5	8258.18	89.95	163.00	7903.00	-361.98	460.41	10.00	110.66	383.37	TD at 18183.48
6	8688.55	89.95	180.22	7903.37	-786.15	522.99	4.00	89.99	810.03	
7	18183.48	89.95	180.22	7911.00	-10281.00	487.30	0.00	0.00	10292.54	



PROJECT DETAILS: Eddy County, NM (NAD 27 NME)
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1886
Zone: New Mexico East 3001
System Datum: Mean Sea Level
Local North: Grid



Vertical Section at 177.29° (250 usft/in)