



March 17, 2015

NM OIL CONSERVATION
ARTESIA DISTRICT

MAY 07 2015

RECEIVED

Concho Resources, Inc.
One Concho Center
600 W. Illinois Avenue
Midland, Texas 79701

15-4565

Attn: Kanicia Castillo

RE: **Munds 1 Federal Com 12H**

Please find enclosed a copy of the survey from 0.00' to 3795.00' ran on the above referenced well.

If I can be of any further service, please do not hesitate to call me at 800-606-4976.

Sincerely,

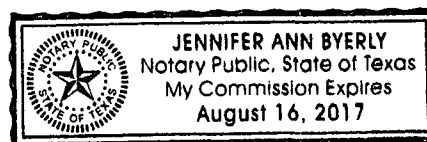
Kimberly D Moller
Operations

STATE OF TEXAS §

§

COUNTY OF NUECES §

This instrument was acknowledged before me on the 17 day of March, A.D., 2015, by Kimberly D Moller.

Jennifer Ann Byerly
Notary Public, State of Texas



Company: COG Operating
Lease/Well: Munds 1 Federal Com/12H

Rig Name: United 43
State/County: New Mexico/Eddy
Latitude: 32.87, Longitude: -104.02
GRID North is 0.17 Degrees East of True North
VS-Azi: 0.00 Degrees



Depth Reference : RKB: 12.5'

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: gyro.ut
Minimum Curvature Method
Report Date/Time: 3/17/2015 / 14:15

VES Survey International
Midland, TX
(432)-563-5444

Surveyor: Tim Dillon
Munds 1 Federal Com 12H / API 30-015-41565

NM OIL CONSERVATION
ARTESIA DISTRICT

MAY 07 2015

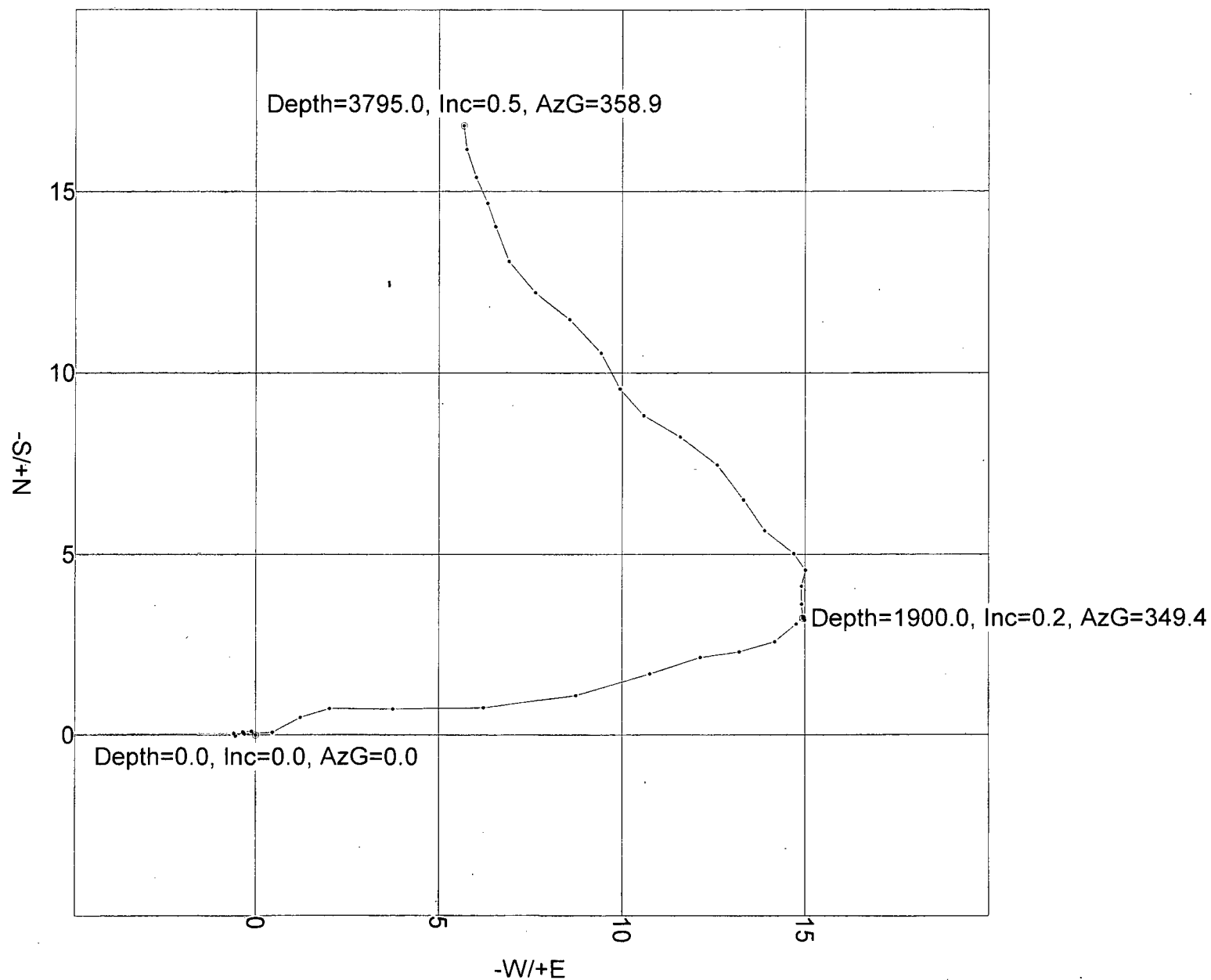
RECEIVED

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
100.00	0.18	312.43	100.00	0.11	-0.12	0.11	0.16	312.43	0.18
200.00	0.19	222.17	200.00	0.09	-0.34	0.09	0.36	284.86	0.26
300.00	0.09	270.24	300.00	-0.03	-0.53	-0.03	0.53	266.72	0.15
400.00	0.10	17.14	400.00	0.05	-0.58	0.05	0.59	274.82	0.15
500.00	0.31	111.12	500.00	0.03	-0.30	0.03	0.31	275.63	0.33
600.00	0.60	73.75	600.00	0.08	0.45	0.08	0.46	80.27	0.40
700.00	0.43	44.16	699.99	0.49	1.22	0.49	1.31	67.95	0.31
800.00	0.62	92.89	799.99	0.74	2.02	0.74	2.15	69.97	0.46
900.00	1.37	88.99	899.97	0.73	3.75	0.73	3.82	78.99	0.75
1000.00	1.48	89.52	999.94	0.76	6.23	0.76	6.28	83.03	0.11
1100.00	1.45	74.87	1099.91	1.10	8.74	1.10	8.81	82.81	0.37
1200.00	0.97	71.66	1199.89	1.70	10.76	1.70	10.90	81.03	0.49
1300.00	0.70	71.88	1299.88	2.15	12.14	2.15	12.33	79.94	0.27
1400.00	0.56	94.24	1399.87	2.31	13.21	2.31	13.41	80.10	0.28
1500.00	0.66	56.31	1499.86	2.59	14.18	2.59	14.42	79.66	0.41
1600.00	0.23	31.85	1599.86	3.08	14.76	3.08	15.08	78.23	0.46
1700.00	0.09	73.69	1699.86	3.27	14.95	3.27	15.30	77.66	0.17
1800.00	0.13	192.45	1799.86	3.18	15.00	3.18	15.33	78.03	0.19

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
1900.00	0.20	349.39	1899.86	3.24	14.94	3.24	15.29	77.76	0.33
2000.00	0.25	0.03	1999.86	3.63	14.91	3.63	15.34	76.31	0.06
2100.00	0.32	359.07	2099.86	4.12	14.90	4.12	15.46	74.53	0.07
2200.00	0.23	35.19	2199.86	4.56	15.01	4.56	15.69	73.10	0.19
2300.00	0.60	304.35	2299.86	5.02	14.70	5.02	15.53	71.14	0.65
2400.00	0.56	312.98	2399.85	5.65	13.90	5.65	15.01	67.89	0.10
2500.00	0.64	337.24	2499.85	6.50	13.33	6.50	14.83	64.00	0.26
2600.00	0.77	311.32	2599.84	7.46	12.61	7.46	14.65	59.38	0.34
2700.00	0.70	303.15	2699.83	8.24	11.59	8.24	14.22	54.59	0.13
2800.00	0.63	297.16	2799.82	8.83	10.59	8.83	13.78	50.18	0.09
2900.00	0.58	342.35	2899.82	9.56	9.94	9.56	13.79	46.13	0.47
3000.00	0.71	324.05	2999.81	10.54	9.42	10.54	14.14	41.80	0.25
3100.00	0.75	311.11	3099.80	11.47	8.57	11.47	14.32	36.75	0.17
3200.00	0.62	304.45	3199.80	12.21	7.63	12.21	14.40	32.02	0.15
3300.00	0.72	333.86	3299.79	13.07	6.91	13.07	14.79	27.87	0.35
3400.00	0.47	346.99	3399.78	14.03	6.55	14.03	15.48	25.02	0.28
3500.00	0.31	332.79	3499.78	14.67	6.33	14.67	15.98	23.34	0.18
3600.00	0.58	338.15	3599.78	15.38	6.02	15.38	16.52	21.36	0.27
3700.00	0.35	346.41	3699.78	16.15	5.76	16.15	17.15	19.61	0.25
3795.00	0.45	358.85	3794.77	16.80	5.68	16.80	17.74	18.68	0.14



VES Survey International
Midland, TX
(432)-563-5444
Surveyor: Tim Dillon
Munds 1 Federal Com 12H / API 30-015-41565



VES Survey Date: 03/05/2015



Standard_report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Munds 1 Federal Com Well No 12H
Project:	Eddy County, New Mexico	TVD Reference:	RKB=3692+12 @ 3704.00usft (United #43)
Site:	Munds 1 Federal Com	MD Reference:	RKB=3692+12 @ 3704.00usft (United #43)
Well:	Munds 1 Federal Com Well No 12H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	Dbase Nov0914

Project: Eddy County, New Mexico			
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site: Munds 1 Federal Com					
Site Position:		Northing:	680,292.40 usft	Latitude:	32.86981315
From:	Map	Easting:	596,285.40 usft	Longitude:	-104.01973417
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.17 °

Well: Munds 1 Federal Com Well No 12H Surf Loc: 890 FNL 295 FEL Sect 13 T 17 S R 29 E Unit 1						
Well Position	+N/-S	0.00 usft	Northing:	679,712.50 usft	Latitude:	32.86822006
	+E/-W	0.00 usft	Easting:	596,180.20 usft	Longitude:	-104.02008240
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,692.00 usft	

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2/23/2015	7.39	60.61	48,583
	IGRF2010	3/5/2015	7.38	60.61	48,580

Design: Surveys/Original Hole				
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	269.00



Standard_report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well Munds-1 Federal Com Well No. 12H
Project:	Eddy County New Mexico	TVD Reference:	RKB=3692+12 @ 3704.00usft (United #43)
Site:	Munds-1 Federal Com	MD Reference:	RKB=3692+12 @ 3704.00usft (United #43)
Well:	Munds-1 Federal Com Well No. 12H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	Dbase Nov0914

Survey Program		Date: 3/16/2015			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.00	3,795.00	Gyro (Original Hole)	NS-GYRO-MS	North sensing gyrocompassing m/s	
3,908.00	8,892.00	MWD (Original Hole)	MWD	MWD - Standard	

Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Northing (usft)	Easting (usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	679,712.50	596,180.20	
100.00	0.18	312.43	100.00	0.11	-0.12	0.18	0.11	679,712.61	596,180.08	
Gyro										
200.00	0.19	222.17	200.00	0.09	-0.34	0.26	0.34	679,712.59	596,179.86	
300.00	0.09	270.24	300.00	-0.03	-0.53	0.15	0.53	679,712.47	596,179.67	
400.00	0.10	17.14	400.00	0.05	-0.59	0.15	0.58	679,712.55	596,179.61	
500.00	0.31	111.12	500.00	0.04	-0.31	0.33	0.31	679,712.54	596,179.89	
600.00	0.60	73.75	600.00	0.09	0.45	0.40	-0.45	679,712.59	596,180.65	
700.00	0.43	44.16	699.99	0.50	1.21	0.31	-1.22	679,713.00	596,181.41	
800.00	0.62	92.89	799.99	0.74	2.01	0.47	-2.03	679,713.24	596,182.21	
900.00	1.37	88.99	899.97	0.74	3.75	0.75	-3.76	679,713.24	596,183.95	
1,000.00	1.48	89.52	999.94	0.77	6.24	0.11	-6.25	679,713.27	596,186.44	
1,100.00	1.45	74.87	1,099.91	1.11	8.75	0.37	-8.77	679,713.61	596,188.95	
1,200.00	0.97	71.66	1,199.89	1.71	10.77	0.48	-10.80	679,714.21	596,190.97	
1,300.00	0.70	71.88	1,299.88	2.16	12.16	0.27	-12.19	679,714.66	596,192.36	
1,400.00	0.56	94.24	1,399.87	2.32	13.22	0.28	-13.26	679,714.82	596,193.42	
1,500.00	0.66	56.31	1,499.86	2.60	14.19	0.41	-14.23	679,715.10	596,194.39	
1,600.00	0.23	31.85	1,599.86	3.09	14.78	0.46	-14.83	679,715.59	596,194.98	
1,700.00	0.09	73.69	1,699.86	3.28	14.96	0.17	-15.01	679,715.78	596,195.16	
1,800.00	0.13	192.45	1,799.86	3.19	15.01	0.19	-15.06	679,715.69	596,195.21	
1,900.00	0.20	349.39	1,899.86	3.25	14.95	0.32	-15.01	679,715.75	596,195.15	



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well Munds 1 Federal Com Well No. 12H
Project:	Eddy County, New Mexico	TVD Reference:	RKB=3692+12 @ 3704:00usft (United #43)
Site:	Munds 1 Federal Com	MD Reference:	RKB=3692+12 @ 3704:00usft (United #43)
Well:	Munds 1 Federal Com Well No. 12H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	Dbase Nov0914

Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Northing (usft)	Easting (usft)	
2,000.00	0.25	0.03	1,999.86	3.64	14.92	0.06	-14.98	679,716.14	596,195.12	
2,100.00	0.32	359.07	2,099.86	4.14	14.92	0.07	-14.99	679,716.64	596,195.12	
2,200.00	0.23	35.19	2,199.86	4.58	15.03	0.19	-15.10	679,717.08	596,195.23	
2,300.00	0.60	304.35	2,299.86	5.04	14.71	0.65	-14.80	679,717.54	596,194.91	
2,400.00	0.56	312.98	2,399.85	5.67	13.92	0.10	-14.02	679,718.17	596,194.12	
2,500.00	0.64	337.24	2,499.84	6.52	13.35	0.26	-13.46	679,719.02	596,193.55	
2,600.00	0.77	311.32	2,599.84	7.48	12.63	0.34	-12.75	679,719.98	596,192.83	
2,700.00	0.70	303.15	2,699.83	8.26	11.61	0.13	-11.75	679,720.76	596,191.81	
2,800.00	0.63	297.16	2,799.82	8.84	10.61	0.10	-10.76	679,721.34	596,190.81	
2,900.00	0.58	342.35	2,899.82	9.58	9.97	0.47	-10.13	679,722.08	596,190.17	
3,000.00	0.71	324.05	2,999.81	10.56	9.45	0.24	-9.63	679,723.06	596,189.65	
3,100.00	0.75	311.11	3,099.80	11.49	8.59	0.17	-8.79	679,723.99	596,188.79	
3,200.00	0.62	304.45	3,199.80	12.23	7.65	0.15	-7.87	679,724.73	596,187.85	
3,300.00	0.72	333.86	3,299.79	13.10	6.93	0.35	-7.16	679,725.60	596,187.13	
3,400.00	0.47	346.99	3,399.78	14.06	6.56	0.28	-6.81	679,726.56	596,186.76	
3,500.00	0.31	332.79	3,499.78	14.70	6.35	0.19	-6.60	679,727.20	596,186.55	
3,600.00	0.58	338.15	3,599.78	15.41	6.03	0.27	-6.30	679,727.91	596,186.23	
3,700.00	0.35	346.41	3,699.78	16.18	5.77	0.24	-6.05	679,728.68	596,185.97	
3,795.00	0.45	358.85	3,794.77	16.83	5.70	0.14	-5.99	679,729.33	596,185.90	
3,908.00	0.10	342.30	3,907.77	17.37	5.66	0.31	-5.96	679,729.87	596,185.86	
Professional Directional Ltd MWD surveys										
3,940.00	0.10	118.20	3,939.77	17.38	5.67	0.58	-5.98	679,729.88	596,185.87	
3,971.00	0.90	241.00	3,970.77	17.25	5.49	3.09	-5.79	679,729.75	596,185.69	
4,003.00	5.00	255.20	4,002.72	16.78	3.92	12.92	-4.21	679,729.28	596,184.12	
4,034.00	10.60	259.20	4,033.42	15.90	-0.19	18.14	-0.08	679,728.40	596,180.01	
4,066.00	16.20	261.80	4,064.54	14.71	-7.51	17.60	7.25	679,727.21	596,172.69	
4,097.00	21.00	262.90	4,093.91	13.40	-17.31	15.52	17.07	679,725.90	596,162.89	



Standard_report



Company:	COG Operating, LLC	Local Co-ordinate/Reference:	Well, Munds 1, Federal Com, Well No. 12H
Project:	Eddy County, New Mexico	TVD Reference:	RKB=3692+12 @ 3704.00usft (United #43)
Site:	Munds 1, Federal Com	MD Reference:	RKB=3692+12 @ 3704.00usft (United #43)
Well:	Munds 1, Federal Com, Well No. 12H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys/Original Hole	Database:	Dbase, Nov0914

Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Northing (usft)	Easting (usft)	
4,129.00	24.90	262.70	4,123.37	11.84	-29.68	12.19	29.47	679,724.34	596,150.52	
4,142.00	26.16	262.96	4,135.10	11.14	-35.24	9.72	35.04	679,723.64	596,144.96	
330 Hard line intercept @ 4142 MD										
4,161.00	28.00	263.30	4,152.02	10.10	-43.83	9.72	43.65	679,722.60	596,136.37	
4,192.00	30.00	264.30	4,179.13	8.49	-58.77	6.64	58.61	679,720.99	596,121.43	
4,223.00	31.50	266.50	4,205.77	7.22	-74.57	6.05	74.43	679,719.72	596,105.63	
4,255.00	33.70	268.70	4,232.73	6.51	-91.79	7.81	91.66	679,719.01	596,088.41	
4,287.00	37.80	268.50	4,258.70	6.05	-110.47	12.82	110.35	679,718.55	596,069.73	
4,318.00	40.60	267.80	4,282.72	5.41	-130.05	9.14	129.94	679,717.91	596,050.15	
4,349.00	44.00	266.10	4,305.64	4.29	-150.88	11.57	150.79	679,716.79	596,029.32	
4,381.00	46.90	264.70	4,328.09	2.46	-173.61	9.58	173.54	679,714.96	596,006.59	
4,412.00	49.70	264.00	4,348.71	0.18	-196.64	9.19	196.61	679,712.68	595,983.56	
4,444.00	52.40	263.20	4,368.83	-2.60	-221.37	8.66	221.38	679,709.90	595,958.83	
4,475.00	55.70	262.80	4,387.02	-5.66	-246.27	10.70	246.33	679,706.84	595,933.93	
4,506.00	58.60	262.60	4,403.84	-8.97	-272.10	9.37	272.22	679,703.53	595,908.10	
4,538.00	61.80	262.50	4,419.74	-12.57	-299.63	10.00	299.81	679,699.93	595,880.57	
4,569.00	64.10	262.50	4,433.83	-16.17	-327.00	7.42	327.24	679,696.33	595,853.20	
4,601.00	67.30	261.40	4,447.00	-20.26	-355.88	10.48	356.18	679,692.24	595,824.32	
4,632.00	71.00	260.90	4,458.03	-24.72	-384.50	12.03	384.87	679,687.78	595,795.70	
4,664.00	72.80	260.40	4,467.97	-29.66	-414.51	5.82	414.96	679,682.84	595,765.69	
4,695.00	75.10	260.70	4,476.54	-34.55	-443.89	7.48	444.43	679,677.95	595,736.31	
4,727.00	77.90	260.10	4,484.01	-39.74	-474.57	8.94	475.19	679,672.76	595,705.63	
4,759.00	80.50	259.10	4,490.01	-45.41	-505.48	8.69	506.20	679,667.09	595,674.72	
4,790.00	83.40	259.50	4,494.35	-51.11	-535.64	9.44	536.45	679,661.39	595,644.56	
4,822.00	86.50	260.70	4,497.17	-56.59	-567.04	10.38	567.94	679,655.91	595,613.16	
4,852.00	89.10	261.80	4,498.32	-61.15	-596.66	9.41	597.64	679,651.35	595,583.54	
4,883.00	89.20	261.80	4,498.78	-65.57	-627.34	0.32	628.39	679,646.93	595,552.86	



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well: Munds:1 Federal Com Well No: 12H
Project:	Eddy County New Mexico	TVD Reference:	RKB=3692+12 @ 3704.00usft (United #43)
Site:	Munds:1 Federal Com	MD Reference:	RKB=3692+12 @ 3704.00usft (United #43)
Well:	Munds:1 Federal Com Well No: 12H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	Dbase Nov09.14

Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Northing (usft)	Easting (usft)	
4,913.00	89.10	261.90	4,499.22	-69.82	-657.04	0.47	658.16	679,642.68	595,523.16	
4,944.00	89.20	261.80	4,499.68	-74.22	-687.72	0.46	688.91	679,638.28	595,492.48	
4,976.00	89.10	262.30	4,500.16	-78.64	-719.41	1.59	720.67	679,633.86	595,460.79	
5,007.00	90.70	263.50	4,500.21	-82.48	-750.17	6.45	751.50	679,630.02	595,430.03	
5,102.00	90.00	267.50	4,499.63	-89.93	-844.86	4.27	846.30	679,622.57	595,335.34	
5,196.00	90.30	267.90	4,499.39	-93.70	-938.78	0.53	940.27	679,618.80	595,241.42	
5,291.00	90.50	269.50	4,498.72	-95.85	-1,033.75	1.70	1,035.26	679,616.65	595,146.45	
5,385.00	90.60	269.80	4,497.82	-96.43	-1,127.74	0.34	1,129.25	679,616.07	595,052.46	
5,480.00	92.20	271.20	4,495.50	-95.60	-1,222.71	2.24	1,224.19	679,616.90	594,957.49	
5,574.00	93.40	272.10	4,490.91	-92.90	-1,316.55	1.60	1,317.97	679,619.60	594,863.65	
5,669.00	93.20	271.70	4,485.44	-89.75	-1,411.34	0.47	1,412.69	679,622.75	594,768.86	
5,763.00	93.10	271.60	4,480.27	-87.05	-1,505.16	0.15	1,506.45	679,625.45	594,675.04	
5,858.00	92.70	271.40	4,475.47	-84.57	-1,600.01	0.47	1,601.24	679,627.93	594,580.19	
5,952.00	92.90	271.20	4,470.88	-82.44	-1,693.87	0.30	1,695.05	679,630.06	594,486.33	
6,046.00	90.90	271.00	4,467.76	-80.63	-1,787.80	2.14	1,788.93	679,631.87	594,392.40	
6,141.00	89.60	270.90	4,467.34	-79.06	-1,882.78	1.37	1,883.87	679,633.44	594,297.42	
6,236.00	90.40	270.00	4,467.34	-78.31	-1,977.78	1.27	1,978.84	679,634.19	594,202.42	
6,330.00	90.10	269.90	4,466.93	-78.39	-2,071.77	0.34	2,072.83	679,634.11	594,108.43	
6,425.00	90.60	269.70	4,466.35	-78.73	-2,166.77	0.57	2,167.82	679,633.77	594,013.43	
6,519.00	90.70	269.40	4,465.29	-79.46	-2,260.76	0.34	2,261.81	679,633.04	593,919.44	
6,613.00	90.60	268.70	4,464.22	-81.02	-2,354.74	0.75	2,355.80	679,631.48	593,825.46	
6,708.00	90.80	268.10	4,463.06	-83.67	-2,449.70	0.67	2,450.79	679,628.83	593,730.50	
6,803.00	91.20	267.40	4,461.40	-87.40	-2,544.61	0.85	2,545.75	679,625.10	593,635.59	
6,897.00	90.50	269.90	4,460.01	-89.62	-2,638.57	2.76	2,639.73	679,622.88	593,541.63	
6,991.00	89.60	270.00	4,459.93	-89.70	-2,732.56	0.96	2,733.71	679,622.80	593,447.64	
7,086.00	88.60	270.00	4,461.42	-89.70	-2,827.55	1.05	2,828.69	679,622.80	593,352.65	
7,180.00	89.10	270.70	4,463.30	-89.13	-2,921.53	0.92	2,922.64	679,623.37	593,258.67	



Standard_report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well: Munds 1 Federal Com Well No. 12H
Project:	Eddy County, New Mexico	TVD Reference:	RKB=3692+12 @ 3704.00usft (United #43)
Site:	Munds 1 Federal Com	MD Reference:	RKB=3692+12 @ 3704.00usft (United #43)
Well:	Munds 1 Federal Com Well No. 12H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	Dbase Nov0914

Survey									
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (%/100usft)	V. Sec (usft)	Northing (usft)	Easting (usft)
7,275.00	89.60	270.60	4,464.38	-88.05	-3,016.52	0.54	3,017.59	679,624.45	593,163.68
7,370.00	90.10	270.10	4,464.63	-87.47	-3,111.51	0.74	3,112.57	679,625.03	593,068.69
7,464.00	90.60	270.80	4,464.06	-86.73	-3,205.51	0.92	3,206.53	679,625.77	592,974.69
7,558.00	91.30	270.80	4,462.50	-85.42	-3,299.49	0.74	3,300.47	679,627.08	592,880.71
7,653.00	91.90	270.70	4,459.85	-84.17	-3,394.44	0.64	3,395.39	679,628.33	592,785.76
7,748.00	92.30	270.30	4,456.36	-83.35	-3,489.37	0.60	3,490.30	679,629.15	592,690.83
7,842.00	93.10	270.60	4,451.94	-82.61	-3,583.27	0.91	3,584.16	679,629.89	592,596.93
7,936.00	92.50	270.40	4,447.34	-81.79	-3,677.15	0.67	3,678.02	679,630.71	592,503.05
8,030.00	91.60	270.20	4,443.98	-81.30	-3,771.09	0.98	3,771.93	679,631.20	592,409.11
8,125.00	91.30	270.30	4,441.58	-80.88	-3,866.05	0.33	3,866.88	679,631.62	592,314.15
8,220.00	91.30	269.50	4,439.42	-81.05	-3,961.03	0.84	3,961.84	679,631.45	592,219.17
8,314.00	91.30	269.80	4,437.29	-81.62	-4,055.00	0.32	4,055.81	679,630.88	592,125.20
8,409.00	90.90	269.30	4,435.47	-82.37	-4,149.98	0.67	4,150.79	679,630.13	592,030.22
8,503.00	90.50	268.90	4,434.32	-83.85	-4,243.96	0.60	4,244.78	679,628.65	591,936.24
8,598.00	91.10	270.50	4,432.99	-84.34	-4,338.95	1.80	4,339.76	679,628.16	591,841.25
8,692.00	91.20	270.40	4,431.10	-83.60	-4,432.93	0.15	4,433.71	679,628.90	591,747.27
8,787.00	91.30	270.40	4,429.03	-82.94	-4,527.90	0.11	4,528.66	679,629.56	591,652.30
8,823.00	91.30	270.50	4,428.22	-82.66	-4,563.89	0.28	4,564.64	679,629.84	591,616.31
8,892.00	91.30	270.50	4,426.65	-82.06	-4,632.87	0.00	4,633.60	679,630.44	591,547.33
Survey projected to 8892.00 MD									



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Site:	Munds 1 Federal Com	MD Reference:	RKB=3692+12 @ 3704.00usft (United #43)
Well:	Munds 1 Federal Com Well No. 12H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	Dbase Nov0914

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
100.00	100.00	0.11	-0.12	Gyro
3,908.00	3,907.77	17.37	5.66	Professional Directional Ltd MWD surveys
4,142.00	4,135.10	11.14	-35.24	330 Hard line intercept @ 4142 MD
8,892.00	4,426.65	-82.06	-4,632.87	Survey projected to 8892.00 MD