

RECEIVED

JUL 22 15

COG
ARTESIA WEST



July 14, 2015

30-015-42412

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

NM OIL CONSERVATION
ARTESIA DISTRICT

OCT 01 2015

RECEIVED

Attn: Kanicia Castillo

RE: Airbus Federal No 003H

Please find enclosed a copy of the survey from 0.00' to 8210.00' 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.

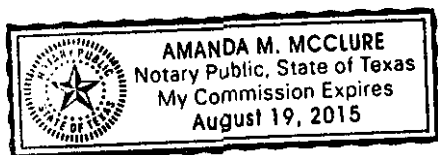
Sincerely,

Kimberly D Moller

Kimberly D Moller
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

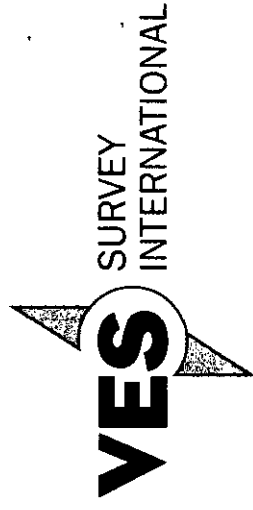
This instrument was acknowledged before me on the 14 day of July, A.D., 2015, by Kimberly D Moller.



Amanda McClure
Amanda McClure
Notary Public, State of Texas



Company: COG Operating
Lease/Well: Airbus 12 Federal/No 003H



Rig Name: Patriot # 6
State/County: New Mexico /Eddy
VS-Azi: 0.00 Degrees
Latitude: 32.68166, Longitude: -103.82450
Grid North = True North -0.27 degs
Grid Convergence Applied = -0.27 degs

Depth Reference : R.K.B = 18 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: airbus 12 federal 3h -de_01.ut
Minimum Curvature Method

Report Date/Time: 7/14/2015 / 09:33

VES Survey International
(432) 563-5444
West Texas

Surveyor: Javier Estrada

Airbus 12 Federal No 003H / API 30-015-42412

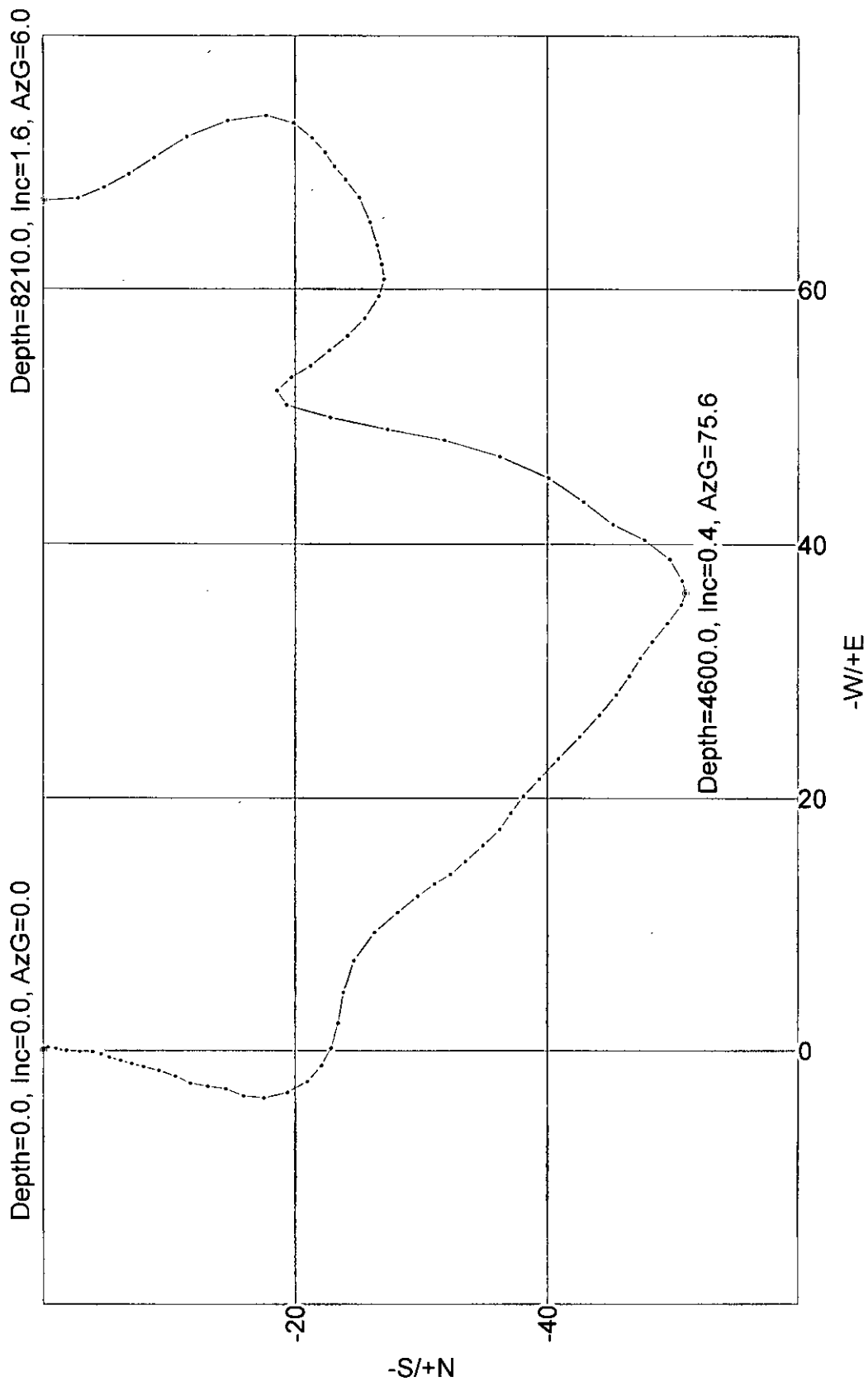
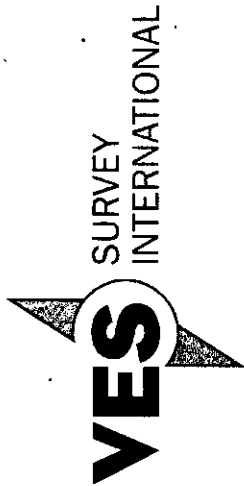
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
100.00	0.18	107.34	100.00	-0.05	0.15	-0.05	0.16	107.34	0.18
200.00	0.33	190.33	200.00	-0.37	0.25	-0.37	0.45	145.87	0.35
300.00	0.37	185.54	300.00	-0.97	0.17	-0.97	0.99	170.02	0.05
400.00	0.65	194.07	399.99	-1.85	0.00	-1.85	1.85	179.93	0.29
500.00	0.59	173.94	499.99	-2.91	-0.08	-2.91	2.91	181.59	0.22
600.00	0.59	189.77	599.98	-3.94	-0.11	-3.94	3.94	181.66	0.16
700.00	0.20	208.34	699.98	-4.60	-0.29	-4.60	4.61	183.56	0.41
800.00	0.61	200.49	799.98	-5.26	-0.56	-5.26	5.29	186.04	0.41
900.00	0.46	191.08	899.97	-6.15	-0.82	-6.15	6.20	187.59	0.17
1000.00	0.59	197.27	999.97	-7.03	-1.05	-7.03	7.11	188.48	0.14
1100.00	0.52	189.67	1099.96	-7.96	-1.27	-7.96	8.06	189.10	0.10
1200.00	0.94	195.01	1199.96	-9.19	-1.56	-9.19	9.33	189.65	0.43
1300.00	0.67	206.04	1299.95	-10.51	-2.03	-10.51	10.70	190.93	0.31
1400.00	0.83	205.95	1399.94	-11.68	-2.60	-11.68	11.97	192.56	0.16
1500.00	0.85	176.14	1499.93	-13.06	-2.87	-13.06	13.37	192.38	0.43
1600.00	0.84	198.41	1599.92	-14.50	-3.05	-14.50	14.81	191.88	0.33

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
1700.00	0.88	204.16	1699.81	-15.90	-3.60	-15.90	16.30	192.75	0.09
1800.00	1.06	170.51	1799.89	-17.51	-3.76	-17.51	17.91	192.11	0.59
1900.00	1.16	164.49	1899.87	-19.39	-3.33	-19.39	19.68	189.76	0.15
2000.00	0.96	136.17	1999.86	-20.97	-2.48	-20.97	21.12	186.75	0.55
2100.00	0.99	125.11	2099.84	-22.08	-1.20	-22.08	22.11	183.10	0.19
2200.00	0.87	111.75	2199.83	-22.85	0.22	-22.85	22.85	179.46	0.24
2300.00	1.46	101.73	2299.81	-23.39	2.17	-23.39	23.49	174.71	0.62
2400.00	1.41	97.24	2399.78	-23.81	4.63	-23.81	24.25	168.99	0.12
2500.00	1.72	116.75	2499.74	-24.64	7.20	-24.64	25.67	163.71	0.61
2600.00	1.51	137.80	2599.70	-26.29	9.43	-26.29	27.93	160.27	0.63
2700.00	1.25	141.74	2699.67	-28.13	10.99	-28.13	30.20	158.66	0.27
2800.00	1.09	139.87	2799.65	-29.71	12.28	-29.71	32.15	157.55	0.17
2900.00	0.80	151.59	2899.64	-31.06	13.23	-31.06	33.75	156.93	0.35
3000.00	0.90	146.49	2999.63	-32.32	13.99	-32.32	35.22	156.60	0.12
3100.00	0.91	133.15	3099.61	-33.52	15.00	-33.52	36.72	155.89	0.21
3200.00	1.23	140.97	3199.60	-34.90	16.26	-34.90	38.50	155.02	0.34
3300.00	0.91	129.77	3299.58	-36.23	17.54	-36.23	40.26	154.17	0.38
3400.00	0.90	118.75	3399.57	-37.12	18.84	-37.12	41.63	153.09	0.17
3500.00	1.01	134.18	3499.55	-38.11	20.16	-38.11	43.11	152.12	0.28
3600.00	1.12	131.81	3599.54	-39.37	21.52	-39.37	44.87	151.34	0.12
3700.00	1.40	134.94	3699.51	-40.89	23.11	-40.89	46.97	150.52	0.29
3800.00	1.39	133.77	3799.48	-42.60	24.86	-42.60	49.32	149.74	0.03
3900.00	1.26	131.37	3899.45	-44.16	26.56	-44.16	51.53	148.98	0.15
4000.00	1.12	128.36	3999.43	-45.49	28.15	-45.49	53.50	148.25	0.15
4100.00	0.96	121.89	4099.42	-46.54	29.62	-46.54	55.17	147.52	0.20
4200.00	0.95	121.28	4199.40	-47.41	31.04	-47.41	56.67	146.79	0.01
4300.00	0.89	131.58	4299.39	-48.36	32.33	-48.36	58.17	146.23	0.18
4400.00	1.27	128.44	4399.37	-49.56	33.78	-49.56	59.98	145.72	0.39
4500.00	0.85	125.00	4499.35	-50.67	35.25	-50.67	61.73	145.18	0.42
4600.00	0.37	75.65	4599.35	-51.02	36.18	-51.02	62.54	144.66	0.67
4700.00	0.76	74.18	4699.34	-50.76	37.13	-50.76	62.89	143.81	0.39
4800.00	1.52	52.08	4799.32	-49.76	38.82	-49.76	63.11	142.04	0.86
4900.00	1.48	21.73	4899.29	-47.74	40.35	-47.74	62.51	139.80	0.79
5000.00	1.73	29.47	4999.25	-45.23	41.57	-45.23	61.43	137.42	0.33
5100.00	1.65	44.84	5099.21	-42.90	43.32	-42.90	60.97	134.72	0.46
5200.00	2.24	26.17	5199.15	-40.12	45.20	-40.12	60.44	131.60	0.86
5300.00	2.62	20.86	5299.06	-36.24	46.87	-36.24	59.25	127.71	0.45
5400.00	2.64	11.64	5398.96	-31.84	48.15	-31.84	57.73	123.47	0.42
5500.00	2.64	9.50	5498.85	-27.31	49.00	-27.31	56.10	119.13	0.10

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S		+E/-W		Vertical Section FT	Closure Distance FT		Closure Direction Deg	Dogleg Severity Deg/100
				FT	FT	FT	FT		FT	Deg		
5500.00	2.67	13.52	5598.74	-22.78	49.92	-22.78	49.92	-22.78	54.87	114.53	0.19	
5700.00	1.44	20.00	5698.68	-19.33	50.90	-19.33	50.90	-19.33	54.45	110.80	1.24	
5800.00	0.92	120.32	5798.66	-18.55	52.03	-18.55	52.03	-18.55	55.24	109.63	1.85	
5900.00	0.94	155.40	5898.65	-19.71	53.06	-19.71	53.06	-19.71	56.61	110.37	0.56	
6000.00	1.08	143.78	5998.64	-21.21	53.96	-21.21	53.96	-21.21	57.98	111.46	0.25	
6100.00	1.13	138.21	6098.62	-22.71	55.18	-22.71	55.18	-22.71	59.67	112.37	0.12	
6200.00	0.99	145.01	6198.60	-24.15	56.33	-24.15	56.33	-24.15	61.28	113.21	0.19	
6300.00	1.27	126.83	6298.58	-25.52	57.71	-25.52	57.71	-25.52	63.10	113.85	0.45	
6400.00	1.10	118.48	6398.56	-26.64	59.44	-26.64	59.44	-26.64	65.14	114.14	0.24	
6500.00	0.57	84.72	6498.55	-27.05	60.78	-27.05	60.78	-27.05	66.53	113.99	0.70	
6600.00	0.79	78.19	6598.54	-26.87	61.96	-26.87	61.96	-26.87	67.53	113.44	0.24	
6700.00	0.97	74.07	6698.53	-26.49	63.45	-26.49	63.45	-26.49	68.76	112.66	0.19	
6800.00	1.22	71.76	6798.51	-25.93	65.28	-25.93	65.28	-25.93	70.24	111.66	0.25	
6900.00	1.21	60.53	6898.49	-25.07	67.21	-25.07	67.21	-25.07	71.73	110.46	0.24	
7000.00	0.86	41.55	6998.47	-23.99	68.62	-23.99	68.62	-23.99	72.70	109.27	0.49	
7100.00	0.70	59.68	7098.46	-23.12	69.65	-23.12	69.65	-23.12	73.39	108.36	0.29	
7200.00	0.82	53.91	7198.46	-22.39	70.75	-22.39	70.75	-22.39	74.21	107.56	0.14	
7300.00	0.96	42.64	7298.44	-21.36	71.89	-21.36	71.89	-21.36	75.00	106.54	0.23	
7400.00	1.20	35.58	7398.43	-19.89	73.07	-19.89	73.07	-19.89	75.73	105.22	0.28	
7500.00	1.52	359.07	7498.40	-17.70	73.66	-17.70	73.66	-17.70	75.76	103.51	0.91	
7600.00	2.02	347.40	7598.35	-14.65	73.26	-14.65	73.26	-14.65	74.71	101.31	0.61	
7700.00	2.03	329.85	7698.29	-11.41	71.98	-11.41	71.98	-11.41	72.88	99.00	0.62	
7800.00	1.49	323.73	7798.24	-8.83	70.33	-8.83	70.33	-8.83	70.88	97.16	0.57	
7900.00	1.28	331.70	7898.21	-6.80	69.03	-6.80	69.03	-6.80	69.37	95.63	0.29	
8000.00	1.29	331.63	7998.19	-4.83	67.97	-4.83	67.97	-4.83	68.14	94.07	0.01	
8100.00	1.30	343.92	8098.16	-2.75	67.12	-2.75	67.12	-2.75	67.18	92.35	0.28	
8210.00	1.58	5.96	8208.13	-0.04	66.93	-0.04	66.93	-0.04	66.93	90.03	0.56	



VES Survey International
(432) 563-5444
West Texas
Surveyor: Javier Estrada
Airbus 12 Federal No 003H / API 30-015-42412



COG Operating LLC

**Eddy County, NM
Airbus 12 Federal
#3H**

OH

Survey: Survey #2 - MWD1

Survey Report - Geographic

15 July, 2015

**NM OIL CONSERVATION
ARTESIA DISTRICT
OCT 01 2015
RECEIVED**

Survey Report - Geographic

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #3H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3618.7usft (Original Well Elev)
Site:	Airbus 12 Federal	MD Reference:	WELL @ 3618.7usft (Original Well Elev)
Well:	#3H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Project	Eddy County, NM		
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	Airbus 12 Federal		
Site Position:		Northing:	607,165.40 usft
From:	Map	Easting:	656,581.60 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 40' 5.399 N
		Longitude:	103° 49' 28.204 W
		Grid Convergence:	0.27 "

Well	#3H		
Well Position	+N/-S	0.0 usft	Northing: 607,165.40 usft
	+E/-W	0.0 usft	Easting: 656,581.60 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 40' 5.399 N
		Longitude:	103° 49' 28.204 W
		Ground Level:	3,600.7 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2010	6/28/2015	7.24
			(°)
			60.45
			48.451

Design	OH		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			359.39

Survey Program	Date 7/15/2015		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100.0	8,210.0	Survey #1 - Gyro (OH)	CB-GYRO-MS
8,552.0	13,672.0	Survey #2 - MWD1 (OH)	MWD
			Description
			Camera based gyro multishot
			MWD - Standard

Survey										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Map	Map			
Depth	(°)	(°)	Depth	(usft)	(usft)	Northing	Easting	Latitude	Longitude	
(usft)			(usft)			(usft)	(usft)			
8,210.0	1.58	5.96	8,208.1	-0.1	66.9	607,165.32	656,648.49	32° 40' 5.395 N	103° 49' 27.422 W	
8,552.0	1.20	16.30	8,550.0	8.0	68.4	607,173.45	656,649.98	32° 40' 5.476 N	103° 49' 27.404 W	
8,584.0	0.90	16.50	8,582.0	8.6	68.5	607,174.01	656,650.15	32° 40' 5.481 N	103° 49' 27.402 W	
KOP @ 8584 MD										
8,615.0	1.40	74.60	8,613.0	8.9	69.0	607,174.35	656,650.58	32° 40' 5.485 N	103° 49' 27.397 W	
8,647.0	4.00	12.70	8,645.0	10.1	69.6	607,175.54	656,651.20	32° 40' 5.496 N	103° 49' 27.389 W	
8,679.0	8.60	2.40	8,676.8	13.6	69.9	607,179.02	656,651.55	32° 40' 5.531 N	103° 49' 27.385 W	
8,710.0	11.90	0.90	8,707.3	19.1	70.1	607,184.53	656,651.70	32° 40' 5.585 N	103° 49' 27.383 W	
8,742.0	14.10	358.90	8,738.5	26.3	70.1	607,191.73	656,651.67	32° 40' 5.657 N	103° 49' 27.383 W	
8,774.0	17.10	353.90	8,769.3	34.9	69.5	607,200.31	656,651.10	32° 40' 5.741 N	103° 49' 27.389 W	
8,805.0	19.80	353.00	8,798.7	44.7	68.4	607,210.05	656,649.97	32° 40' 5.838 N	103° 49' 27.402 W	

Survey Report - Geographic

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #3H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3618.7usft (Original Well Elev)
Site:	Airbus 12 Federal	MD Reference:	WELL @ 3618.7usft (Original Well Elev)
Well:	#3H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
8,837.0	23.20	356.80	8,828.5	56.3	67.4	607,221.73	656,648.96	32° 40' 5.954 N	103° 49' 27.413 W
8,869.0	24.40	0.60	8,857.7	69.2	67.1	607,234.63	656,648.68	32° 40' 6.081 N	103° 49' 27.416 W
8,900.0	26.10	3.80	8,885.8	82.4	67.6	607,247.84	656,649.20	32° 40' 6.212 N	103° 49' 27.409 W
8,932.0	27.20	7.30	8,914.4	96.7	69.0	607,262.12	656,650.59	32° 40' 6.353 N	103° 49' 27.392 W
8,964.0	29.70	6.40	8,942.5	111.9	70.8	607,277.26	656,652.41	32° 40' 6.503 N	103° 49' 27.370 W
8,995.0	34.70	3.90	8,968.7	128.3	72.3	607,293.70	656,653.86	32° 40' 6.665 N	103° 49' 27.352 W
9,015.2	38.55	3.17	8,984.9	140.3	73.0	607,305.73	656,654.60	32° 40' 6.784 N	103° 49' 27.342 W
Cross 330' Hardline @ 9015.2 MD, 38.5 Inc									
9,027.0	40.80	2.80	8,994.0	147.8	73.4	607,313.25	656,655.00	32° 40' 6.859 N	103° 49' 27.337 W
9,058.0	47.00	3.00	9,016.4	169.3	74.5	607,334.71	656,656.08	32° 40' 7.071 N	103° 49' 27.323 W
9,090.0	53.30	2.70	9,036.8	193.8	75.7	607,359.23	656,657.30	32° 40' 7.314 N	103° 49' 27.308 W
9,121.0	60.00	1.60	9,053.9	219.7	76.7	607,385.09	656,658.26	32° 40' 7.570 N	103° 49' 27.295 W
9,153.0	63.50	1.20	9,069.0	247.9	77.3	607,413.27	656,658.95	32° 40' 7.848 N	103° 49' 27.286 W
9,185.0	66.40	0.50	9,082.6	276.9	77.8	607,442.25	656,659.38	32° 40' 8.135 N	103° 49' 27.279 W
9,216.0	69.50	0.20	9,094.2	305.6	77.9	607,470.98	656,659.55	32° 40' 8.419 N	103° 49' 27.275 W
9,248.0	72.20	0.00	9,104.7	335.8	78.0	607,501.21	656,659.61	32° 40' 8.719 N	103° 49' 27.273 W
9,280.0	75.00	359.10	9,113.7	366.5	77.8	607,531.90	656,659.36	32° 40' 9.022 N	103° 49' 27.274 W
9,311.0	77.90	358.20	9,121.0	396.6	77.0	607,562.03	656,658.65	32° 40' 9.320 N	103° 49' 27.281 W
9,343.0	80.70	357.70	9,126.9	428.0	75.9	607,593.45	656,657.53	32° 40' 9.631 N	103° 49' 27.292 W
9,375.0	83.70	357.70	9,131.3	459.7	74.6	607,625.12	656,656.25	32° 40' 9.945 N	103° 49' 27.305 W
9,406.0	86.00	358.00	9,134.1	490.6	73.5	607,655.97	656,655.10	32° 40' 10.250 N	103° 49' 27.317 W
9,469.0	90.50	359.20	9,136.0	553.5	72.0	607,718.91	656,653.56	32° 40' 10.873 N	103° 49' 27.331 W
9,564.0	92.50	359.20	9,133.5	648.5	70.6	607,813.86	656,652.23	32° 40' 11.813 N	103° 49' 27.342 W
EOC @ 9564 MD, 9133.5 TVD, 92.5 Inc									
9,659.0	92.50	359.40	9,129.4	743.4	69.5	607,908.76	656,651.07	32° 40' 12.752 N	103° 49' 27.350 W
9,754.0	91.60	357.70	9,126.0	838.3	67.1	608,003.67	656,648.67	32° 40' 13.691 N	103° 49' 27.373 W
9,849.0	90.40	357.50	9,124.3	933.2	63.1	608,098.57	656,644.69	32° 40' 14.630 N	103° 49' 27.414 W
9,944.0	92.40	357.10	9,122.0	1,028.0	58.6	608,193.43	656,640.22	32° 40' 15.569 N	103° 49' 27.461 W
10,040.0	91.30	357.70	9,118.9	1,123.9	54.3	608,289.28	656,635.87	32° 40' 16.518 N	103° 49' 27.506 W
10,134.0	91.60	359.50	9,116.5	1,217.8	52.0	608,383.22	656,633.57	32° 40' 17.447 N	103° 49' 27.528 W
10,230.0	91.20	358.30	9,114.2	1,313.8	50.1	608,479.17	656,631.73	32° 40' 18.397 N	103° 49' 27.544 W
10,324.0	94.40	357.50	9,109.6	1,407.6	46.7	608,572.98	656,628.29	32° 40' 19.326 N	103° 49' 27.579 W
10,451.0	93.10	357.30	9,101.3	1,534.2	40.9	608,699.58	656,622.54	32° 40' 20.578 N	103° 49' 27.639 W
10,578.0	91.30	359.30	9,096.4	1,661.0	37.2	608,826.41	656,618.78	32° 40' 21.834 N	103° 49' 27.676 W
10,673.0	90.20	359.00	9,095.1	1,756.0	35.8	608,921.39	656,617.37	32° 40' 22.774 N	103° 49' 27.687 W
10,768.0	91.50	358.20	9,093.7	1,850.9	33.4	609,016.35	656,615.05	32° 40' 23.713 N	103° 49' 27.709 W
10,863.0	91.30	358.70	9,091.4	1,945.9	30.9	609,111.29	656,612.48	32° 40' 24.653 N	103° 49' 27.734 W
10,926.0	92.60	358.20	9,089.3	2,008.8	29.2	609,174.23	656,610.78	32° 40' 25.276 N	103° 49' 27.750 W
11,021.0	91.60	357.80	9,085.8	2,103.7	25.9	609,269.11	656,607.46	32° 40' 26.215 N	103° 49' 27.784 W
11,084.0	92.90	357.60	9,083.3	2,166.6	23.3	609,332.00	656,604.94	32° 40' 26.837 N	103° 49' 27.810 W
11,211.0	91.70	359.80	9,078.2	2,293.5	20.5	609,458.86	656,602.06	32° 40' 28.093 N	103° 49' 27.836 W
11,306.0	91.00	359.40	9,076.0	2,388.4	19.8	609,553.83	656,601.40	32° 40' 29.033 N	103° 49' 27.839 W
11,370.0	93.10	358.90	9,073.7	2,452.4	18.8	609,617.78	656,600.45	32° 40' 29.665 N	103° 49' 27.846 W
11,465.0	92.90	358.90	9,068.7	2,547.2	17.0	609,712.63	656,598.63	32° 40' 30.604 N	103° 49' 27.862 W
11,560.0	92.40	358.80	9,064.3	2,642.1	15.1	609,807.51	656,596.72	32° 40' 31.543 N	103° 49' 27.879 W
11,655.0	92.00	359.20	9,060.7	2,737.0	13.5	609,902.42	656,595.07	32° 40' 32.482 N	103° 49' 27.893 W
11,750.0	91.30	358.40	9,057.9	2,832.0	11.5	609,997.36	656,593.08	32° 40' 33.422 N	103° 49' 27.911 W
11,845.0	90.60	358.50	9,056.4	2,926.9	8.9	610,092.31	656,590.51	32° 40' 34.362 N	103° 49' 27.936 W
11,940.0	90.10	359.10	9,055.8	3,021.9	6.9	610,187.29	656,588.52	32° 40' 35.301 N	103° 49' 27.954 W
12,035.0	91.30	358.40	9,054.6	3,116.9	4.8	610,282.26	656,586.45	32° 40' 36.241 N	103° 49' 27.973 W
12,130.0	90.60	358.40	9,053.1	3,211.8	2.2	610,377.21	656,583.79	32° 40' 37.181 N	103° 49' 27.998 W
12,225.0	92.00	357.30	9,050.9	3,306.7	-1.4	610,472.11	656,580.23	32° 40' 38.120 N	103° 49' 28.035 W
12,351.0	90.10	358.00	9,048.6	3,432.6	-6.5	610,597.98	656,575.07	32° 40' 39.366 N	103° 49' 28.088 W
12,446.0	91.70	357.70	9,047.1	3,527.5	-10.1	610,692.90	656,571.50	32° 40' 40.305 N	103° 49' 28.125 W
12,541.0	91.20	358.30	9,044.7	3,622.4	-13.4	610,787.81	656,568.19	32° 40' 41.245 N	103° 49' 28.158 W

Survey Report - Geographic

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #3H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3618.7usft (Original Well Elev)
Site:	Airbus 12 Federal	MD Reference:	WELL @ 3618.7usft (Original Well Elev)
Well:	#3H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
12,636.0	93.00	357.70	9,041.2	3,717.3	-16.7	610,882.68	656,564.87	32° 40' 42.184 N	103° 49' 28.191 W
12,731.0	93.70	357.90	9,035.7	3,812.0	-20.4	610,977.45	656,561.23	32° 40' 43.122 N	103° 49' 28.229 W
12,826.0	92.10	358.90	9,030.9	3,906.9	-23.0	611,072.29	656,558.59	32° 40' 44.060 N	103° 49' 28.254 W
12,953.0	91.60	359.30	9,026.8	4,033.8	-25.0	611,199.20	656,556.59	32° 40' 45.316 N	103° 49' 28.271 W
13,048.0	91.60	358.50	9,024.1	4,128.7	-26.8	611,294.15	656,554.77	32° 40' 46.256 N	103° 49' 28.287 W
13,174.0	92.30	358.90	9,019.8	4,254.6	-29.7	611,420.04	656,551.91	32° 40' 47.502 N	103° 49' 28.313 W
13,301.0	92.40	358.40	9,014.6	4,381.5	-32.7	611,546.90	656,548.92	32° 40' 48.757 N	103° 49' 28.341 W
13,428.0	92.40	357.40	9,009.3	4,508.3	-37.3	611,673.70	656,544.27	32° 40' 50.012 N	103° 49' 28.388 W
13,555.0	92.40	356.80	9,004.0	4,635.0	-43.8	611,800.43	656,537.85	32° 40' 51.266 N	103° 49' 28.456 W
13,672.0	92.40	356.80	8,999.1	4,751.7	-50.3	611,917.14	656,531.33	32° 40' 52.421 N	103° 49' 28.526 W
TD @ 13672 MD, 8999.1 TVD, 4751.7 N, -50.3 E, 4752 VS									

Survey Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
8,584.0	8,582.0	8.6	68.5	KOP @ 8584 MD	
9,015.2	8,984.9	140.3	73.0	Cross 330' Hardline @ 9015.2 MD, 38.5 Inc	
9,584.0	9,133.5	648.5	70.6	EOC @ 9584 MD, 9133.5 TVD, 92.5 Inc	
13,672.0	8,999.1	4,751.7	-50.3	TD @ 13672 MD, 8999.1 TVD, 4751.7 N, -50.3 E, 4752 VS	

Checked By: _____	Approved By: _____	Date: _____
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