



November 5, 2014

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

HOBSOCD
JAN 20 2015
RECEIVED

Attn: Kanicia Castillo

RE: Ben Lilly 2 State Com No. 005H

Please find enclosed a copy of the survey from 0.00' to 10090.00' ran on the above referenced well.

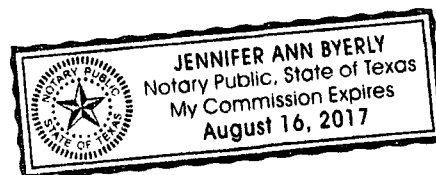
Sincerely,

Deb Salge
Deb Salge
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 5 day of November A.D., 2014, by Keith Havelka.

Jennifer Ann Byerly
Jennifer Ann Byerly
Notary Public, State of Texas



29
JAN 28 2015

Company: COG OPERATING (CONCHO)
Lease/Well: BEN LILLY 2 STATE COM/NO. 005H



Rig Name: PRECISION #105
State/County: NEW MEXICO/LEA
Latitude: 32.50, Longitude: -103.54
GRID North is 0.43 Degrees East of True North
VS-Azi: 0.00 Degrees



Depth Reference : RKB: 25 FEET

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: gyro survey.ut
Minimum Curvature Method
Report Date/Time: 11/5/2014 / 11:49

Vaughn Energy Services
West Texas
(432) 563-5444

Surveyor: Jordan Shelleby
Ben Lilly 2 State Com No. 005H / API 30-025-41915

HOBBSOCD

JAN 20 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	0.43	306.26	100.00	0.22	-0.30	0.22	0.37	306.26	0.43
200.00	0.38	266.84	200.00	0.42	-0.94	0.42	1.03	294.31	0.28
300.00	0.19	12.03	300.00	0.57	-1.24	0.57	1.36	294.76	0.47
400.00	0.83	340.87	399.99	1.42	-1.44	1.42	2.02	314.60	0.67
500.00	0.13	326.87	499.99	2.19	-1.74	2.19	2.80	321.66	0.70
600.00	0.87	18.81	599.98	3.01	-1.55	3.01	3.38	332.69	0.80
700.00	0.46	13.28	699.98	4.12	-1.21	4.12	4.29	343.56	0.41
800.00	0.92	57.63	799.97	4.94	-0.44	4.94	4.96	354.89	0.67
900.00	0.32	22.93	899.96	5.63	0.35	5.63	5.64	353.53	0.68
1000.00	0.25	20.72	999.96	6.09	0.53	6.09	6.12	5.01	0.07
1100.00	0.39	29.52	1099.96	6.59	0.78	6.59	6.64	6.73	0.14
1200.00	0.28	46.72	1199.96	7.06	1.13	7.06	7.15	9.06	0.14
1300.00	0.15	274.00	1299.96	7.24	1.18	7.24	7.33	9.25	0.40
1400.00	0.14	269.37	1399.96	7.25	0.93	7.25	7.31	7.33	0.02
1500.00	0.30	289.71	1499.96	7.33	0.56	7.33	7.35	4.41	0.18
1600.00	0.49	229.85	1599.96	7.15	-0.01	7.15	7.15	359.92	0.43
1700.00	0.67	276.41	1699.95	6.94	-0.92	6.94	7.00	352.48	0.49
1800.00	0.39	302.69	1799.95	7.18	-1.78	7.18	7.40	346.10	0.36

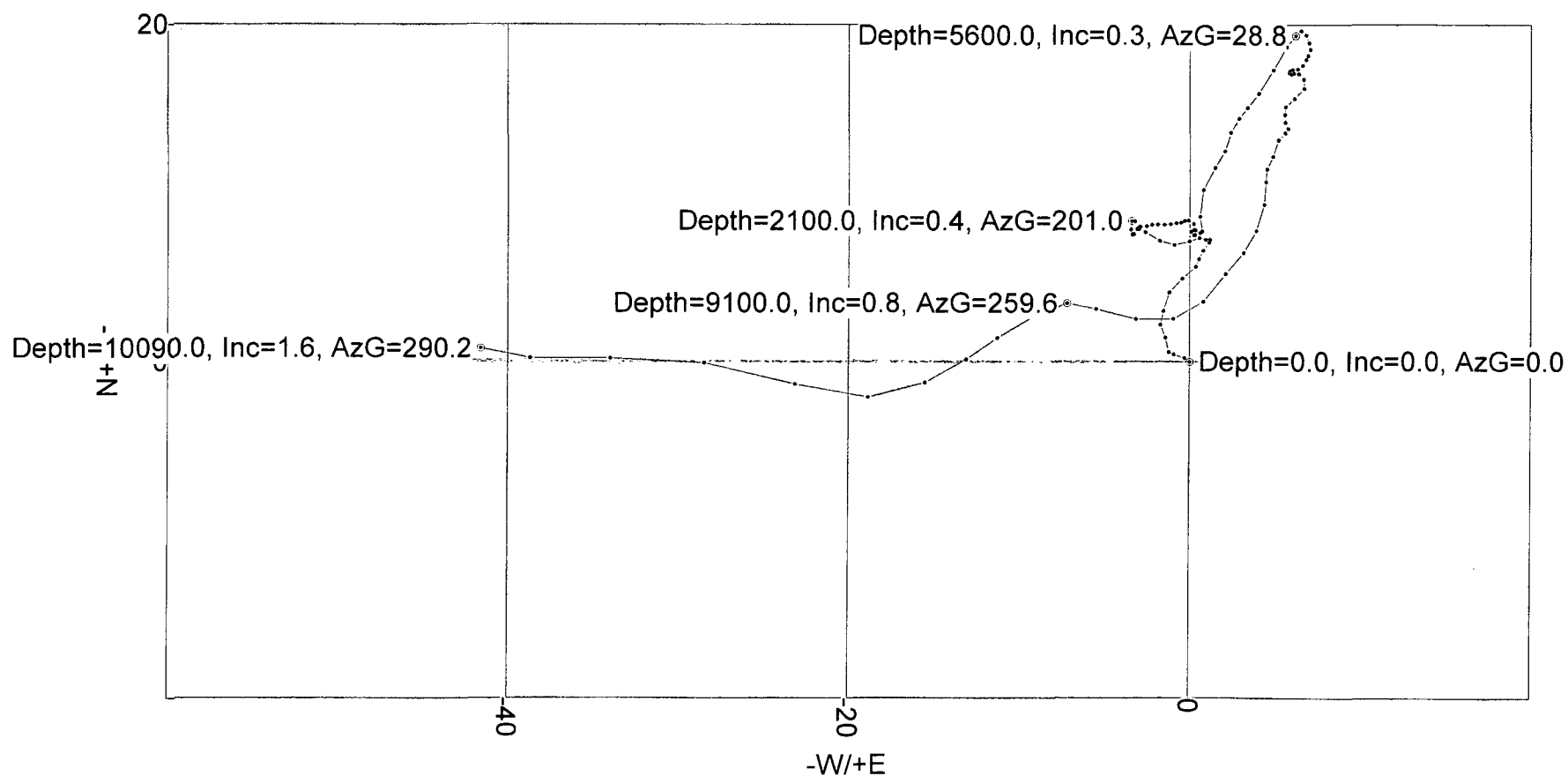
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100 .
1900.00	0.74	299.72	1899.94	7.68	-2.62	7.68	8.12	341.16	0.35
2000.00	0.39	350.71	1999.94	8.34	-3.24	8.34	8.94	338.79	0.58
2100.00	0.40	200.96	2099.94	8.35	-3.41	8.35	9.02	337.76	0.76
2200.00	0.21	157.84	2199.93	7.85	-3.47	7.85	8.58	336.17	0.28
2300.00	0.16	174.53	2299.93	7.54	-3.38	7.54	8.26	335.82	0.07
2400.00	0.21	25.50	2399.93	7.56	-3.29	7.56	8.25	336.47	0.36
2500.00	0.25	34.02	2499.93	7.90	-3.09	7.90	8.49	338.63	0.05
2600.00	0.25	190.36	2599.93	7.87	-3.01	7.87	8.43	339.07	0.49
2700.00	0.24	348.00	2699.93	7.86	-3.09	7.86	8.45	338.52	0.48
2800.00	0.24	103.20	2799.93	8.02	-2.93	8.02	8.53	339.91	0.41
2900.00	0.22	67.72	2899.93	8.04	-2.55	8.04	8.43	342.43	0.14
3000.00	0.15	83.75	2999.93	8.13	-2.23	8.13	8.43	344.64	0.09
3100.00	0.22	88.47	3099.93	8.15	-1.91	8.15	8.37	346.84	0.07
3200.00	0.23	92.97	3199.93	8.14	-1.51	8.14	8.28	349.53	0.02
3300.00	0.18	78.60	3299.93	8.16	-1.15	8.16	8.24	351.98	0.08
3400.00	0.23	78.79	3399.93	8.23	-0.80	8.23	8.27	354.46	0.06
3500.00	0.08	99.39	3499.93	8.26	-0.53	8.26	8.28	356.34	0.16
3600.00	0.21	49.46	3599.93	8.37	-0.32	8.37	8.37	357.80	0.17
3700.00	0.17	133.26	3699.93	8.38	-0.08	8.38	8.38	359.48	0.25
3800.00	0.26	117.03	3799.93	8.18	0.24	8.18	8.18	1.66	0.11
3900.00	0.33	207.04	3899.93	7.82	0.31	7.82	7.82	2.28	0.42
4000.00	0.14	109.75	3999.92	7.52	0.30	7.52	7.52	2.27	0.38
4100.00	0.21	282.57	4099.92	7.51	0.24	7.51	7.52	1.82	0.35
4200.00	0.20	1.40	4199.92	7.73	0.07	7.73	7.73	0.50	0.26
4300.00	0.22	117.39	4299.92	7.81	0.24	7.81	7.81	1.76	0.35
4400.00	0.23	112.09	4399.92	7.65	0.59	7.65	7.67	4.44	0.03
4500.00	0.20	341.21	4499.92	7.74	0.72	7.74	7.77	5.35	0.40
4600.00	0.81	354.19	4599.92	8.61	0.60	8.61	8.63	3.96	0.61
4700.00	1.06	16.06	4699.91	10.20	0.78	10.20	10.23	4.37	0.43
4800.00	0.69	45.10	4799.89	11.51	1.46	11.51	11.61	7.23	0.57
4900.00	0.66	14.70	4899.89	12.49	2.03	12.49	12.66	9.24	0.35
5000.00	0.67	21.39	4999.88	13.60	2.39	13.60	13.81	9.98	0.08
5100.00	0.45	45.95	5099.88	14.42	2.89	14.42	14.70	11.33	0.32
5200.00	0.51	27.62	5199.87	15.08	3.38	15.08	15.46	12.62	0.17
5300.00	0.74	45.91	5299.87	15.93	4.05	15.93	16.44	14.26	0.30
5400.00	1.15	21.99	5399.85	17.31	4.89	17.31	17.99	15.77	0.56
5500.00	0.68	42.55	5499.84	18.68	5.66	18.68	19.52	16.87	0.57
5600.00	0.31	28.75	5599.84	19.35	6.19	19.35	20.31	17.75	0.38
5700.00	0.23	77.96	5699.84	19.62	6.52	19.62	20.68	18.37	0.23

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 .
5800.00	0.35	162.89	5799.83	19.38	6.80	19.38	20.54	19.35	0.40
5900.00	0.21	152.53	5899.83	18.92	6.98	18.92	20.17	20.25	0.15
6000.00	0.27	183.51	5999.83	18.52	7.05	18.52	19.82	20.84	0.14
6100.00	0.20	220.39	6099.83	18.16	6.93	18.16	19.44	20.87	0.16
6200.00	0.12	188.52	6199.83	17.92	6.80	17.92	19.17	20.77	0.11
6300.00	0.34	216.88	6299.83	17.58	6.61	17.58	18.78	20.59	0.24
6400.00	0.14	273.86	6399.83	17.35	6.30	17.35	18.46	19.96	0.29
6500.00	0.19	259.39	6499.83	17.33	6.02	17.33	18.35	19.15	0.06
6600.00	0.06	187.08	6599.83	17.25	5.85	17.25	18.21	18.74	0.18
6700.00	0.07	188.41	6699.83	17.13	5.83	17.13	18.10	18.81	0.01
6800.00	0.15	96.88	6799.83	17.06	5.96	17.06	18.07	19.25	0.17
6900.00	0.08	354.50	6899.83	17.11	6.08	17.11	18.16	19.57	0.18
7000.00	0.36	107.30	6999.83	17.08	6.38	17.08	18.23	20.47	0.39
7100.00	0.27	181.36	7099.83	16.75	6.67	16.75	18.03	21.71	0.38
7200.00	0.34	174.33	7199.83	16.22	6.69	16.22	17.55	22.42	0.08
7300.00	0.76	242.28	7299.82	15.62	6.14	15.62	16.78	21.46	0.70
7400.00	0.21	161.84	7399.82	15.13	5.61	15.13	16.14	20.35	0.75
7500.00	0.37	198.07	7499.82	14.65	5.57	14.65	15.68	20.82	0.23
7600.00	0.22	137.67	7599.82	14.21	5.60	14.21	15.27	21.51	0.32
7700.00	0.28	171.78	7699.81	13.83	5.76	13.83	14.98	22.63	0.16
7800.00	0.24	269.97	7799.81	13.58	5.59	13.58	14.69	22.36	0.40
7900.00	0.54	207.51	7899.81	13.17	5.16	13.17	14.14	21.40	0.47
8000.00	0.67	188.71	7999.81	12.18	4.86	12.18	13.11	21.74	0.24
8100.00	0.35	238.08	8099.80	11.43	4.51	11.43	12.29	21.51	0.52
8200.00	0.72	161.35	8199.80	10.67	4.45	10.67	11.56	22.61	0.73
8300.00	0.92	202.03	8299.79	9.33	4.35	9.33	10.29	24.98	0.60
8400.00	0.96	190.93	8399.78	7.77	3.89	7.77	8.68	26.59	0.18
8500.00	0.87	230.66	8499.76	6.46	3.14	6.46	7.19	25.90	0.63
8600.00	1.03	210.11	8599.75	5.20	2.10	5.20	5.61	21.96	0.37
8700.00	1.39	224.89	8699.73	3.57	0.79	3.57	3.65	12.50	0.48
8800.00	1.06	259.80	8799.71	2.54	-0.97	2.54	2.72	339.06	0.80
8900.00	1.49	276.29	8899.68	2.52	-3.17	2.52	4.05	308.52	0.56
9000.00	1.29	293.77	8999.65	3.12	-5.49	3.12	6.31	299.61	0.46
9100.00	0.76	259.64	9099.64	3.45	-7.17	3.45	7.95	295.71	0.78
9200.00	1.56	244.00	9199.62	2.74	-9.04	2.74	9.45	286.83	0.85
9300.00	1.42	233.39	9299.58	1.40	-11.26	1.40	11.34	277.10	0.31
9400.00	1.13	236.29	9399.56	0.12	-13.06	0.12	13.06	270.53	0.30
9500.00	2.05	242.64	9499.52	-1.25	-15.47	-1.25	15.52	265.39	0.94
9600.00	2.02	268.44	9599.46	-2.12	-18.83	-2.12	18.94	263.58	0.91

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
9700.00	3.07	288.04	9699.36	-1.34	-23.13	-1.34	23.17	266.69	1.35
9800.00	3.20	278.62	9799.21	-0.09	-28.44	-0.09	28.44	269.82	0.53
9900.00	3.13	267.02	9899.06	0.19	-33.92	0.19	33.92	270.31	0.64
10000.00	2.28	274.66	9998.95	0.21	-38.62	0.21	38.63	270.30	0.92
10090.00	1.61	290.19	10088.90	0.79	-41.59	0.79	41.60	271.08	0.94



Vaughn Energy Services
West Texas
(432) 563-5444
Surveyor: Jordan Shelleby
Ben Lilly 2 State Com No. 005H / API 30-025-41915





COG Operating LLC

Lea County, NM

Ben Lilly 2 State Com

#5H

OH

Design: OH

HOBBSOCD

JAN 20 2015

RECEIVED

Survey Report - Geographic

06 November, 2014



AM



TDS
Survey Report - Geographic



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #5H
Project:	Lea County, NM	TVD Reference:	KB @ 3809.9usft
Site:	Ben Lilly 2 State Com	MD Reference:	KB @ 3809.9usft
Well:	#5H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Project	Lea 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	Ben Lilly 2 State Com		
Site Position:		Northing:	547,017.80 usft
From:	Map	Easting:	745,707.20 usft
Position Uncertainty:	3.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 30' 4.817 N
		Longitude:	103° 32' 10.896 W
		Grid Convergence:	0.43 °

Well	#5H		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	0.0 usft	Easting:
Position Uncertainty	0.0 usft	Wellhead Elevation:	0.0 usft
		Latitude:	32° 30' 3.430 N
		Longitude:	103° 32' 10.195 W
		Ground Level:	3,783.9 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2010	7/31/2014	7.20
			Dip Angle
			(°)
			60.37
			Field Strength
			(nT)
			48,471

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
			Direction
			(°)
			359.05

Survey Program	Date 11/6/2014		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100.0	10,090.0	Gyro #1 (OH)	Good_gyro
10,176.0	18,770.0	MWD #1 (OH)	MWD
			Description
			Good Gyro
			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)		
0.0	0.00	0.00	0.0	0.0	0.0	546,878.10	745,768.30	32° 30' 3.430 N	103° 32' 10.195 W
100.0	0.43	306.26	100.0	0.2	-0.3	546,878.32	745,767.99	32° 30' 3.433 N	103° 32' 10.198 W
200.0	0.38	266.84	200.0	0.4	-0.9	546,878.53	745,767.36	32° 30' 3.435 N	103° 32' 10.206 W
300.0	0.19	12.03	300.0	0.6	-1.2	546,878.67	745,767.06	32° 30' 3.436 N	103° 32' 10.209 W
400.0	0.83	340.87	400.0	1.4	-1.4	546,879.52	745,766.86	32° 30' 3.445 N	103° 32' 10.211 W
500.0	0.13	326.87	500.0	2.2	-1.7	546,880.30	745,766.56	32° 30' 3.452 N	103° 32' 10.215 W
600.0	0.87	18.81	600.0	3.0	-1.6	546,881.11	745,766.74	32° 30' 3.460 N	103° 32' 10.213 W
700.0	0.46	13.28	700.0	4.1	-1.2	546,882.22	745,767.08	32° 30' 3.471 N	103° 32' 10.209 W
800.0	0.92	57.63	800.0	4.9	-0.4	546,883.04	745,767.85	32° 30' 3.479 N	103° 32' 10.199 W
900.0	0.32	22.93	900.0	5.6	0.3	546,883.73	745,768.64	32° 30' 3.486 N	103° 32' 10.190 W
1,000.0	0.25	20.72	1,000.0	6.1	0.5	546,884.19	745,768.82	32° 30' 3.491 N	103° 32' 10.188 W



TDS
Survey Report - Geographic



Company: COG Operating LLC
Project: Lea County, NM
Site: Ben Lilly 2 State Com
Well: #5H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #5H
TVD Reference: KB @ 3809.9usft
MD Reference: KB @ 3809.9usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
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
1,100.0	0.39	29.52	1,100.0	6.6	0.8	546,884.69	745,769.07	32° 30' 3.496 N	103° 32' 10.185 W
1,200.0	0.28	46.72	1,200.0	7.1	1.1	546,885.15	745,769.42	32° 30' 3.500 N	103° 32' 10.181 W
1,300.0	0.15	274.00	1,300.0	7.2	1.2	546,885.33	745,769.46	32° 30' 3.502 N	103° 32' 10.180 W
1,400.0	0.14	269.37	1,400.0	7.2	0.9	546,885.34	745,769.21	32° 30' 3.502 N	103° 32' 10.183 W
1,500.0	0.30	289.71	1,500.0	7.3	0.5	546,885.42	745,768.84	32° 30' 3.503 N	103° 32' 10.188 W
1,600.0	0.49	229.85	1,600.0	7.1	0.0	546,885.24	745,768.27	32° 30' 3.501 N	103° 32' 10.194 W
1,700.0	0.67	276.41	1,700.0	6.9	-0.9	546,885.03	745,767.36	32° 30' 3.499 N	103° 32' 10.205 W
1,800.0	0.39	302.69	1,799.9	7.2	-1.8	546,885.28	745,766.49	32° 30' 3.502 N	103° 32' 10.215 W
1,900.0	0.74	299.72	1,899.9	7.7	-2.7	546,885.78	745,765.65	32° 30' 3.507 N	103° 32' 10.225 W
2,000.0	0.39	350.71	1,999.9	8.3	-3.3	546,886.44	745,765.03	32° 30' 3.513 N	103° 32' 10.232 W
2,100.0	0.40	200.96	2,099.9	8.3	-3.4	546,886.45	745,764.85	32° 30' 3.513 N	103° 32' 10.234 W
2,200.0	0.21	157.84	2,199.9	7.8	-3.5	546,885.95	745,764.79	32° 30' 3.508 N	103° 32' 10.235 W
2,300.0	0.16	174.53	2,299.9	7.5	-3.4	546,885.64	745,764.88	32° 30' 3.505 N	103° 32' 10.234 W
2,400.0	0.21	25.50	2,399.9	7.6	-3.3	546,885.67	745,764.97	32° 30' 3.506 N	103° 32' 10.233 W
2,500.0	0.25	34.02	2,499.9	7.9	-3.1	546,886.01	745,765.17	32° 30' 3.509 N	103° 32' 10.231 W
2,600.0	0.25	190.36	2,599.9	7.9	-3.0	546,885.98	745,765.25	32° 30' 3.509 N	103° 32' 10.230 W
2,700.0	0.24	348.00	2,699.9	7.9	-3.1	546,885.97	745,765.17	32° 30' 3.509 N	103° 32' 10.231 W
2,800.0	0.24	103.20	2,799.9	8.0	-3.0	546,886.13	745,765.33	32° 30' 3.510 N	103° 32' 10.229 W
2,900.0	0.22	67.72	2,899.9	8.1	-2.6	546,886.15	745,765.71	32° 30' 3.510 N	103° 32' 10.224 W
3,000.0	0.15	83.75	2,999.9	8.1	-2.3	546,886.24	745,766.02	32° 30' 3.511 N	103° 32' 10.221 W
3,100.0	0.22	88.47	3,099.9	8.2	-2.0	546,886.26	745,766.34	32° 30' 3.511 N	103° 32' 10.217 W
3,200.0	0.23	92.97	3,199.9	8.2	-1.6	546,886.25	745,766.73	32° 30' 3.511 N	103° 32' 10.212 W
3,300.0	0.18	78.60	3,299.9	8.2	-1.2	546,886.27	745,767.09	32° 30' 3.511 N	103° 32' 10.208 W
3,400.0	0.23	78.79	3,399.9	8.2	-0.9	546,886.34	745,767.44	32° 30' 3.512 N	103° 32' 10.204 W
3,500.0	0.08	99.39	3,499.9	8.3	-0.6	546,886.37	745,767.70	32° 30' 3.512 N	103° 32' 10.201 W
3,600.0	0.21	49.46	3,599.9	8.4	-0.4	546,886.48	745,767.91	32° 30' 3.513 N	103° 32' 10.198 W
3,700.0	0.17	133.26	3,699.9	8.4	-0.1	546,886.50	745,768.16	32° 30' 3.513 N	103° 32' 10.196 W
3,800.0	0.26	117.03	3,799.9	8.2	0.2	546,886.29	745,768.47	32° 30' 3.511 N	103° 32' 10.192 W
3,900.0	0.33	207.04	3,899.9	7.8	0.2	546,885.93	745,768.54	32° 30' 3.508 N	103° 32' 10.191 W
4,000.0	0.14	109.75	3,999.9	7.5	0.2	546,885.63	745,768.53	32° 30' 3.505 N	103° 32' 10.191 W
4,100.0	0.21	282.57	4,099.9	7.5	0.2	546,885.63	745,768.46	32° 30' 3.505 N	103° 32' 10.192 W
4,200.0	0.20	1.40	4,199.9	7.7	0.0	546,885.85	745,768.29	32° 30' 3.507 N	103° 32' 10.194 W
4,300.0	0.22	117.39	4,299.9	7.8	0.2	546,885.93	745,768.46	32° 30' 3.508 N	103° 32' 10.192 W
4,400.0	0.23	112.09	4,399.9	7.7	0.5	546,885.77	745,768.82	32° 30' 3.506 N	103° 32' 10.188 W
4,500.0	0.20	341.21	4,499.9	7.8	0.7	546,885.86	745,768.95	32° 30' 3.507 N	103° 32' 10.186 W
4,600.0	0.81	354.19	4,599.9	8.6	0.5	546,886.73	745,768.82	32° 30' 3.516 N	103° 32' 10.188 W
4,700.0	1.06	16.06	4,699.9	10.2	0.7	546,888.32	745,769.00	32° 30' 3.531 N	103° 32' 10.186 W
4,800.0	0.69	45.10	4,799.9	11.5	1.4	546,889.63	745,769.69	32° 30' 3.544 N	103° 32' 10.177 W
4,900.0	0.66	14.70	4,899.9	12.5	2.0	546,890.62	745,770.26	32° 30' 3.554 N	103° 32' 10.171 W
5,000.0	0.67	21.39	4,999.9	13.6	2.3	546,891.72	745,770.62	32° 30' 3.565 N	103° 32' 10.166 W
5,100.0	0.45	45.95	5,099.9	14.4	2.8	546,892.54	745,771.11	32° 30' 3.573 N	103° 32' 10.161 W
5,200.0	0.51	27.62	5,199.9	15.1	3.3	546,893.20	745,771.60	32° 30' 3.580 N	103° 32' 10.155 W
5,300.0	0.74	45.91	5,299.9	15.9	4.0	546,894.05	745,772.27	32° 30' 3.588 N	103° 32' 10.147 W
5,400.0	1.15	21.99	5,399.9	17.3	4.8	546,895.43	745,773.11	32° 30' 3.601 N	103° 32' 10.137 W
5,500.0	0.68	42.55	5,499.8	18.7	5.6	546,896.79	745,773.89	32° 30' 3.615 N	103° 32' 10.128 W
5,600.0	0.31	28.75	5,599.8	19.4	6.1	546,897.47	745,774.42	32° 30' 3.622 N	103° 32' 10.122 W
5,700.0	0.23	77.96	5,699.8	19.6	6.5	546,897.75	745,774.75	32° 30' 3.624 N	103° 32' 10.118 W
5,800.0	0.35	162.89	5,799.8	19.4	6.7	546,897.50	745,775.03	32° 30' 3.622 N	103° 32' 10.114 W
5,900.0	0.21	152.53	5,899.8	18.9	6.9	546,897.04	745,775.21	32° 30' 3.617 N	103° 32' 10.112 W
6,000.0	0.27	183.51	5,999.8	18.5	7.0	546,896.64	745,775.28	32° 30' 3.613 N	103° 32' 10.112 W
6,100.0	0.20	220.39	6,099.8	18.2	6.9	546,896.28	745,775.15	32° 30' 3.610 N	103° 32' 10.113 W
6,200.0	0.12	188.52	6,199.8	17.9	6.7	546,896.04	745,775.02	32° 30' 3.607 N	103° 32' 10.115 W
6,300.0	0.34	216.88	6,299.8	17.6	6.5	546,895.70	745,774.83	32° 30' 3.604 N	103° 32' 10.117 W
6,400.0	0.14	273.86	6,399.8	17.4	6.2	546,895.47	745,774.53	32° 30' 3.602 N	103° 32' 10.120 W
6,500.0	0.19	259.39	6,499.8	17.3	5.9	546,895.45	745,774.24	32° 30' 3.602 N	103° 32' 10.124 W



TDS
Survey Report - Geographic



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #5H
Project:	Lea County, NM	TVD Reference:	KB @ 3809.9usft
Site:	Ben Lilly 2 State Com	MD Reference:	KB @ 3809.9usft
Well:	#5H	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
6,600.0	0.06	187.08	6,599.8	17.3	5.8	546,895.37	745,774.07	32° 30' 3.601 N	103° 32' 10.126 W
6,700.0	0.07	188.41	6,699.8	17.2	5.8	546,895.25	745,774.06	32° 30' 3.600 N	103° 32' 10.126 W
6,800.0	0.15	96.88	6,799.8	17.1	5.9	546,895.18	745,774.18	32° 30' 3.599 N	103° 32' 10.125 W
6,900.0	0.08	354.50	6,899.8	17.1	6.0	546,895.23	745,774.30	32° 30' 3.599 N	103° 32' 10.123 W
7,000.0	0.36	107.30	6,999.8	17.1	6.3	546,895.21	745,774.60	32° 30' 3.599 N	103° 32' 10.120 W
7,100.0	0.27	181.36	7,099.8	16.8	6.6	546,894.88	745,774.89	32° 30' 3.596 N	103° 32' 10.116 W
7,200.0	0.34	174.33	7,199.8	16.2	6.6	546,894.35	745,774.91	32° 30' 3.591 N	103° 32' 10.116 W
7,300.0	0.76	242.28	7,299.8	15.6	6.1	546,893.74	745,774.36	32° 30' 3.585 N	103° 32' 10.123 W
7,400.0	0.21	161.84	7,399.8	15.2	5.5	546,893.26	745,773.83	32° 30' 3.580 N	103° 32' 10.129 W
7,500.0	0.37	198.07	7,499.8	14.7	5.5	546,892.78	745,773.78	32° 30' 3.575 N	103° 32' 10.129 W
7,600.0	0.22	137.67	7,599.8	14.2	5.5	546,892.33	745,773.81	32° 30' 3.571 N	103° 32' 10.129 W
7,700.0	0.28	171.78	7,699.8	13.8	5.7	546,891.95	745,773.98	32° 30' 3.567 N	103° 32' 10.127 W
7,800.0	0.24	269.97	7,799.8	13.6	5.5	546,891.70	745,773.80	32° 30' 3.565 N	103° 32' 10.129 W
7,900.0	0.54	207.51	7,899.8	13.2	5.1	546,891.29	745,773.38	32° 30' 3.561 N	103° 32' 10.134 W
8,000.0	0.67	188.71	7,999.8	12.2	4.8	546,890.29	745,773.07	32° 30' 3.551 N	103° 32' 10.138 W
8,100.0	0.35	238.08	8,099.8	11.4	4.4	546,889.55	745,772.72	32° 30' 3.543 N	103° 32' 10.142 W
8,200.0	0.72	161.35	8,199.8	10.7	4.4	546,888.79	745,772.66	32° 30' 3.536 N	103° 32' 10.143 W
8,300.0	0.92	202.03	8,299.8	9.4	4.3	546,887.46	745,772.56	32° 30' 3.523 N	103° 32' 10.144 W
8,400.0	0.96	190.93	8,399.8	7.8	3.8	546,885.89	745,772.10	32° 30' 3.507 N	103° 32' 10.150 W
8,500.0	0.87	230.66	8,499.8	6.5	3.1	546,884.58	745,771.36	32° 30' 3.494 N	103° 32' 10.158 W
8,600.0	1.03	210.11	8,599.8	5.2	2.0	546,883.33	745,770.32	32° 30' 3.482 N	103° 32' 10.171 W
8,700.0	1.39	224.89	8,699.7	3.6	0.7	546,881.69	745,769.01	32° 30' 3.466 N	103° 32' 10.186 W
8,800.0	1.06	259.80	8,799.7	2.6	-1.1	546,880.67	745,767.25	32° 30' 3.456 N	103° 32' 10.207 W
8,900.0	1.49	276.29	8,899.7	2.5	-3.3	546,880.64	745,765.04	32° 30' 3.456 N	103° 32' 10.232 W
9,000.0	1.29	293.77	8,999.7	3.1	-5.6	546,881.24	745,762.72	32° 30' 3.462 N	103° 32' 10.260 W
9,100.0	0.76	259.64	9,099.6	3.5	-7.3	546,881.58	745,761.04	32° 30' 3.465 N	103° 32' 10.279 W
9,200.0	1.56	244.00	9,199.6	2.8	-9.1	546,880.86	745,759.16	32° 30' 3.458 N	103° 32' 10.301 W
9,300.0	1.42	233.39	9,299.6	1.4	-11.4	546,879.52	745,756.94	32° 30' 3.445 N	103° 32' 10.327 W
9,400.0	1.13	236.29	9,399.6	0.1	-13.2	546,878.24	745,755.13	32° 30' 3.433 N	103° 32' 10.348 W
9,500.0	2.05	242.64	9,499.5	-1.2	-15.6	546,876.87	745,752.72	32° 30' 3.419 N	103° 32' 10.377 W
9,600.0	2.02	268.44	9,599.5	-2.1	-18.9	546,876.00	745,749.37	32° 30' 3.411 N	103° 32' 10.416 W
9,700.0	3.07	288.04	9,699.4	-1.3	-23.2	546,876.78	745,745.06	32° 30' 3.419 N	103° 32' 10.466 W
9,800.0	3.20	278.62	9,799.2	-0.1	-28.5	546,878.03	745,739.76	32° 30' 3.432 N	103° 32' 10.528 W
9,900.0	3.13	267.02	9,899.1	0.2	-34.0	546,878.30	745,734.27	32° 30' 3.435 N	103° 32' 10.592 W
10,000.0	2.28	274.66	9,998.9	0.2	-38.7	546,878.32	745,729.56	32° 30' 3.435 N	103° 32' 10.647 W
10,090.0	1.61	290.19	10,088.9	0.8	-41.7	546,878.91	745,726.59	32° 30' 3.441 N	103° 32' 10.682 W
10,176.0	1.40	307.20	10,174.9	1.9	-43.7	546,879.96	745,724.62	32° 30' 3.452 N	103° 32' 10.705 W
10,270.0	1.30	306.80	10,268.8	3.2	-45.4	546,881.29	745,722.85	32° 30' 3.465 N	103° 32' 10.725 W
10,365.0	1.00	320.40	10,363.8	4.5	-46.8	546,882.57	745,721.46	32° 30' 3.478 N	103° 32' 10.741 W
10,460.0	0.50	261.70	10,458.8	5.1	-47.8	546,883.15	745,720.52	32° 30' 3.484 N	103° 32' 10.752 W
10,555.0	0.90	215.10	10,553.8	4.4	-48.6	546,882.48	745,719.68	32° 30' 3.477 N	103° 32' 10.762 W
10,651.0	1.20	187.80	10,649.8	2.8	-49.2	546,880.87	745,719.11	32° 30' 3.461 N	103° 32' 10.769 W
10,745.0	1.50	161.60	10,743.8	0.6	-48.9	546,878.73	745,719.37	32° 30' 3.440 N	103° 32' 10.766 W
10,840.0	1.50	151.30	10,838.7	-1.6	-47.9	546,876.46	745,720.36	32° 30' 3.418 N	103° 32' 10.755 W
10,935.0	1.90	144.20	10,933.7	-4.0	-46.4	546,874.09	745,721.87	32° 30' 3.394 N	103° 32' 10.737 W
11,030.0	1.60	340.60	11,028.7	-4.0	-45.9	546,874.06	745,722.36	32° 30' 3.394 N	103° 32' 10.731 W
11,062.0	6.80	337.60	11,060.6	-1.9	-46.8	546,876.24	745,721.48	32° 30' 3.415 N	103° 32' 10.741 W
11,094.0	11.10	336.50	11,092.2	2.7	-48.8	546,880.82	745,719.53	32° 30' 3.461 N	103° 32' 10.764 W
11,125.0	14.50	340.10	11,122.4	9.1	-51.3	546,887.20	745,717.02	32° 30' 3.524 N	103° 32' 10.793 W
11,157.0	17.70	342.00	11,153.1	17.5	-54.1	546,895.60	745,714.15	32° 30' 3.608 N	103° 32' 10.825 W
11,189.0	19.90	339.20	11,183.4	27.2	-57.6	546,905.32	745,710.72	32° 30' 3.704 N	103° 32' 10.865 W
11,220.0	22.20	336.40	11,212.4	37.5	-61.8	546,915.62	745,706.50	32° 30' 3.806 N	103° 32' 10.913 W
11,252.0	24.40	335.10	11,241.8	49.1	-67.0	546,927.16	745,701.29	32° 30' 3.921 N	103° 32' 10.973 W
11,284.0	27.40	335.80	11,270.5	61.8	-72.8	546,939.87	745,695.49	32° 30' 4.047 N	103° 32' 11.039 W
11,316.0	27.60	330.90	11,298.9	75.0	-79.4	546,953.06	745,688.87	32° 30' 4.178 N	103° 32' 11.116 W



TDS
Survey Report - Geographic



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #5H
Project:	Lea County, NM	TVD Reference:	KB @ 3809.9usft
Site:	Ben Lilly 2 State Com	MD Reference:	KB @ 3809.9usft
Well:	#5H	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
11,348.0	31.40	331.60	11,326.8	88.8	-87.0	546,966.88	745,681.29	32° 30' 4.315 N	103° 32' 11.203 W
11,379.0	33.90	330.60	11,352.9	103.4	-95.1	546,981.52	745,673.21	32° 30' 4.461 N	103° 32' 11.296 W
11,411.0	37.90	332.30	11,378.8	119.9	-104.0	546,998.00	745,664.25	32° 30' 4.625 N	103° 32' 11.399 W
11,443.0	39.20	335.80	11,403.8	137.8	-112.8	547,015.93	745,655.54	32° 30' 4.803 N	103° 32' 11.499 W
11,475.0	40.80	338.30	11,428.3	156.8	-120.8	547,034.87	745,647.53	32° 30' 4.991 N	103° 32' 11.591 W
11,506.0	43.50	339.70	11,451.3	176.2	-128.2	547,054.29	745,640.08	32° 30' 5.183 N	103° 32' 11.676 W
11,538.0	47.10	342.20	11,473.8	197.7	-135.6	547,075.79	745,632.67	32° 30' 5.397 N	103° 32' 11.761 W
11,570.0	51.70	343.60	11,494.6	220.9	-142.8	547,099.01	745,625.54	32° 30' 5.627 N	103° 32' 11.842 W
11,601.0	56.40	344.60	11,512.8	245.0	-149.6	547,123.14	745,618.67	32° 30' 5.866 N	103° 32' 11.920 W
11,633.0	61.20	346.40	11,529.4	271.5	-156.5	547,149.63	745,611.83	32° 30' 6.129 N	103° 32' 11.998 W
11,665.0	65.90	348.70	11,543.7	299.5	-162.6	547,177.60	745,605.67	32° 30' 6.406 N	103° 32' 12.067 W
11,697.0	69.50	351.70	11,555.8	328.7	-167.7	547,206.77	745,600.64	32° 30' 6.695 N	103° 32' 12.124 W
11,728.0	71.30	356.40	11,566.2	357.7	-170.7	547,235.80	745,597.62	32° 30' 6.982 N	103° 32' 12.156 W
11,760.0	74.60	359.20	11,575.6	388.3	-171.8	547,266.37	745,596.45	32° 30' 7.285 N	103° 32' 12.167 W
11,791.0	78.80	0.30	11,582.7	418.4	-172.0	547,296.53	745,596.33	32° 30' 7.583 N	103° 32' 12.166 W
11,823.0	84.00	0.10	11,587.5	450.1	-171.9	547,328.16	745,596.44	32° 30' 7.896 N	103° 32' 12.162 W
11,883.0	91.10	359.90	11,590.1	510.0	-171.9	547,388.06	745,596.44	32° 30' 8.489 N	103° 32' 12.157 W
11,915.0	91.70	359.80	11,589.3	542.0	-171.9	547,420.05	745,596.35	32° 30' 8.806 N	103° 32' 12.155 W
12,010.0	93.20	359.30	11,585.2	636.9	-172.7	547,514.96	745,595.61	32° 30' 9.745 N	103° 32' 12.155 W
12,106.0	93.60	0.40	11,579.5	732.7	-172.9	547,610.79	745,595.36	32° 30' 10.693 N	103° 32' 12.150 W
12,201.0	92.20	1.30	11,574.7	827.6	-171.5	547,705.65	745,596.76	32° 30' 11.632 N	103° 32' 12.125 W
12,296.0	92.20	1.70	11,571.1	922.4	-169.0	547,800.55	745,599.25	32° 30' 12.571 N	103° 32' 12.088 W
12,392.0	90.60	2.10	11,568.7	1,018.4	-165.9	547,896.47	745,602.43	32° 30' 13.519 N	103° 32' 12.043 W
12,488.0	90.60	1.60	11,567.7	1,114.3	-162.8	547,992.41	745,605.53	32° 30' 14.469 N	103° 32' 11.998 W
12,582.0	90.90	1.80	11,566.5	1,208.3	-160.0	548,086.36	745,608.32	32° 30' 15.398 N	103° 32' 11.957 W
12,677.0	91.90	1.90	11,564.2	1,303.2	-156.9	548,181.28	745,611.38	32° 30' 16.337 N	103° 32' 11.913 W
12,772.0	90.40	1.20	11,562.3	1,398.1	-154.3	548,276.22	745,613.95	32° 30' 17.276 N	103° 32' 11.875 W
12,867.0	90.60	359.00	11,561.4	1,493.1	-154.2	548,371.22	745,614.12	32° 30' 18.216 N	103° 32' 11.865 W
12,963.0	90.10	359.80	11,560.9	1,589.1	-155.2	548,467.21	745,613.11	32° 30' 19.166 N	103° 32' 11.868 W
13,058.0	91.10	1.10	11,559.9	1,684.1	-154.4	548,562.20	745,613.86	32° 30' 20.106 N	103° 32' 11.851 W
13,154.0	92.50	1.10	11,556.8	1,780.0	-152.6	548,658.13	745,615.70	32° 30' 21.055 N	103° 32' 11.821 W
13,249.0	90.70	0.40	11,554.2	1,875.0	-151.4	548,753.08	745,616.94	32° 30' 21.994 N	103° 32' 11.798 W
13,344.0	92.10	0.90	11,551.9	1,969.9	-150.3	548,848.04	745,618.02	32° 30' 22.934 N	103° 32' 11.777 W
13,439.0	91.80	359.90	11,548.6	2,064.9	-149.6	548,942.98	745,618.68	32° 30' 23.873 N	103° 32' 11.761 W
13,534.0	91.50	359.20	11,545.9	2,159.8	-150.4	549,037.94	745,617.94	32° 30' 24.813 N	103° 32' 11.762 W
13,629.0	90.60	359.00	11,544.2	2,254.8	-151.9	549,132.91	745,616.45	32° 30' 25.753 N	103° 32' 11.771 W
13,725.0	91.30	1.40	11,542.6	2,350.8	-151.5	549,228.89	745,616.78	32° 30' 26.703 N	103° 32' 11.759 W
13,820.0	91.50	1.00	11,540.2	2,445.7	-149.5	549,323.84	745,618.77	32° 30' 27.642 N	103° 32' 11.727 W
13,917.0	92.20	0.80	11,537.1	2,542.7	-148.0	549,420.78	745,620.29	32° 30' 28.601 N	103° 32' 11.701 W
14,012.0	91.70	0.60	11,533.9	2,637.6	-146.8	549,515.71	745,621.45	32° 30' 29.540 N	103° 32' 11.679 W
14,107.0	91.10	0.80	11,531.6	2,732.6	-145.7	549,610.68	745,622.61	32° 30' 30.480 N	103° 32' 11.657 W
14,201.0	90.20	1.40	11,530.5	2,826.6	-143.9	549,704.65	745,624.42	32° 30' 31.410 N	103° 32' 11.628 W
14,296.0	90.30	1.50	11,530.1	2,921.5	-141.5	549,799.62	745,626.82	32° 30' 32.349 N	103° 32' 11.592 W
14,390.0	91.30	1.80	11,528.8	3,015.5	-138.8	549,893.57	745,629.53	32° 30' 33.279 N	103° 32' 11.552 W
14,485.0	91.00	2.20	11,526.9	3,110.4	-135.5	549,988.50	745,632.84	32° 30' 34.218 N	103° 32' 11.505 W
14,580.0	90.30	1.90	11,525.8	3,205.3	-132.1	550,083.43	745,636.24	32° 30' 35.157 N	103° 32' 11.457 W
14,675.0	89.90	2.00	11,525.6	3,300.3	-128.8	550,178.37	745,639.47	32° 30' 36.096 N	103° 32' 11.411 W
14,770.0	90.30	1.90	11,525.5	3,395.2	-125.6	550,273.32	745,642.71	32° 30' 37.035 N	103° 32' 11.365 W
14,864.0	89.90	1.90	11,525.3	3,489.2	-122.5	550,367.27	745,645.82	32° 30' 37.965 N	103° 32' 11.320 W
14,958.0	90.60	2.00	11,524.9	3,583.1	-119.3	550,461.21	745,649.02	32° 30' 38.894 N	103° 32' 11.275 W
15,052.0	92.00	2.60	11,522.7	3,677.0	-115.5	550,555.11	745,652.79	32° 30' 39.823 N	103° 32' 11.222 W
15,147.0	91.30	2.50	11,520.0	3,771.9	-111.3	550,649.97	745,657.02	32° 30' 40.761 N	103° 32' 11.165 W
15,241.0	90.70	1.90	11,518.4	3,865.8	-107.7	550,743.89	745,660.62	32° 30' 41.690 N	103° 32' 11.114 W
15,335.0	89.90	0.70	11,517.9	3,959.8	-105.5	550,837.86	745,662.76	32° 30' 42.620 N	103° 32' 11.081 W
15,429.0	90.30	0.90	11,517.7	4,053.7	-104.2	550,931.85	745,664.07	32° 30' 43.550 N	103° 32' 11.058 W



TDS
Survey Report - Geographic



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #5H
Project:	Lea County, NM	TVD Reference:	KB @ 3809.9usft
Site:	Ben Lilly 2 State Corn	MD Reference:	KB @ 3809.9usft
Well:	#5H	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
15,524.0	90.60	1.20	11,517.0	4,148.7	-102.5	551,026.83	745,665.81	32° 30' 44.490 N	103° 32' 11.029 W
15,618.0	89.80	0.20	11,516.6	4,242.7	-101.3	551,120.82	745,666.96	32° 30' 45.420 N	103° 32' 11.008 W
15,713.0	90.60	359.70	11,516.3	4,337.7	-101.4	551,215.82	745,666.88	32° 30' 46.360 N	103° 32' 11.000 W
15,807.0	91.80	359.40	11,514.3	4,431.7	-102.2	551,309.80	745,666.14	32° 30' 47.289 N	103° 32' 11.001 W
15,903.0	93.30	359.80	11,510.1	4,527.6	-102.8	551,405.69	745,665.47	32° 30' 48.238 N	103° 32' 11.000 W
15,997.0	94.70	359.70	11,503.5	4,621.4	-103.2	551,499.46	745,665.06	32° 30' 49.166 N	103° 32' 10.997 W
16,092.0	94.40	359.00	11,496.0	4,716.1	-104.3	551,594.16	745,663.98	32° 30' 50.103 N	103° 32' 11.001 W
16,186.0	92.50	357.60	11,490.3	4,809.8	-107.1	551,687.94	745,661.20	32° 30' 51.032 N	103° 32' 11.025 W
16,280.0	90.50	357.90	11,487.9	4,903.7	-110.8	551,781.83	745,657.51	32° 30' 51.961 N	103° 32' 11.060 W
16,375.0	91.80	358.10	11,486.0	4,998.6	-114.1	551,876.75	745,654.20	32° 30' 52.900 N	103° 32' 11.091 W
16,470.0	90.20	358.50	11,484.3	5,093.6	-116.9	551,971.69	745,651.38	32° 30' 53.840 N	103° 32' 11.115 W
16,564.0	91.10	358.90	11,483.2	5,187.6	-119.1	552,065.66	745,649.25	32° 30' 54.770 N	103° 32' 11.132 W
16,659.0	89.90	358.60	11,482.4	5,282.5	-121.1	552,160.63	745,647.17	32° 30' 55.710 N	103° 32' 11.148 W
16,753.0	90.90	359.00	11,481.7	5,376.5	-123.1	552,254.61	745,645.21	32° 30' 56.640 N	103° 32' 11.163 W
16,848.0	90.00	358.40	11,481.0	5,471.5	-125.2	552,349.58	745,643.05	32° 30' 57.580 N	103° 32' 11.180 W
16,942.0	90.90	358.80	11,480.3	5,565.4	-127.5	552,443.55	745,640.75	32° 30' 58.510 N	103° 32' 11.198 W
17,036.0	92.30	358.90	11,477.6	5,659.4	-129.4	552,537.49	745,638.87	32° 30' 59.439 N	103° 32' 11.212 W
17,131.0	91.10	358.80	11,474.8	5,754.3	-131.3	552,632.42	745,636.96	32° 31' 0.379 N	103° 32' 11.226 W
17,225.0	91.90	358.60	11,472.4	5,848.3	-133.5	552,726.37	745,634.83	32° 31' 1.309 N	103° 32' 11.243 W
17,320.0	90.60	359.00	11,470.3	5,943.2	-135.5	552,821.32	745,632.84	32° 31' 2.248 N	103° 32' 11.258 W
17,414.0	91.00	358.40	11,469.0	6,037.2	-137.6	552,915.29	745,630.71	32° 31' 3.178 N	103° 32' 11.274 W
17,509.0	91.50	357.60	11,466.9	6,132.1	-140.9	553,010.21	745,627.39	32° 31' 4.118 N	103° 32' 11.305 W
17,604.0	91.90	359.70	11,464.1	6,227.0	-143.1	553,105.13	745,625.16	32° 31' 5.057 N	103° 32' 11.323 W
17,698.0	93.10	359.70	11,460.0	6,320.9	-143.6	553,199.04	745,624.67	32° 31' 5.987 N	103° 32' 11.320 W
17,793.0	92.20	0.20	11,455.6	6,415.8	-143.7	553,293.94	745,624.58	32° 31' 6.926 N	103° 32' 11.313 W
17,888.0	90.70	359.70	11,453.2	6,510.8	-143.8	553,388.90	745,624.50	32° 31' 7.865 N	103° 32' 11.305 W
17,982.0	91.60	359.60	11,451.3	6,604.8	-144.4	553,482.88	745,623.93	32° 31' 8.795 N	103° 32' 11.304 W
18,076.0	90.40	359.30	11,449.7	6,698.8	-145.3	553,576.86	745,623.02	32° 31' 9.725 N	103° 32' 11.306 W
18,171.0	91.50	359.40	11,448.1	6,793.7	-146.4	553,671.84	745,621.95	32° 31' 10.665 N	103° 32' 11.311 W
18,265.0	90.30	0.70	11,446.6	6,887.7	-146.3	553,765.83	745,622.03	32° 31' 11.595 N	103° 32' 11.301 W
18,360.0	91.60	0.90	11,445.0	6,982.7	-144.9	553,860.80	745,623.35	32° 31' 12.535 N	103° 32' 11.278 W
18,454.0	90.30	0.00	11,443.5	7,076.7	-144.2	553,954.78	745,624.09	32° 31' 13.465 N	103° 32' 11.261 W
18,549.0	92.00	0.30	11,441.6	7,171.7	-144.0	554,049.76	745,624.34	32° 31' 14.404 N	103° 32' 11.250 W
18,644.0	90.40	0.20	11,439.6	7,266.6	-143.5	554,144.73	745,624.76	32° 31' 15.344 N	103° 32' 11.236 W
18,717.0	91.10	0.20	11,438.6	7,339.6	-143.3	554,217.73	745,625.01	32° 31' 16.066 N	103° 32' 11.227 W
Final Survey									
18,770.0	91.10	0.20	11,437.6	7,392.6	-143.1	554,270.72	745,625.19	32° 31' 16.591 N	103° 32' 11.220 W
PTB									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL (BL #5H/OH Plan	0.00	0.00	11,420.0	7,403.0	-122.6	554,281.10	745,645.70	32° 31' 16.692 N	103° 32' 10.980 W
- actual wellpath misses target center by 28.9usft at 18770.0usft MD (11437.6 TVD, 7392.6 N, -143.1 E)									
- Point									



TDS
Survey Report - Geographic



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #5H
Project:	Lea County, NM	TVD Reference:	KB @ 3809.9usft
Site:	Ben Lilly 2 State Corn	MD Reference:	KB @ 3809.9usft
Well:	#5H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
18,717.0	11,438.6	7,339.6	-143.3	Final Survey
18,770.0	11,437.6	7,392.6	-143.1	PTB

Checked By: _____	Approved By: _____	Date: _____
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COG Operating LLC
Project: Lea County, NM
Site: Ben Lilly 2 State Com
Well: #5H
Wellbore: OH
Plan: Plan #3 (#5H/OH)

Section Details

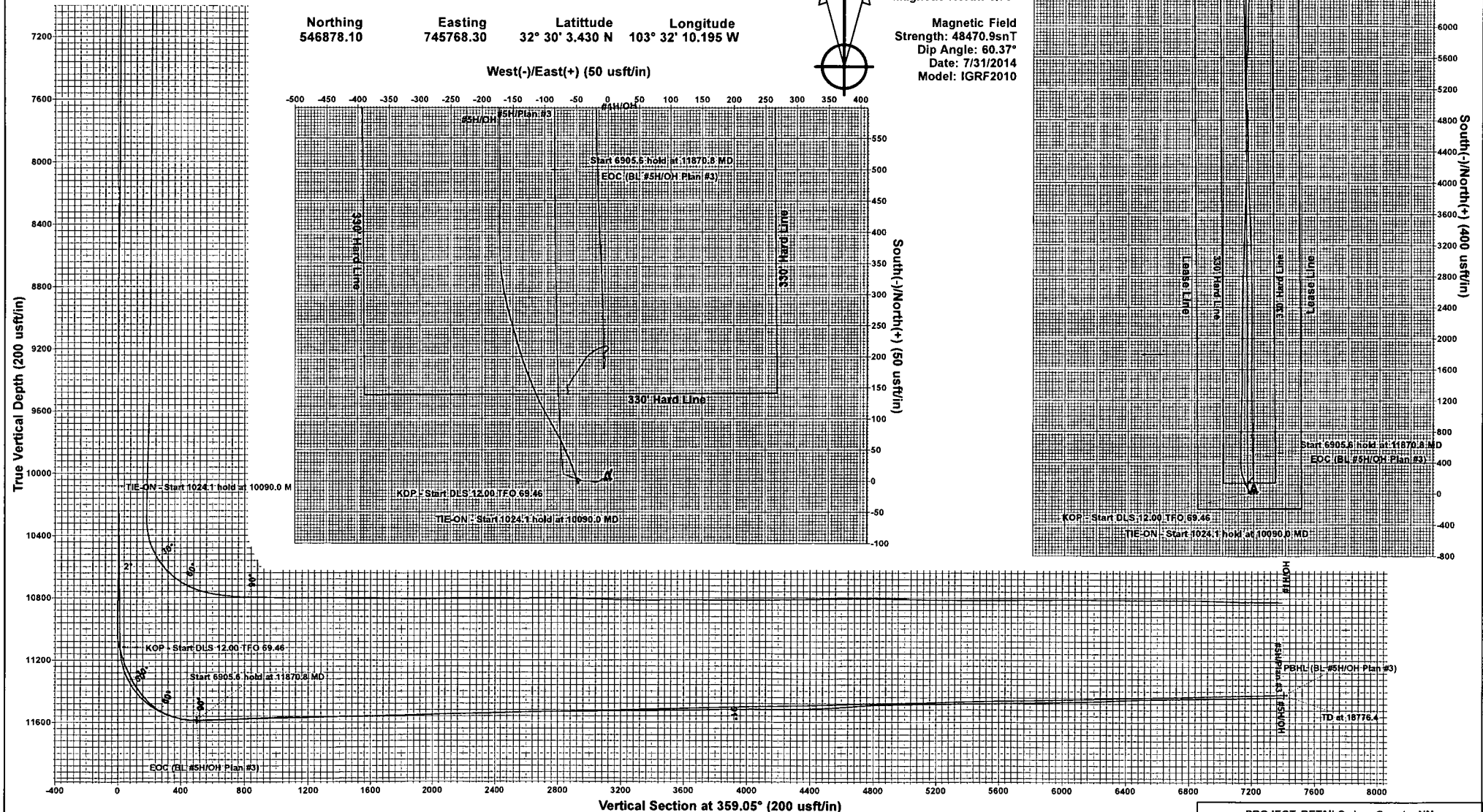
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	10090.0	1.61	290.19	10088.9	0.8	-41.7	0.00	0.00	1.5	
2	11114.1	1.61	290.19	11112.6	10.7	-68.7	0.00	0.00	11.9	
3	11870.8	91.37	359.68	11585.0	499.5	-84.2	12.00	69.46	500.8	
4	18776.4	91.37	359.68	11420.0	7403.0	-122.6	0.00	0.00	7404.0	PBHL (BL #5H/OH Plan #3)

#5H

Ground Elevation:: 3783.9
RKB Elevation: KB @ 3809.9usft

Northing 546878.10 Easting 745768.30 Latitude 32° 30' 3.430 N Longitude 103° 32' 10.195 W

West(-)/East(+) (50 usft/in)



Azimuths to Grid North
True North: -0.43°
Magnetic North: 6.78°

Magnetic Field
Strength: 48470.9snT
Dip Angle: 60.37°
Date: 7/31/2014
Model: IGRF2010



Terra Directional Services LLC
322 Spring Hill Drive, Suite A300, Spring, Tx 77386
Phone: 432-425-7532

PROJECT DETAILS: Lea County, NM
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level
Local North: Grid