

Results of Directional Survey

API number:	30-025-41106		
OGRID:		Operator:	COG PRODUCTION, LLC
		Property:	GOOSE STATE # 1H

surface	ULSTR:	C	32	T	20S	R	34E
				190	FNL	1980	FWL

BH Loc	ULSTR:	N	32	T	20S	R	34E
15665	MD	11371.8	TVD	319	FSL	2052	FWL
				4961	FNL		

Top Perf/OH	ULSTR:	C	32	T	20S	R	34E
11432	MD	11229.9	TVD	732	FNL	2044	FWL

Bot Perf/OH	ULSTR:	N	32	T	20S	R	34E
15524	MD	11365.9	TVD	460	FSL	2051	FWL
				4820	FNL		

	MD	N/S	E/W	VD
	11401	-512.70	64.20	11220.3
TOP PERFS/OH	11432	-542.10	63.50	11229.90
	11432	-542.10	63.50	11229.90
	15476	-4582.50	70.60	11363.90
BOT PERFS/OH	15524	-4630.45	70.90	11365.87
	15571	-4677.40	71.20	11367.80

NEXT TO LAST	15617	-4723.30	71.60	11369.70
LAST READING	15665	-4771.30	72.20	11371.80
TD	15665	-4771.30	72.20	11371.80

Surface Location	190	FN	1980	FW
Projected BHL	4961	FN	2052	FW
Location of				
Top Perfs/OH	732	FN	2044	FW
Bottom Perfs/OH	4820	FN	2051	FW

SUMMARY of Subsurface Locations

Surface Location	C-32-20S-34E	190	FN	1980	FW	Vert. Depth
Top Perfs/OH	C-32-20S-34E	732	FN	2044	FW	11229.90
Bottom Perfs/OH	N-32-20S-34E	4820	FN	2051	FW	11365.87
Projected TD	N-32-20S-34E	4961	FN	2052	FW	11371.80

NOV 05 2013



A GYRO TECHNOLOGIES INC. COMPANY

PO Box 261021
Corpus Christi, Texas 78426
(361) 767-0602 • (800) 606-GYRO • Fax (361) 767-0612

June 24, 2013

HOBBS OCD

SEP 13 2013

RECEIVED

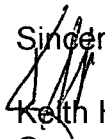
Concho Resources, Inc.
One Concho Center
600 W. Illinois Avenue
Midland, Texas 79701

Attn: Kanicia Castillo

RE: **Goose State No. 001H**

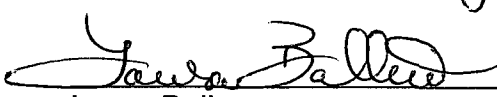
Please find enclosed a copy of the survey from 0.00' to 10596.00' ran on the above referenced well.

Sincerely,

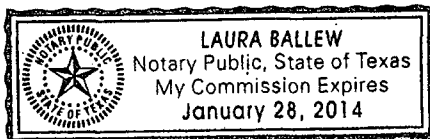

Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 24th day of June, A.D., 2013, by Keith Havelka.



Laura Ballew
Notary Public, State of Texas





Company: COG Operating LLC (Concho)

Lease/Well: Goose State/No. 001H

Rig Name: Precision 105

State/County: New Mexico/Lea

Latitude: 32.54, Longitude: -103.58

GRID North is 0.40 Degrees East of True North

VS-Azi: 179.58 Degrees



Depth Reference : RKB = 26ft

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: final.ut

Minimum Curvature Method

Report Date/Time: 6/24/2013 / 10:09

Vaughn Energy Services

Fort Worth, Texas

817-741-3610

Surveyor: Jay Carroll

Goose State No. 001H / API 30-025-41106

RECEIVED
SEP 13 2013
HOBBS OCD

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W 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	****
100.00	0.20	85.19	100.00	0.01	0.17	0.18	85.19	0.20
200.00	0.20	92.46	200.00	0.02	0.52	0.52	87.59	0.03
300.00	0.29	133.93	300.00	-0.16	0.88	0.89	100.50	0.20
400.00	0.42	143.94	400.00	-0.63	1.28	1.43	116.42	0.14
500.00	0.22	183.32	499.99	-1.12	1.48	1.86	127.21	0.28
600.00	0.68	140.77	599.99	-1.78	1.84	2.56	133.97	0.54
700.00	0.25	156.53	699.99	-2.44	2.31	3.36	136.61	0.44
800.00	0.37	118.90	799.99	-2.80	2.68	3.87	136.26	0.23
900.00	0.68	112.38	899.98	-3.18	3.51	4.74	132.20	0.31
1000.00	1.23	137.88	999.97	-4.20	4.77	6.36	131.36	0.69
1100.00	1.55	148.64	1099.94	-6.16	6.20	8.74	134.80	0.41
1200.00	2.02	132.83	1199.89	-8.51	8.20	11.82	136.08	0.68
1300.00	1.97	155.27	1299.83	-11.28	10.21	15.21	137.83	0.78
1400.00	1.25	149.47	1399.79	-13.77	11.48	17.93	140.18	0.74
1500.00	0.98	148.08	1499.77	-15.43	12.49	19.85	141.03	0.27
1600.00	0.60	117.34	1599.76	-16.40	13.40	21.18	140.74	0.55
1700.00	0.66	114.18	1699.76	-16.87	14.39	22.18	139.54	0.07
1800.00	1.39	87.84	1799.74	-17.06	16.13	23.48	136.62	0.85

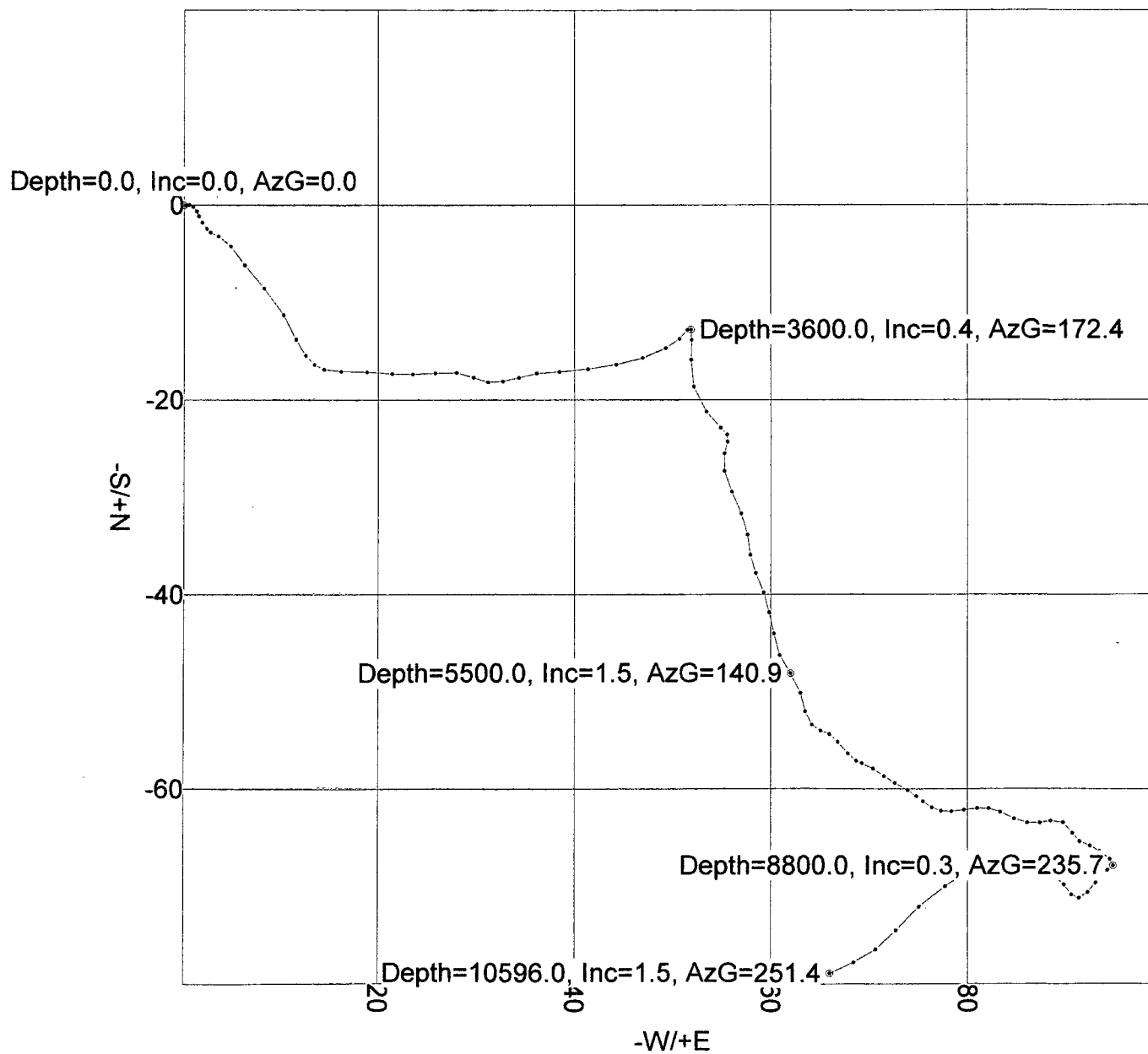
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
1900.00	1.78	93.85	1899.70	-17.12	18.89	25.49	132.19	0.43
2000.00	1.11	94.23	1999.67	-17.30	21.41	27.52	128.94	0.67
2100.00	1.35	89.36	2099.65	-17.36	23.56	29.26	126.38	0.26
2200.00	1.32	84.31	2199.62	-17.23	25.88	31.09	123.65	0.12
2300.00	1.14	94.31	2299.60	-17.19	28.02	32.87	121.53	0.28
2400.00	1.01	119.09	2399.58	-17.69	29.78	34.64	120.71	0.48
2500.00	0.81	94.54	2499.57	-18.18	31.26	36.16	120.18	0.43
2600.00	0.94	79.72	2599.56	-18.09	32.76	37.42	118.90	0.26
2700.00	0.99	74.28	2699.54	-17.71	34.39	38.69	117.24	0.10
2800.00	1.14	78.10	2799.53	-17.27	36.20	40.11	115.51	0.17
2900.00	1.51	91.48	2899.50	-17.10	38.49	42.12	113.95	0.48
3000.00	1.84	78.93	2999.46	-16.82	41.39	44.68	112.12	0.50
3100.00	1.45	83.23	3099.41	-16.37	44.22	47.15	110.31	0.41
3200.00	1.72	70.00	3199.38	-15.70	46.89	49.45	108.52	0.45
3300.00	1.22	61.27	3299.34	-14.68	49.23	51.37	106.61	0.55
3400.00	0.80	46.54	3399.33	-13.69	50.67	52.48	105.12	0.49
3500.00	0.59	38.59	3499.32	-12.80	51.50	53.07	103.96	0.24
3600.00	0.40	172.41	3599.32	-12.75	51.86	53.41	103.81	0.91
3700.00	0.83	177.77	3699.31	-13.82	51.94	53.74	104.90	0.44
3800.00	1.52	183.27	3799.29	-15.87	51.89	54.26	107.00	0.69
3900.00	1.71	167.50	3899.25	-18.64	52.13	55.37	109.68	0.48
4000.00	1.70	139.62	3999.21	-21.23	53.42	57.48	111.67	0.82
4100.00	0.82	136.04	4099.18	-22.87	54.87	59.45	112.62	0.89
4200.00	0.29	140.08	4199.18	-23.58	55.53	60.33	113.00	0.53
4300.00	0.63	191.49	4299.18	-24.31	55.58	60.67	113.62	0.50
4400.00	0.79	197.64	4399.17	-25.50	55.27	60.87	114.77	0.18
4500.00	1.32	169.48	4499.15	-27.30	55.27	61.64	116.29	0.73
4600.00	1.30	152.27	4599.13	-29.44	56.00	63.27	117.73	0.39
4700.00	1.49	160.16	4699.10	-31.67	56.98	65.18	119.07	0.27
4800.00	1.12	168.36	4799.07	-33.85	57.61	66.82	120.43	0.42
4900.00	1.31	174.81	4899.05	-35.94	57.91	68.16	121.82	0.24
5000.00	1.00	148.83	4999.03	-37.82	58.47	69.63	122.90	0.60
5100.00	1.47	163.76	5099.01	-39.79	59.28	71.39	123.87	0.57
5200.00	0.96	166.58	5198.98	-41.84	59.83	73.01	124.97	0.51
5300.00	1.59	167.83	5298.96	-44.01	60.32	74.67	126.12	0.63
5400.00	1.05	161.09	5398.93	-46.23	60.90	76.46	127.20	0.56
5500.00	1.47	140.95	5498.91	-48.09	62.01	78.47	127.80	0.60
5600.00	1.22	167.68	5598.88	-50.13	63.04	80.54	128.49	0.67
5700.00	1.03	164.02	5698.86	-52.03	63.52	82.11	129.32	0.20

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
5800.00	0.78	139.67	5798.85	-53.41	64.20	83.52	129.76	0.45
5900.00	0.52	101.82	5898.84	-54.02	65.08	84.58	129.69	0.49
6000.00	0.61	117.56	5998.84	-54.36	65.99	85.50	129.48	0.18
6100.00	0.78	146.76	6098.83	-55.17	66.84	86.67	129.54	0.39
6200.00	1.02	132.56	6198.82	-56.34	67.86	88.20	129.70	0.32
6300.00	0.25	129.31	6298.81	-57.08	68.68	89.31	129.73	0.77
6400.00	0.52	106.64	6398.81	-57.35	69.28	89.94	129.61	0.30
6500.00	0.92	121.16	6498.80	-57.89	70.40	91.15	129.43	0.44
6600.00	0.64	128.90	6598.79	-58.65	71.52	92.49	129.36	0.30
6700.00	0.87	118.16	6698.78	-59.36	72.62	93.79	129.26	0.27
6800.00	0.85	120.53	6798.77	-60.09	73.92	95.27	129.11	0.04
6900.00	0.38	134.26	6898.77	-60.70	74.80	96.33	129.06	0.49
7000.00	0.63	126.38	6998.76	-61.25	75.47	97.20	129.06	0.26
7100.00	0.61	121.17	7098.76	-61.86	76.37	98.28	129.00	0.06
7200.00	0.51	101.86	7198.75	-62.23	77.27	99.21	128.84	0.21
7300.00	0.75	86.10	7298.75	-62.27	78.36	100.09	128.48	0.29
7400.00	0.73	79.89	7398.74	-62.12	79.64	101.00	127.95	0.08
7500.00	0.79	86.15	7498.73	-61.96	80.96	101.94	127.43	0.10
7600.00	0.55	98.58	7598.72	-61.98	82.12	102.89	127.04	0.28
7700.00	0.89	112.83	7698.71	-62.35	83.31	104.06	126.81	0.38
7800.00	0.93	119.40	7798.70	-63.05	84.72	105.61	126.66	0.11
7900.00	0.71	92.55	7898.69	-63.47	86.04	106.92	126.42	0.43
8000.00	0.73	89.86	7998.68	-63.50	87.30	107.95	126.03	0.04
8100.00	0.65	66.87	8098.68	-63.28	88.45	108.76	125.58	0.29
8200.00	0.99	116.93	8198.67	-63.45	89.74	109.90	125.26	0.76
8300.00	0.82	167.14	8298.66	-64.53	90.67	111.29	125.44	0.78
8400.00	0.67	105.03	8398.65	-65.38	91.39	112.37	125.58	0.78
8500.00	0.67	119.05	8498.64	-65.82	92.47	113.50	125.44	0.16
8600.00	0.62	122.01	8598.64	-66.39	93.44	114.63	125.39	0.06
8700.00	0.87	133.55	8698.63	-67.20	94.45	115.91	125.43	0.29
8800.00	0.31	235.71	8798.62	-67.87	94.78	116.57	125.61	0.98
8900.00	0.52	228.16	8898.62	-68.32	94.22	116.38	125.95	0.22
9000.00	0.38	219.47	8998.62	-68.87	93.67	116.27	126.32	0.16
9100.00	0.77	221.31	9098.61	-69.63	93.02	116.20	126.82	0.40
9200.00	0.67	217.01	9198.60	-70.60	92.23	116.15	127.44	0.11
9300.00	0.65	257.27	9298.60	-71.20	91.32	115.79	127.94	0.46
9400.00	0.60	338.58	9398.59	-70.84	90.57	114.98	128.03	0.82
9500.00	0.88	312.67	9498.59	-69.83	89.81	113.76	127.86	0.43
9600.00	1.36	309.79	9598.57	-68.54	88.33	111.81	127.81	0.48

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
9700.00	0.77	288.44	9698.55	-67.57	86.78	109.98	127.91	0.70
9800.00	0.97	278.82	9798.54	-67.23	85.30	108.60	128.24	0.25
9900.00	1.68	260.53	9898.51	-67.34	83.01	106.89	129.05	0.82
10000.00	1.59	241.02	9998.47	-68.25	80.35	105.43	130.34	0.56
10100.00	2.01	234.43	10098.42	-69.94	77.71	104.55	131.99	0.47
10200.00	1.89	228.40	10198.36	-72.06	75.05	104.04	133.84	0.24
10300.00	1.99	219.67	10298.31	-74.49	72.71	104.09	135.70	0.31
10400.00	1.28	236.44	10398.27	-76.45	70.66	104.11	137.25	0.85
10500.00	1.72	240.65	10498.23	-77.80	68.43	103.61	138.67	0.45
10596.00	1.47	251.43	10594.19	-78.90	66.01	102.87	140.08	0.41



Vaughn Energy Services
Fort Worth, Texas
817-741-3610
Surveyor: Jay Carroll
Goose State No. 001H / API 30-025-41106



VES Survey Date: 06/19/2013



COG Operating, LLC

Lea County, NM

Sec 32, T20S, R34E

Goose State #1H

Wellbore #1

Survey: MWD

DDC Survey Report

03 July, 2013





Survey Certification Sheet

COG Operating, LLC.
Company

WT-13472
Job Number

7/3/13
Date

Sec32, T20S, R34E
Lease

Goose State # 1H
Well Name

Lea, NM
County & State

API: 30-025-41106

Surveyed from a depth of: (OH) 10596 feet to 11736 feet MD
Surveyed from a depth of: (ST#1) 11306 feet to 15665 feet MD

Type of Survey: MWD

Directional Supervisor/Surveyor: Daniel Longoria

The data and calculations for this survey have been checked by me and conform to the standards and procedures set forth by **The Directional Drilling Company (DDC)**. This report represents a true and correct Directional survey of this well based on the original data obtained at the well site. Wellbore Coordinates are calculated using minimum curvature.

Digitally signed by Larry Wright
DN: cn=Larry Wright, o=The Directional Drilling
Company, ou=GM of Guidance Services,
email=larry@directional-drilling.com, c=US
Date: 2013.07.03 14:40:47 -0500

Larry Wright
MWD General Manager



DDC
Survey Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Goose State #1H
Project:	Lea County, NM	TVD Reference:	WELL @ 3743.0usft (Precision #105)
Site:	Sec 32, T20S, R34E	MD Reference:	WELL @ 3743.0usft (Precision #105)
Well:	Goose State #1H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	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	Sec 32, T20S, R34E		
Site Position:		Northing:	559,607.10 usft
From:	Map	Easting:	730,897.80 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 32' 10.452 N
		Longitude:	103° 35' 2.778 W
		Grid Convergence:	0.40 °

Well	Goose State #1H		
Well Position	+N/-S	0.0 usft	Northing: 559,607.10 usft
	+E/-W	0.0 usft	Easting: 730,897.80 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 32' 10.452 N
		Longitude:	103° 35' 2.778 W
		Ground Level:	3,717.4 usft

Wellbore	Wellbore #1		
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Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF2010	6/4/2013	7.37	60.42	48,604

Design	Wellbore #1		
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Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 0.0

Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0.0	0.0	0.0	179.58

Survey Program	Date 7/3/2013		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100.0	10,596.0	GYRO (Wellbore #1)	Good_gyro
10,672.0	11,736.0	MWD (Wellbore #1)	MWD default
			Good Gyro
			MWD - Standard

Survey									
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Vertical	Dogleg	Build	Turn
Depth	(°)	(°)	Depth	(usft)	(usft)	Section	Rate	Rate	Rate
(usft)			(usft)			(usft)	(°/100usft)	(°/100usft)	(°/100usft)
TIE IN @ 10596' MD / 10594' TVD									
10,596.0	1.47	251.43	10,594.2	-79.0	66.1	79.4	0.00	0.00	0.00
10,672.0	4.30	174.80	10,670.1	-82.1	65.4	82.6	5.54	3.72	-100.83
10,703.0	10.10	173.80	10,700.8	-86.0	65.8	86.5	18.71	18.71	-3.23
10,735.0	15.10	175.80	10,732.1	-92.9	66.4	93.4	15.68	15.63	6.25
10,767.0	17.70	172.80	10,762.8	-101.9	67.4	102.4	8.54	8.13	-9.38
10,799.0	20.50	173.10	10,793.0	-112.3	68.6	112.8	8.76	8.75	0.94
10,831.0	23.30	174.00	10,822.7	-124.2	70.0	124.7	8.81	8.75	2.81
10,862.0	25.50	177.20	10,850.9	-136.9	70.9	137.4	8.28	7.10	10.32
10,894.0	26.90	178.40	10,879.6	-151.0	71.5	151.6	4.68	4.38	3.75



DDC
Survey Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Goose State #1H
Project:	Lea County, NM	TVD Reference:	WELL @ 3743.0usft (Precision #105)
Site:	Sec 32, T20S, R34E	MD Reference:	WELL @ 3743.0usft (Precision #105)
Well:	Goose State #1H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,925.0	29.50	179.10	10,906.9	-165.7	71.8	166.2	8.45	8.39	2.26
10,957.0	33.10	181.90	10,934.3	-182.3	71.6	182.8	12.13	11.25	8.75
10,989.0	34.40	181.90	10,960.9	-200.1	71.0	200.6	4.06	4.06	0.00
11,020.0	35.30	180.10	10,986.3	-217.8	70.7	218.3	4.41	2.90	-5.81
11,052.0	37.80	178.10	11,012.0	-236.8	71.0	237.3	8.65	7.81	-6.25
11,084.0	41.10	178.20	11,036.7	-257.1	71.7	257.7	10.31	10.31	0.31
11,115.0	44.80	179.00	11,059.4	-278.3	72.2	278.8	12.06	11.94	2.58
11,147.0	48.60	180.40	11,081.4	-301.5	72.3	302.1	12.29	11.88	4.38
11,179.0	51.70	181.90	11,101.9	-326.1	71.8	326.6	10.33	9.69	4.69
11,210.0	51.60	181.60	11,121.1	-350.4	71.1	350.9	0.82	-0.32	-0.97
11,242.0	53.40	180.70	11,140.6	-375.8	70.6	376.3	6.05	5.63	-2.81
11,274.0	56.40	180.60	11,159.0	-402.0	70.3	402.5	9.38	9.38	-0.31
11,306.0	59.30	179.90	11,176.0	-429.0	70.2	429.5	9.25	9.06	-2.19
11,337.0	63.10	179.80	11,191.0	-456.2	70.2	456.7	12.26	12.26	-0.32
11,369.0	66.00	180.30	11,204.7	-485.1	70.2	485.6	9.17	9.06	1.56
11,401.0	67.90	180.90	11,217.2	-514.5	69.9	515.0	6.18	5.94	1.88
11,432.0	70.80	181.40	11,228.2	-543.5	69.3	544.0	9.48	9.35	1.61
11,464.0	75.20	180.90	11,237.5	-574.1	68.7	574.6	13.83	13.75	-1.56
11,495.0	79.20	180.00	11,244.4	-604.3	68.5	604.8	13.21	12.90	-2.90
11,527.0	79.70	179.80	11,250.2	-635.8	68.5	636.3	1.68	1.56	-0.63
11,558.0	81.90	180.50	11,255.2	-666.4	68.4	666.9	7.44	7.10	2.26
11,590.0	84.80	181.00	11,258.9	-698.2	68.0	698.7	9.19	9.06	1.56
11,635.0	88.00	181.30	11,261.7	-743.1	67.1	743.6	7.14	7.11	0.67
11,685.0	88.70	181.40	11,263.2	-793.0	66.0	793.5	1.41	1.40	0.20
TD @ 11736' MD / 11263.3' TVD									
11,736.0	91.00	181.00	11,263.3	-844.0	64.9	844.5	4.58	4.51	-0.78

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
10,596.0	10,594.2	-79.0	66.1	TIE IN @ 10596' MD / 10594' TVD
11,736.0	11,263.3	-844.0	64.9	TD @ 11736' MD / 11263.3' TVD

Checked By: _____ Approved By: _____ Date: _____



COG Operating, LLC

Lea County, NM

Sec 32, T20S, R34E

Goose State #1H

Sidetrack #1

Survey: DDC MWD

DDC Survey Report

03 July, 2013





DDC
Survey Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Goose State #1H
Project:	Lea County, NM	TVD Reference:	WELL @ 3743.0usft (Precision #105)
Site:	Sec 32, T20S, R34E	MD Reference:	WELL @ 3743.0usft (Precision #105)
Well:	Goose State #1H	North Reference:	Grid
Wellbore:	Sidetrack #1	Survey Calculation Method:	Minimum Curvature
Design:	Sidetrack #1	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	Sec 32, T20S, R34E		
Site Position:		Northing:	559,607.10 usft
From:	Map	Easting:	730,897.80 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 32' 10.452 N
		Longitude:	103° 35' 2.778 W
		Grid Convergence:	0.40 °

Well	Goose State #1H		
Well Position	+N/-S	0.0 usft	Northing: 559,607.10 usft
	+E/-W	0.0 usft	Easting: 730,897.80 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 32' 10.452 N
		Longitude:	103° 35' 2.778 W
		Ground Level:	3,717.4 usft

Wellbore	Sidetrack #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	6/22/2013	7.37	60.42	48,599

Design	Sidetrack #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	11,306.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	179.11	

Survey Program	Date 7/3/2013			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	10,596.0	GYRO (Wellbore #1)	Good_gyro	Good Gyro
10,672.0	11,306.0	MWD (Wellbore #1)	MWD default	MWD - Standard
11,338.0	15,665.0	DDC MWD (Sidetrack #1)	MWD default	MWD - Standard

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
TIE INTO SIDETRACK @ 11306' MD / 11176' TVD									
11,306.0	59.30	179.90	11,176.0	-429.0	70.2	430.1	0.00	0.00	0.00
11,338.0	59.00	185.80	11,192.4	-456.5	68.8	457.5	15.85	-0.94	18.44
11,369.0	63.60	184.90	11,207.3	-483.5	66.3	484.5	15.06	14.84	-2.90
11,401.0	68.40	183.30	11,220.3	-512.7	64.2	513.6	15.68	15.00	-5.00
11,432.0	75.80	179.60	11,229.9	-542.1	63.5	543.1	26.43	23.87	-11.94
11,498.0	89.30	177.70	11,238.4	-607.4	65.0	608.4	20.65	20.45	-2.88
11,593.0	90.50	178.50	11,238.6	-702.4	68.2	703.3	1.52	1.26	0.84
11,688.0	89.60	179.90	11,238.5	-797.3	69.5	798.3	1.75	-0.95	1.47



DDC
Survey Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Goose State #1H
Project:	Lea County, NM	TVD Reference:	WELL @ 3743.0usft (Precision #105)
Site:	Sec 32, T20S, R34E	MD Reference:	WELL @ 3743.0usft (Precision #105)
Well:	Goose State #1H	North Reference:	Grid
Wellbore:	Sidetrack #1	Survey Calculation Method:	Minimum Curvature
Design:	Sidetrack #1	Database:	EDM 5000.1 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,783.0	89.40	179.30	11,239.3	-892.3	70.2	893.3	0.67	-0.21	-0.63
11,877.0	89.40	179.10	11,240.3	-986.3	71.5	987.3	0.21	0.00	-0.21
11,972.0	88.60	179.90	11,242.0	-1,081.3	72.3	1,082.3	1.19	-0.84	0.84
12,066.0	88.80	179.50	11,244.1	-1,175.3	72.8	1,176.3	0.48	0.21	-0.43
12,161.0	88.10	179.70	11,246.7	-1,270.2	73.5	1,271.2	0.77	-0.74	0.21
12,256.0	88.10	179.80	11,249.8	-1,365.2	73.9	1,366.2	0.11	0.00	0.11
12,351.0	88.20	179.50	11,252.9	-1,460.1	74.5	1,461.1	0.33	0.11	-0.32
12,445.0	88.30	179.30	11,255.7	-1,554.1	75.4	1,555.1	0.24	0.11	-0.21
12,539.0	88.90	180.30	11,258.0	-1,648.1	75.8	1,649.0	1.24	0.64	1.06
12,634.0	88.90	179.90	11,259.9	-1,743.0	75.6	1,744.0	0.42	0.00	-0.42
12,729.0	88.30	181.70	11,262.2	-1,838.0	74.3	1,838.9	2.00	-0.63	1.89
12,824.0	86.50	181.30	11,266.5	-1,932.9	71.8	1,933.7	1.94	-1.89	-0.42
12,919.0	87.30	181.10	11,271.6	-2,027.7	69.8	2,028.5	0.87	0.84	-0.21
13,014.0	87.10	180.50	11,276.3	-2,122.6	68.5	2,123.4	0.67	-0.21	-0.63
13,108.0	88.50	180.50	11,279.9	-2,216.5	67.7	2,217.3	1.49	1.49	0.00
13,204.0	89.60	180.80	11,281.5	-2,312.5	66.6	2,313.2	1.19	1.15	0.31
13,298.0	89.00	179.60	11,282.6	-2,406.5	66.2	2,407.2	1.43	-0.64	-1.28
13,393.0	89.70	179.30	11,283.7	-2,501.5	67.2	2,502.2	0.80	0.74	-0.32
13,488.0	87.70	180.10	11,285.9	-2,596.4	67.6	2,597.2	2.27	-2.11	0.84
13,583.0	86.60	179.50	11,290.6	-2,691.3	68.0	2,692.0	1.32	-1.16	-0.63
13,677.0	86.50	179.50	11,296.2	-2,785.1	68.8	2,785.9	0.11	-0.11	0.00
13,772.0	88.10	179.40	11,300.7	-2,880.0	69.7	2,880.8	1.69	1.68	-0.11
13,866.0	88.00	179.40	11,303.9	-2,974.0	70.7	2,974.7	0.11	-0.11	0.00
13,961.0	87.70	179.00	11,307.5	-3,068.9	72.0	3,069.6	0.53	-0.32	-0.42
14,056.0	87.30	178.60	11,311.6	-3,163.8	74.0	3,164.5	0.60	-0.42	-0.42
14,151.0	87.40	178.90	11,316.0	-3,258.7	76.1	3,259.4	0.33	0.11	0.32
14,245.0	87.90	178.40	11,319.9	-3,352.5	78.3	3,353.4	0.75	0.53	-0.53
14,341.0	87.80	178.40	11,323.5	-3,448.4	81.0	3,449.3	0.10	-0.10	0.00
14,441.0	88.00	179.30	11,327.1	-3,548.4	83.0	3,549.2	0.92	0.20	0.90
14,530.0	88.40	180.40	11,329.9	-3,637.3	83.2	3,638.2	1.31	0.45	1.24
14,624.0	88.80	181.30	11,332.2	-3,731.3	81.8	3,732.1	1.05	0.43	0.96
14,719.0	88.40	181.10	11,334.5	-3,826.2	79.8	3,827.0	0.47	-0.42	-0.21
14,814.0	86.80	180.40	11,338.5	-3,921.1	78.6	3,921.9	1.84	-1.68	-0.74
14,908.0	86.60	180.60	11,343.9	-4,015.0	77.8	4,015.7	0.30	-0.21	0.21
15,003.0	86.20	180.60	11,349.9	-4,109.8	76.8	4,110.5	0.42	-0.42	0.00
15,097.0	88.00	181.30	11,354.6	-4,203.6	75.2	4,204.3	2.05	1.91	0.74
15,129.0	89.20	181.30	11,355.4	-4,235.6	74.5	4,236.3	3.75	3.75	0.00
15,192.0	89.20	181.30	11,356.3	-4,298.6	73.1	4,299.2	0.00	0.00	0.00
15,287.0	89.00	180.90	11,357.8	-4,393.6	71.2	4,394.1	0.47	-0.21	-0.42
15,381.0	88.00	180.10	11,360.3	-4,487.5	70.4	4,488.1	1.36	-1.06	-0.85
15,476.0	87.60	179.70	11,363.9	-4,582.5	70.6	4,583.0	0.60	-0.42	-0.42
15,571.0	87.70	179.60	11,367.8	-4,677.4	71.2	4,677.9	0.15	0.11	-0.11
15,617.0	87.50	179.30	11,369.7	-4,723.3	71.6	4,723.9	0.78	-0.43	-0.65



DDC
Survey Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Goose State #1H
Project:	Lea County, NM	TVD Reference:	WELL @ 3743.0usft (Precision #105)
Site:	Sec 32, T20S, R34E	MD Reference:	WELL @ 3743.0usft (Precision #105)
Well:	Goose State #1H	North Reference:	Grid
Wellbore:	Sidetrack #1	Survey Calculation Method:	Minimum Curvature
Design:	Sidetrack #1	Database:	EDM 5000.1 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
TD @ 15665' MD / 11371.8' TVD									
15,665.0	87.50	179.30	11,371.8	-4,771.3	72.2	4,771.8	0.00	0.00	0.00

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
11,306.0	11,176.0	-429.0	70.2	TIE INTO SIDETRACK @ 11306' MD / 11176' TVD
15,665.0	11,371.8	-4,771.3	72.2	TD @ 15665' MD / 11371.8' TVD

Checked By: _____	Approved By: _____	Date: _____
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