

Results of Directional Survey

API number:	30-025-39267		
OGRID:		Operator:	COG OPERATING LLC
		Property:	GC FEDERAL # 21

surface	ULSTR:	J	20	T 17S	R 32E
				1980 FSL	2110 FEL

BH Loc	ULSTR:	J	20	T 17S	R 32E
7038	MD	7013.0	TVD	2296 FSL	2302 FEL

Top Perf/OH	ULSTR:	J	20	T 17S	R 32E
5408	MD	5383.0	TVD	2296 FSL	2302 FEL

Bot Perf/OH	ULSTR:	J	20	T 17S	R 32E
6850	MD	6825.0	TVD	2296 FSL	2302 FEL

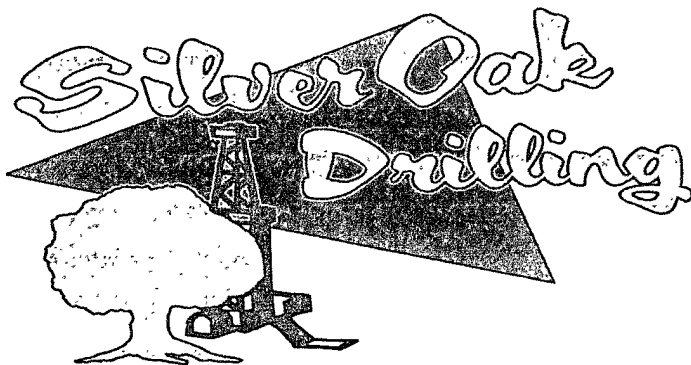
	MD	N/S	E/W	VD
		315.70	-191.60	
TOP PERFS/OH	5408	315.70	-191.60	5383.00
	5404	315.70	-191.60	
		315.70	-191.60	
BOT PERFS/OH	6850	315.70	-191.60	6825.00
	5404	315.70	-191.60	

NEXT TO LAST		315.70	-191.60	
LAST READING	5404	315.70	-191.60	
TD	7038	315.70	-191.60	7013.00

Surface Location	1980	FS	2110	FE
Projected BHL	2296	FS	2302	FE
Location of				
Top Perfs/OH	2296	FS	2302	FE
Bottom Perfs/OH	2296	FS	2302	FE

SUMMARY of Subsurface Locations

Surface Location	J-20-17S-32E	1980	FS	2110	FE	Vert. Depth
Top Perfs/OH	J-20-17S-32E	2296	FS	2302	FE	5383.00
Bottom Perfs/OH	J-20-17S-32E	2296	FS	2302	FE	6825.00
Projected TD	J-20-17S-32E	2296	FS	2302	FE	7013.00



PO Box 1370
Artesia, NM 88211-1370
(575) 748-1288

RECEIVED

JUL 19 2010

HOBBSOCD

May 3, 2010

COG, LLC
Fasken Center, Tower II
550 West Texas Ave, Suite 1300
Midland, TX 79701

SUR: J-20-17s-32e, 1980/S & 2110/E
BHL: J-20-17s-32e, 2296/S & 2302/E
API # 30-025-39627

RE: GC Federal #21
1980' FSL & 2110' FEL
Sec. 20, T17S, R32E
Lea County, New Mexico

Dear Sir,

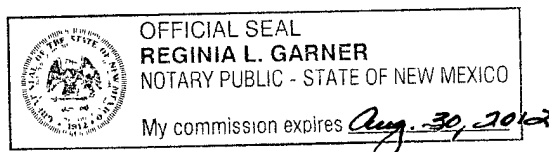
The attached is the Deviation Survey for the above captioned well.

Very truly yours,

Eddie C. LaRue
Operations Manager

State of New Mexico }
County of Eddy }

The foregoing was acknowledged before me this 3rd day of May, 2010.

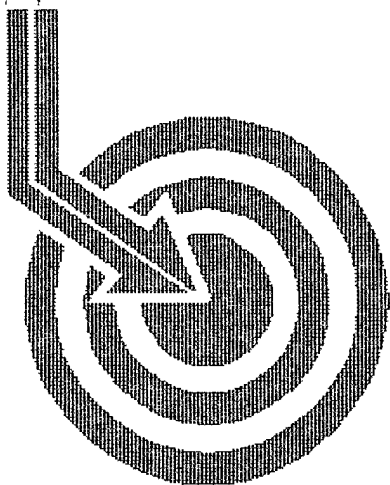
Notary Public

GC Fed #21

Date	Depth	Dev/Inc.	Dir/AZ
4/22/2010	224	0.30	
4/22/2010	622	0.40	
4/24/2010	898	0.10	
4/24/2010	1461	0.10	
4/25/2010	1930	0.90	
4/25/2010	2100	1.00	
4/26/2010	2177	1.25	39.40
4/26/2010	2240	1.08	344.50
4/26/2010	2303	2.40	318.30
4/26/2010	2366	3.22	318.80
4/26/2010	2428	3.73	323.40
4/26/2010	2491	4.47	326.20
4/26/2010	2553	5.92	329.80
4/26/2010	2616	6.55	327.60
4/26/2010	2678	7.73	328.10
4/26/2010	2741	8.76	325.00
4/27/2010	2804	8.63	323.90
4/27/2010	2898	8.12	328.50
4/27/2010	2992	8.20	327.10
4/27/2010	3086	8.54	330.50
4/27/2010	3180	7.69	329.30
4/27/2010	3242	7.12	328.30
4/27/2010	3336	7.73	320.50
4/27/2010	3400	7.40	322.40
4/27/2010	3462	9.41	332.90
4/27/2010	3556	9.41	332.70
4/27/2010	3650	9.15	325.90
4/27/2010	3744	8.61	322.80
4/27/2010	3806	8.95	323.90
4/27/2010	3900	8.69	324.10
4/27/2010	3994	8.26	322.90
4/28/2010	4089	8.27	323.10
4/28/2010	4183	8.54	322.40
4/28/2010	4277	8.55	327.50
4/28/2010	4339	7.43	331.50
4/28/2010	4434	7.06	332.50
4/28/2010	4496	7.03	325.10
4/28/2010	4590	6.72	323.30
4/28/2010	4683	6.65	323.70
4/28/2010	4777	6.21	324.20
4/28/2010	4903	6.12	321.50
4/28/2010	4965	6.27	329.20
4/28/2010	5028	6.28	328.70
4/28/2010	5090	6.13	329.60
4/29/2010	5153	5.30	332.10
4/29/2010	5216	3.53	326.20
4/29/2010	5279	2.61	321.80
4/29/2010	5342	2.03	318.80
4/29/2010	5405	0.39	288.50
4/30/2010	3907	0.50	

GC Fed #21

Date	Depth	Dev/Inc.	Dir/AZ
5/1/2010	6407	0.70	
5/1/2010	6907	0.20	



Scientific Drilling

RECEIVED

JUL 19 2010

HOBBSOCD

COG RESOURCES

Field: Maljamar
Site: Lea County, NM
Well: GC Federal #21
Wellpath: DH - Job #32D0410285
Survey: 04/25/10-04/29/10

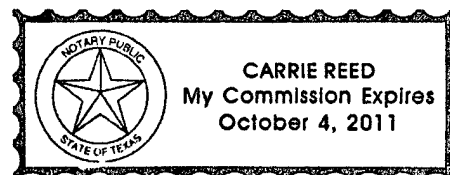
SUR: J-20-17s-32e, 1980/S & 2110/E
BHL: J-20-17s-32e, 2296/S & 2302/E
API # 30-025-39627

This survey is correct to the best of my knowledge and is supported by actual field data.

Richard
Company Representative

Notarized this date July of May, 2010.

Carrie Reed
Notary Signature
County of Midland
State of Texas





Scientific Drilling International, Inc.

Survey Report

Company: COG RESOURCES	Date: 4/29/2010	Time: 15:49:58	Page: 1
Field: Maljamar	Co-ordinate(NE) Reference:	Site: Lea County, NM, True North	
Site: Lea County, NM	Vertical (TVD) Reference:	SITE 0.0	
Well: GC Federal #21	Section (VS) Reference:	Well (0.00N,0.00E,328.91Azi)	
Wellpath: VH - Job #32K0410288	Survey Calculation Method:	Minimum Curvature	Db: Sybase

Survey: 04/24/10	Start Date: 4/24/2010
Company: Scientific Drilling Internatio	Engineer: Madrid/Renteria
Tool: Keeper,Keeper Gyro	Tied-to: From Surface

Survey

MD ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	ClsD ft	ClsA deg
0.0	0.00	359.70	0.0	0.0	0.0	0.0	0.00	0.0	0.00
100.0	0.29	190.20	100.0	-0.2	-0.2	0.0	0.29	0.3	190.20
200.0	0.57	162.93	200.0	-0.9	-1.0	0.1	0.34	1.0	176.69
300.0	0.57	121.93	300.0	-1.8	-1.7	0.6	0.40	1.8	159.96
400.0	0.44	122.37	400.0	-2.6	-2.2	1.4	0.13	2.6	147.84
500.0	0.52	133.20	500.0	-3.4	-2.7	2.0	0.12	3.4	143.09
600.0	0.55	124.28	600.0	-4.2	-3.3	2.8	0.09	4.3	139.97
700.0	0.29	111.89	700.0	-4.9	-3.6	3.4	0.27	5.0	137.10
800.0	0.44	137.67	800.0	-5.4	-4.0	3.9	0.22	5.6	136.03
900.0	0.36	112.00	900.0	-6.1	-4.4	4.4	0.19	6.3	134.96
1000.0	0.33	168.32	1000.0	-6.6	-4.8	4.8	0.33	6.8	135.27
1100.0	0.20	83.46	1100.0	-6.9	-5.1	5.0	0.37	7.1	135.43
1200.0	0.08	305.76	1200.0	-6.9	-5.0	5.1	0.26	7.2	134.42
1300.0	0.16	126.81	1300.0	-7.0	-5.1	5.2	0.24	7.2	134.36
1400.0	0.26	119.03	1400.0	-7.3	-5.3	5.5	0.10	7.6	133.77
1500.0	0.59	85.67	1500.0	-7.8	-5.3	6.2	0.40	8.2	130.68
1600.0	0.90	69.89	1600.0	-8.2	-5.0	7.5	0.37	9.0	123.97
1700.0	1.16	64.27	1699.9	-8.4	-4.3	9.1	0.28	10.1	115.35
1800.0	1.14	60.63	1799.9	-8.5	-3.4	10.9	0.08	11.4	107.28
1900.0	1.28	57.71	1899.9	-8.5	-2.3	12.7	0.15	12.9	100.28
2000.0	1.20	49.06	1999.9	-8.3	-1.0	14.4	0.20	14.5	94.04
2070.0	1.30	29.36	2069.9	-7.8	0.2	15.4	0.63	15.4	89.43



Scientific Drilling International, Inc.

Survey Report

Company: COG RESOURCES
 Field: Maljamar
 Site: Lea County, NM
 Well: GC Federal #21
 Wellpath: DH - Job #32D0410285

Date: 4/30/2010 Time: 16:40:41 Page: 1
 Co-ordinate(NE) Reference: Site: Lea County, NM, True North
 Vertical (TVD) Reference: SITE 0.0
 Section (VS) Reference: Well (0.00N,0.00E,328.91Azi)
 Survey Calculation Method: Minimum Curvature Db: Sybase

Survey: 04/25/10-04/29/10
 MWD 2177'-5404'

Start Date: 4/25/2010

Company: Scientific Drilling Internatio
 Tool: MWD,MWD

Engineer: McCormick/Glover
 Tied-to: From: Definitive Path

Survey

MD ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	ClsD ft	ClsA deg
2070.0	1.30	29.36	2069.9	-7.8	0.2	15.4	0.00	15.4	89.43
2177.0	1.25	39.40	2176.8	-6.8	2.1	16.7	0.21	16.8	82.79
2240.0	1.08	344.50	2239.8	-6.0	3.2	17.0	1.72	17.3	79.28
2303.0	2.40	318.31	2302.8	-4.1	4.8	15.9	2.39	16.6	73.34
2366.0	3.22	318.88	2365.7	-1.1	7.1	13.9	1.30	15.6	62.98
2428.0	3.73	323.44	2427.6	2.6	10.0	11.6	0.93	15.3	49.08
2491.0	4.47	326.26	2490.4	7.1	13.7	9.0	1.22	16.4	33.21
2553.0	5.92	329.82	2552.2	12.7	18.5	6.0	2.39	19.4	18.06
2616.0	6.55	327.64	2614.8	19.6	24.3	2.5	1.07	24.5	5.80
2678.0	7.73	328.16	2676.3	27.3	30.9	-1.6	1.91	30.9	356.99
2741.0	8.76	325.04	2738.7	36.3	38.4	-6.6	1.78	39.0	350.24
2804.0	8.63	323.95	2801.0	45.8	46.1	-12.1	0.33	47.7	345.26
2898.0	8.12	328.55	2894.0	59.4	57.5	-19.8	0.90	60.8	341.05
2992.0	7.17	327.11	2987.1	71.9	68.1	-26.4	1.03	73.0	338.81
3086.0	8.54	330.52	3080.2	84.8	79.1	-33.0	1.54	85.7	337.34
3180.0	7.69	329.31	3173.3	98.1	90.6	-39.7	0.92	98.9	336.35
3242.0	7.12	328.34	3234.8	106.0	97.4	-43.8	0.94	106.8	335.79
3336.0	7.73	320.50	3328.0	118.1	107.3	-50.9	1.26	118.7	334.62
3400.0	7.40	322.42	3391.4	126.5	113.8	-56.1	0.65	126.9	333.76
3462.0	7.48	332.81	3452.9	134.5	120.6	-60.4	2.17	134.9	333.39
3556.0	9.41	332.74	3545.9	148.2	132.9	-66.7	2.05	148.7	333.34
3650.0	9.15	325.93	3638.7	163.4	145.9	-74.4	1.20	163.8	332.97
3744.0	8.61	322.84	3731.5	177.8	157.7	-82.9	0.77	178.1	332.28
3807.0	8.95	323.92	3793.8	187.4	165.4	-88.6	0.60	187.7	331.82
3900.0	8.69	324.12	3885.7	201.6	177.0	-97.0	0.28	201.8	331.27
3994.0	8.26	322.98	3978.7	215.4	188.1	-105.2	0.49	215.5	330.78
4089.0	8.27	323.16	4072.7	229.0	199.0	-113.4	0.03	229.1	330.32
4138.0	8.54	322.43	4121.2	236.1	204.7	-117.7	0.59	236.2	330.09
4277.0	8.55	327.55	4258.6	256.7	221.6	-129.6	0.55	256.7	329.68
4339.0	7.43	331.51	4320.0	265.3	229.0	-134.0	2.01	265.3	329.68
4434.0	7.06	332.52	4414.3	277.3	239.6	-139.6	0.41	277.3	329.78
4496.0	7.03	325.11	4475.8	284.9	246.1	-143.5	1.47	284.9	329.75
4590.0	6.72	323.30	4569.1	296.1	255.2	-150.1	0.40	296.1	329.54
4683.0	6.65	323.75	4661.5	306.9	263.9	-156.5	0.09	306.9	329.33
4777.0	6.21	324.29	4754.9	317.3	272.5	-162.7	0.47	317.3	329.15
4903.0	6.12	321.57	4880.2	330.8	283.2	-170.9	0.24	330.8	328.90
4965.0	6.27	329.28	4941.8	337.5	288.7	-174.7	1.36	337.5	328.83
5028.0	6.28	328.72	5004.4	344.3	294.7	-178.2	0.10	344.3	328.83
5090.0	6.13	329.68	5066.1	351.0	300.4	-181.6	0.29	351.0	328.84
5153.0	5.30	332.10	5128.7	357.3	305.9	-184.7	1.37	357.3	328.88
5216.0	3.53	326.25	5191.6	362.2	310.1	-187.1	2.90	362.2	328.89
5279.0	2.61	321.82	5254.5	365.5	312.8	-189.1	1.51	365.5	328.85
5342.0	2.03	318.88	5317.4	368.0	314.8	-190.7	0.94	368.0	328.79
5404.0	0.39	288.56	5379.4	369.3	315.7	-191.6	2.75	369.3	328.74