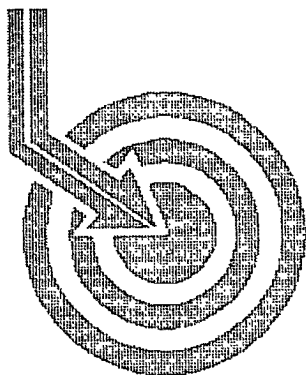




Scientific Drilling

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HOBBSOCD

COG RESOURCES

Field: Maljamar
Site: Lea County, NM
Well: GC Federal #24
Wellpath: DH - Job #32D0509181
Survey: 05/19/09-05/28/09

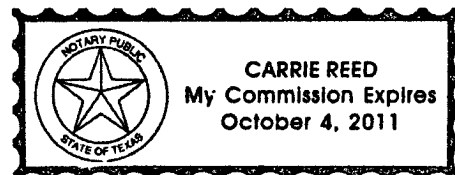
SUR: I-20-17s-32e, 1330/S & 1290/E
BHL: J-20-17s-32e, 1659/S & 1663/E
API # 30-025-39262

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

.....*R. W. Hart*..... Company Representative

Notorized this date 7th of July, 2009.

Carrie Reed
Notary Signature
County of Midland
State of Texas





Scientific Drilling International Survey Report

Company: COG RESOURCES	Date: 06/05/2009	Time: 15:02:53	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 #24	Section (VS) Reference: Well (0.00N,0.00E,311.32Azi)		
Wellpath: VH - Job #32K0509184	Survey Calculation Method: Minimum Curvature		Db: Sybase

Survey: 05/19/09	Start Date: 05/19/2009
Company: KSRG 0'-2069'	
Tool: Scientific Drilling Internatio	Engineer: Guebara/Garza/Paredes
Tool: Keeper;Keeper Gyro	Tied-to: From Surface

Survey

MD ft	Incl deg	Azlm deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	ClsD ft	ClsA deg
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.44	299.93	100.00	0.38	0.19	-0.33	0.44	0.38	299.93
200.00	0.95	316.82	199.99	1.58	0.99	-1.23	0.54	1.58	308.70
300.00	1.12	320.33	299.98	3.37	2.34	-2.42	0.18	3.37	314.04
400.00	1.02	313.32	399.96	5.22	3.71	-3.70	0.16	5.23	315.09
500.00	1.24	321.77	499.94	7.18	5.17	-5.01	0.28	7.20	315.87
600.00	1.37	314.40	599.91	9.43	6.85	-6.54	0.21	9.47	316.36
700.00	1.27	313.21	699.89	11.74	8.45	-8.20	0.10	11.77	315.87
800.00	1.11	314.67	799.86	13.81	9.89	-9.69	0.16	13.85	315.57
900.00	0.91	313.49	899.85	15.57	11.12	-10.96	0.20	15.61	315.41
1000.00	0.94	314.07	999.84	17.18	12.23	-12.12	0.03	17.22	315.26
1100.00	0.92	311.29	1099.82	18.81	13.33	-13.32	0.05	18.85	315.04
1200.00	0.90	307.20	1199.81	20.39	14.34	-14.55	0.07	20.43	314.59
1300.00	0.84	318.02	1299.80	21.90	15.36	-15.66	0.17	21.94	314.44
1400.00	0.76	316.62	1399.79	23.29	16.39	-16.61	0.08	23.33	314.61
1500.00	1.03	351.40	1499.78	24.64	17.76	-17.20	0.59	24.72	315.91
1600.00	1.49	7.89	1599.75	26.04	19.93	-17.15	0.58	26.30	319.28
1700.00	1.81	11.22	1699.71	27.55	22.77	-16.67	0.33	28.22	323.79
1800.00	2.07	12.03	1799.65	29.23	26.08	-15.98	0.26	30.59	328.50
1900.00	1.95	9.44	1899.59	31.01	29.53	-15.33	0.15	33.27	332.57
2000.00	1.82	14.04	1999.54	32.64	32.75	-14.66	0.20	35.88	335.88
2069.00	1.85	14.65	2068.50	33.64	34.89	-14.12	0.05	37.64	337.97



Scientific Drilling International Survey Report

Company: COG RESOURCES	Date: 07/02/2009	Time: 16:43:12	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 #24	Section (VS) Reference:	Well (0.00N,0.00E,311.32Azi)	
Wellpath: DH - Job #32D0509181	Survey Calculation Method:	Minimum Curvature	Db: Sybase

Survey: 05/19/09-05/28/09	Start Date: 05/19/2009
MWVD 2178'-6998'	
Company: Scientific Drilling Internatio	Engineer: Calvert/Corley/Glass
Tool: MWVD;MWVD	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
2069.00	1.85	14.65	2068.50	33.64	34.89	-14.12	0.00	37.64	337.97
2178.00	1.64	9.97	2177.45	35.24	38.13	-13.40	0.23	40.41	340.63
2271.00	3.71	322.40	2270.36	38.89	41.82	-15.01	3.09	44.43	340.26
2364.00	6.10	325.30	2363.01	46.63	48.27	-19.66	2.58	52.12	337.84
2459.00	7.72	313.60	2457.32	57.91	56.82	-27.15	2.25	62.98	334.46
2648.00	7.82	305.37	2644.59	83.38	73.02	-46.83	0.59	86.75	327.33
2838.00	6.50	300.28	2833.11	106.80	85.92	-66.66	0.77	108.75	322.20
3026.00	4.30	307.23	3020.26	124.27	95.56	-81.46	1.22	125.57	319.55
3226.00	6.56	305.38	3219.35	143.12	106.71	-96.75	1.13	144.04	317.80
3412.00	6.71	313.60	3404.11	164.54	120.35	-113.28	0.52	165.28	316.73
3600.00	8.76	313.72	3590.39	189.82	137.82	-131.58	1.09	190.55	316.33
3758.00	8.18	301.50	3746.68	212.92	152.01	-149.86	1.19	213.46	315.41
3946.00	5.99	300.57	3933.23	235.74	163.99	-169.72	1.17	236.00	314.02
4135.00	7.72	304.73	4120.88	258.04	176.24	-188.64	0.95	258.16	313.05
4325.00	7.33	305.72	4309.24	282.78	190.59	-208.97	0.22	282.83	312.37
4511.00	5.64	308.95	4494.04	303.72	203.26	-225.71	0.93	303.75	312.00
4704.00	7.09	307.19	4685.85	325.08	216.42	-242.58	0.76	325.09	311.74
4892.00	5.42	303.98	4872.72	345.46	228.40	-259.18	0.91	345.46	311.39
5081.00	6.60	311.20	5060.68	365.18	240.54	-274.76	0.74	365.18	311.20
5176.00	6.50	310.92	5155.06	376.01	247.66	-282.93	0.11	376.01	311.20
5269.00	3.97	311.36	5247.67	384.50	253.24	-289.32	2.72	384.50	311.19
5458.00	3.97	304.10	5436.22	397.53	261.23	-299.65	0.27	397.53	311.08
5614.00	4.92	323.94	5591.75	409.42	269.67	-308.06	1.15	409.42	311.20
5709.00	4.88	320.80	5686.41	417.38	276.09	-313.02	0.29	417.38	311.41
5836.00	3.71	311.85	5813.05	426.81	283.02	-319.49	1.06	426.82	311.54
6025.00	3.16	314.20	6001.71	438.13	290.73	-327.78	0.30	438.14	311.57
6213.00	2.76	298.66	6189.46	447.72	296.51	-335.47	0.47	447.73	311.47
6339.00	3.00	314.00	6315.30	453.98	300.26	-340.50	0.64	453.98	311.41
6528.00	3.20	310.57	6504.03	464.19	307.12	-348.07	0.14	464.19	311.42
6718.00	3.67	312.17	6693.68	475.58	314.66	-356.60	0.25	475.58	311.42
6907.00	4.03	310.66	6882.26	488.26	323.04	-366.12	0.20	488.27	311.42
6998.00	3.67	312.52	6973.05	494.37	327.10	-370.69	0.42	494.37	311.42



Scientific Drilling
Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Site GC Federal #24
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	Ground Elev @ 3988 00ft (Silver Oak #8)
Site:	GC Federal #24	MD Reference:	Ground Elev @ 3988 00ft (Silver Oak #8)
Well:	GC Federal #24	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	EDM 5000 1 Single User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
6,998 00	3 67	312 52	6,973 05	327 10	-370 69	494 37	0 42	-0 40	2 04
MWD Survey									
7,045 00	3 67	312 52	7,019 96	329 13	-372 91	497 38	0 00	0 00	0 00
Projection to Bit									

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
2,069 00	2,068 50	34 89	-14 12	Gyro tie-in
6,998 00	6,973 05	327 10	-370 69	MWD Survey
7,045 00	7,019 96	329 13	-372 91	Projection to Bit

Checked By: _____ Approved By: _____ Date: _____



Scientific
Drilling

Field: Maljamar
Site: Lea County, NM
Well: GC Federal #24
Wellpath: DH - Job #32D0509181
Survey: 05/19/09-05/28/09



Azimuths to True North
Magnetic North: 0.00°

Magnetic Field
Strength: 0nT
Dip Angle: 0.00°
Date: 07/02/2009
Model: igrf2000

