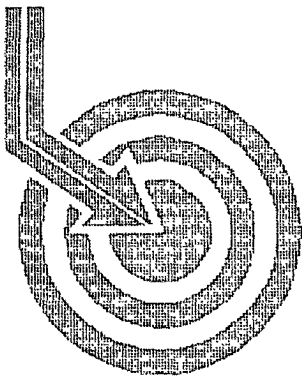




Scientific Drilling

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COG RESOURCES

Field: Maljamar
Site: Lea County, NM
Well: JC Federal #24
Wellpath: DH - Job #32D1109488
Survey: 11/13/09-11/22/09

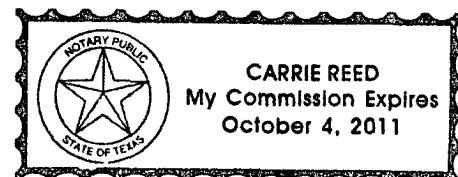
SUR: J-22-17s-32e, 1650/S & 1810/E
BHL: J-22-17s-32e, 1659/S & 2301/E
SPI # 30-025-30165

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

.....L. Wharton..... Company Representative

Notorized this date 10th of December, 2009.

Carrie Reed
Notary Signature
County of Midland
State of Texas





Scientific Drilling International Survey Report

Company: COG RESOURCES	Date: 11/13/2009	Time: 14:04:13	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: JC Federal #24	Section (VS) Reference:	Well (0.00N,0.00E,270.99Azi)	
Wellpath: VH - Job #32K1109490	Survey Calculation Method:	Minimum Curvature	Db: Sybase

Survey: 11/13/09	Start Date: 11/13/2009
Company: Scientific Drilling Internatio	Engineer: Guebara w/Gray
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
0.00	0.00	359.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.01	291.35	100.00	0.01	0.00	-0.01	0.01	0.01	291.35
200.00	0.48	232.53	200.00	0.34	-0.25	-0.35	0.47	0.43	234.53
300.00	0.53	218.77	299.99	0.96	-0.86	-0.97	0.13	1.30	228.33
400.00	0.81	265.01	399.99	1.94	-1.29	-1.96	0.59	2.35	236.79
500.00	1.31	253.39	499.97	3.73	-1.67	-3.76	0.54	4.12	246.02
600.00	1.11	235.40	599.95	5.61	-2.55	-5.66	0.43	6.21	245.73
700.00	1.23	260.20	699.93	7.45	-3.28	-7.51	0.52	8.20	246.39
800.00	1.29	250.13	799.91	9.56	-3.85	-9.63	0.23	10.37	248.21
900.00	1.02	231.40	899.89	11.30	-4.79	-11.38	0.46	12.35	247.19
1000.00	0.25	314.53	999.88	12.14	-5.19	-12.23	1.02	13.29	247.01
1100.00	0.58	292.78	1099.88	12.77	-4.84	-12.86	0.36	13.74	249.37
1200.00	0.42	290.60	1199.87	13.59	-4.52	-13.67	0.16	14.39	251.72
1300.00	0.16	309.55	1299.87	14.04	-4.30	-14.12	0.27	14.76	253.07
1400.00	0.42	346.43	1399.87	14.24	-3.85	-14.31	0.31	14.82	254.93
1500.00	0.82	341.56	1499.86	14.57	-2.82	-14.62	0.40	14.89	259.09
1600.00	0.53	328.30	1599.86	15.06	-1.74	-15.09	0.33	15.19	263.41
1700.00	0.70	37.96	1699.85	14.94	-0.87	-14.96	0.72	14.98	266.67
1800.00	1.34	47.00	1799.84	13.73	0.41	-13.73	0.66	13.73	271.71
1900.00	2.08	31.37	1899.79	11.97	2.76	-11.93	0.87	12.24	283.01
1966.00	1.85	26.83	1965.75	10.90	4.73	-10.82	0.42	11.81	293.60



Scientific Drilling International Survey Report

Company: COG RESOURCES
Field: Maljamar
Site: Lea County, NM
Well: JC Federal #24
Wellpath: DH - Job #32D1109488

Date: 11/30/2009 Time: 10:59:08 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,270.99Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey: 11/13/09-11/22/09
MWD 2111'-7100'
Company: Scientific Drilling Internatio
Tool: MWD;MWD

Start Date: 11/13/2009
Engineer: McCormick/Baldwin
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
1966.00	1.85	26.83	1965.75	10.90	4.73	-10.82	0.00	11.81	293.60
2111.00	1.96	25.83	2110.67	8.84	9.05	-8.69	0.08	12.54	316.17
2174.00	1.45	7.01	2173.64	8.31	10.81	-8.12	1.19	13.52	323.09
2238.00	2.40	341.00	2237.61	8.68	12.88	-8.46	1.98	15.41	326.71
2301.00	3.21	330.53	2300.53	10.02	15.66	-9.75	1.52	18.45	328.09
2364.00	4.07	319.38	2363.41	12.40	18.90	-12.08	1.76	22.43	327.42
2428.00	5.06	309.09	2427.20	16.13	22.40	-15.75	2.00	27.38	324.89
2491.00	5.70	298.76	2489.93	21.09	25.66	-20.65	1.84	32.93	321.18
2555.00	5.30	289.10	2553.63	26.71	28.15	-26.23	1.57	38.48	317.03
2618.00	5.76	274.33	2616.34	32.63	29.35	-32.13	2.37	43.51	312.41
2681.00	6.08	264.92	2679.01	39.10	29.29	-38.60	1.62	48.46	307.19
2745.00	6.81	259.96	2742.61	46.20	28.33	-45.72	1.43	53.78	301.78
2809.00	7.75	261.61	2806.09	54.18	27.04	-53.72	1.50	60.14	296.71
2872.00	7.66	262.49	2868.52	62.53	25.87	-62.09	0.24	67.26	292.62
2936.00	7.54	261.59	2931.96	70.89	24.70	-70.47	0.26	74.67	289.31
2999.00	7.07	262.47	2994.45	78.80	23.58	-78.40	0.77	81.87	286.74
3063.00	7.39	264.97	3057.94	86.79	22.71	-86.41	0.70	89.34	284.72
3127.00	8.22	263.93	3121.34	95.42	21.86	-95.06	1.32	97.54	282.95
3221.00	8.06	261.82	3214.40	108.60	20.21	-108.26	0.36	110.13	280.58
3317.00	7.61	261.12	3309.50	121.50	18.27	-121.20	0.48	122.57	278.57
3380.00	8.01	264.92	3371.92	129.98	17.24	-129.70	1.04	130.84	277.57
3444.00	8.76	268.03	3435.23	139.28	16.68	-139.01	1.37	140.01	276.84
3539.00	8.70	268.27	3529.13	153.68	16.21	-153.42	0.07	154.28	276.03
3634.00	8.40	268.01	3623.08	167.79	15.76	-167.54	0.32	168.28	275.37
3697.00	8.14	267.37	3685.42	176.83	15.39	-176.59	0.44	177.26	274.98
3761.00	7.44	266.11	3748.83	185.48	14.90	-185.25	1.13	185.85	274.60
3855.00	7.21	268.15	3842.06	197.44	14.30	-197.22	0.37	197.74	274.15
3919.00	7.10	268.38	3905.56	205.40	14.06	-205.19	0.18	205.67	273.92
3982.00	7.03	268.85	3968.09	213.14	13.87	-212.93	0.14	213.39	273.73
4046.00	6.78	270.42	4031.62	220.83	13.82	-220.63	0.49	221.06	273.58
4116.00	6.49	271.49	4101.15	228.92	13.95	-228.71	0.45	229.14	273.49
4180.00	6.09	270.74	4164.77	235.93	14.09	-235.73	0.64	236.15	273.42
4243.00	6.87	275.80	4227.36	243.03	14.51	-242.82	1.53	243.25	273.42
4307.00	8.26	274.39	4290.81	251.43	15.25	-251.21	2.19	251.67	273.47
4368.00	8.76	267.54	4351.14	260.45	15.39	-260.22	1.85	260.67	273.38
4431.00	7.64	268.05	4413.49	269.42	15.04	-269.20	1.78	269.62	273.20
4526.00	7.03	266.31	4507.71	281.52	14.45	-281.31	0.68	281.68	272.94
4589.00	7.10	266.62	4570.23	289.24	13.97	-289.04	0.13	289.38	272.77
4685.00	7.13	264.13	4665.50	301.07	13.02	-300.89	0.32	301.17	272.48
4749.00	7.11	264.38	4729.00	308.95	12.22	-308.79	0.06	309.03	272.27
4812.00	7.49	268.54	4791.49	316.93	11.73	-316.77	1.03	316.99	272.12
4907.00	7.46	269.65	4885.68	329.28	11.54	-329.13	0.16	329.33	272.01
4969.00	7.19	269.70	4947.18	337.18	11.49	-337.03	0.44	337.23	271.95
5033.00	7.54	264.35	5010.65	345.36	11.06	-345.22	1.20	345.39	271.83
5128.00	6.72	266.05	5104.92	357.08	10.06	-356.96	0.89	357.11	271.61
5223.00	6.60	265.07	5199.27	368.05	9.21	-367.95	0.17	368.06	271.43
5287.00	5.70	266.92	5262.91	374.88	8.72	-374.79	1.44	374.89	271.33
5351.00	4.71	273.93	5326.64	380.68	8.73	-380.58	1.84	380.68	271.31
5413.00	4.02	270.42	5388.46	385.39	8.92	-385.29	1.19	385.40	271.33



Scientific Drilling International Survey Report

Company: COG RESOURCES
Field: Maljamar
Site: Lea County, NM
Well: JC Federal #24
Wellpath: DH - Job #32D1109488

Date: 11/30/2009 Time: 10:59:08 Page: 2
Co-ordinate(NE) Reference: Site: Lea County, NM, True North
Vertical (TVD) Reference: SITE 0.0
Section (VS) Reference: Well (0.00N,0.00E,270.99Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey

MD ft	Incl deg	Azlm deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	ClsD ft	ClsA deg
5508.00	4.07	264.43	5483.23	392.07	8.62	-391.98	0.45	392.07	271.26
5571.00	3.83	271.81	5546.08	396.40	8.47	-396.31	0.89	396.40	271.22
5635.00	3.60	265.31	5609.94	400.53	8.37	-400.45	0.75	400.53	271.20
5698.00	3.60	261.58	5672.82	404.45	7.92	-404.37	0.37	404.45	271.12
5762.00	3.67	265.94	5736.69	408.47	7.48	-408.41	0.45	408.47	271.05
5824.00	3.72	270.38	5798.56	412.46	7.36	-412.40	0.47	412.46	271.02
5888.00	3.52	271.21	5862.43	416.50	7.41	-416.44	0.32	416.50	271.02
5982.00	3.56	269.42	5956.25	422.31	7.44	-422.24	0.13	422.31	271.01
6078.00	3.54	270.70	6052.07	428.25	7.45	-428.18	0.09	428.25	271.00
6173.00	3.57	272.37	6146.89	434.14	7.61	-434.07	0.11	434.14	271.00
6268.00	3.40	274.59	6241.71	439.91	7.95	-439.83	0.23	439.91	271.04
6332.00	3.49	273.98	6305.60	443.75	8.24	-443.67	0.15	443.75	271.06
6427.00	3.36	271.59	6400.43	449.42	8.52	-449.34	0.20	449.42	271.09
6523.00	3.17	273.07	6496.27	454.88	8.74	-454.80	0.22	454.88	271.10
6586.00	2.97	280.07	6559.18	458.24	9.12	-458.15	0.67	458.24	271.14
6649.00	2.63	275.17	6622.10	461.29	9.53	-461.19	0.66	461.29	271.18
6713.00	3.30	272.25	6686.02	464.59	9.74	-464.50	1.07	464.60	271.20
6776.00	3.55	272.63	6748.91	468.36	9.90	-468.26	0.40	468.36	271.21
6849.00	3.46	271.05	6821.77	472.82	10.04	-472.72	0.18	472.82	271.22
6944.00	3.49	271.67	6916.59	478.58	10.18	-478.47	0.05	478.58	271.22
7039.00	3.31	265.32	7011.43	484.20	10.04	-484.10	0.44	484.20	271.19
7100.00	3.52	264.12	7072.32	487.81	9.71	-487.71	0.36	487.81	271.14