Results of Directional Survey

API number:	30-025-39167			
OGRID:		Operator:	COG OPERATING LLC	
		Property:	J C FEDERAL	# 29

surface	ULSTR:	O	21	T	17S	R	32E
				720	FSL	1890	FEL

BH Loc	ULSTR:	O	21	T	17S	R	32E
7134	MD	7099.0	TVD	380	FSL	2299	FEL

Top Perf/OH	ULSTR:	O	21	T	17S	R	32E
5520	MD	5487.8	TVD	438	FSL	2229	FEL

Bot Perf/OH	ULSTR:	O	21	T	17S	R	32E
6860	MD	6825.4	TVD	387	FSL	2289	FEL

	MD	N/S	E/W	VD
	5519	-281.70	-338.90	5486.8
TOP PERFS/OH	**5520**	-281.73	-338.96	5487.80
	5614	-284.80	-344.70	5581.60
	6841	-332.60	-398.10	6806.40
BOT PERFS/OH	**6860**	-333.06	-398.82	6825.38
	6936	-334.90	-401.70	6901.30

NEXT TO LAST	7031	-337.10	-405.30	6996.20
LAST READING	7086	-338.40	-407.50	7051.10
TD	**7134**	-339.53	-409.42	7099.01

Surface Location	720	FS	1890	FE
Projected BHL	380	FS	2299	FE
Location of				
Top Perfs/OH	438	FS	2229	FE
Bottom Perfs/OH	387	FS	2289	FE

SUMMARY of Subsurface Locations

Surface Location	O-21-17S-32E	720	FS	1890	FE	Vert. Depth
Top Perfs/OH	O-21-17S-32E	438	FS	2229	FE	5487.80
Bottom Perfs/OH	O-21-17S-32E	387	FS	2289	FE	6825.38
Projected TD	O-21-17S-32E	380	FS	2299	FE	7099.01

Scientific Drilling

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COG RESOURCES

Field: Maljamar
Site: Lea County, NM
Well: JC Federal #29
Wellpath: DH - Job #32D0610416
Survey: 06/02/10-06/09/10

SUR @ O-21-17s-32e, 720/S & 1890/E
BHL @ O-21-17s-32w, 380/S & 2299/E
API # 30-025-39167

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

Company Representative

Notarized this date 20th **of** July **, 2010.**

Notary Signature
Couty of Midland
State of Texas

NOTARY PUBLIC STATE OF TEXAS
CARRIE REED
My Commission Expires
October 4, 2011

Scientific Drilling

Scientific Drilling International, Inc.

Survey Report

Company:	COG RESOURCES	**Date:** 6/7/2010	**Time:** 14:53:12	**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:	JC Federal #29	**Section (VS) Reference:**	Well (0.00N,0.00E,230.07Azi)		
Wellpath:	VH - Job #32K0610414	**Survey Calculation Method:**	Minimum Curvature	**Db:**	Sybase

Survey:	06/02/10 KSRG 0'-2100'	**Start Date:**	6/2/2010
Company:	Scientific Drilling Internatio	**Engineer:**	Madrid/Rowe/Williams
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	359.69	0.0	0 0	0.0	0.0	0.00	0.0	0.00
100.0	0.69	191.90	100.0	0.5	-0.6	-0.1	0.69	0.6	191.90
200.0	0.65	188.50	200 0	1.4	-1.7	-0.3	0.06	1.8	190.81
300 0	0.72	177.59	300.0	2.2	-2.9	-0.4	0.15	3.0	187.58
400.0	0.76	192.38	400.0	3.1	-4.2	-0.5	0.19	4.2	186.86
500.0	1.07	198.36	500.0	4 4	-5 7	-0.9	0.32	5.8	189 32
600.0	1.13	201.29	599.9	6.1	-7.5	-1.6	0.08	7.7	191.93
700.0	1.29	206.89	699.9	8.0	-9.5	-2.5	0.20	9.8	194.57
800.0	1.12	212.87	799.9	9.9	-11.3	-3.5	0.21	11.8	197.23
900.0	1.36	213 01	899.9	12.0	-13.1	-4.7	0.24	13.9	199.64
1000.0	1.26	217.41	999.9	14.2	-15.0	-6.0	0.14	16.1	201.81
1100.0	0.92	235.59	1099.8	16 1	-16.3	-7 3	0.48	17.9	204.19
1200.0	0.96	231.24	1199.8	17.7	-17.3	-8.6	0.08	19.3	206.56
1300.0	1.08	237.54	1299.8	19.5	-18 3	-10.1	0.16	20.9	208 85
1400.0	0.80	248.67	1399.8	21.1	-19.1	-11.5	0.33	22.3	211.16
1500.0	0.82	265.37	1499.8	22.3	-19 4	-12.9	0.24	23.3	213.64
1600.0	0.59	314.40	1599.8	23.0	-19.1	-14.0	0 62	23 7	216.22
1700.0	0.83	346.87	1699.8	22 7	-18.0	-14.5	0.46	23.1	218.85
1800.0	1.04	2.52	1799 8	21.7	-16.4	-14.6	0.33	22.0	221.74
1900.0	1.41	20.06	1899.7	20.1	-14.3	-14.2	0.52	20.2	224.66
2000.0	1.54	22.40	1999.7	17.8	-11 9	-13.2	0.14	17.8	227.95
2100 0	1.68	22.34	2099.7	15 3	-9.3	-12.2	0.14	15.3	232.48

Scientific Drilling

Scientific Drilling International, Inc.

Survey Report

Company:	COG RESOURCES	**Date:** 6/18/2010 **Time:** 09:22:13	**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 #29	**Section (VS) Reference:**	Well (0.00N,0.00E,230.70Azi)
Wellpath:	DH - Job #32D0610416	**Survey Calculation Method:**	Minimum Curvature **Db:** Sybase

Survey:	06/02/10-06/09/10 MWD 2202'-7086'	**Start Date:**	6/2/2010
Company:	Scientific Drilling Internatio	**Engineer:**	Kriethe/Jones
Tool:	MWD,MWD	**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
2100.3	1.68	22.34	2100.0	15.3	-9.3	-12.2	0.00	15.3	232.50
2202.0	2.16	28.31	2201.6	12.2	-6 3	-10.7	0.51	12.4	239.61
2234 0	2.00	28.89	2233.6	11.2	-5 2	-10.1	0.50	11.4	242.62
2297.0	1.12	18.78	2296.6	9.6	-3.7	-9.4	1.46	10.1	248.51
2360.0	0.45	268.18	2359.6	9.3	-3.1	-9.5	2.14	10.0	251.69
2423.0	1.55	237.60	2422.5	10.3	-3.6	-10.4	1.88	11.0	250.98
2486.0	2.69	227.87	2485.5	12.7	-5 0	-12.2	1.89	13.2	247.61
2549.0	3.77	233.80	2548 4	16.2	-7.3	-15.0	1.79	16.7	244.19
2613.0	5.18	235.70	2612.2	21.2	-10.1	-19.1	2.21	21.6	242.05
2675.0	6.30	237.00	2673.9	27 4	-13.6	-24.3	1.82	27.8	240.80
2737.0	7.02	232.60	2735.5	34.5	-17.7	-30.1	1.42	34.9	239.54
2801.0	8 08	233.71	2798.9	42.9	-22.7	-36.8	1.67	43.3	238.31
2864.0	9.82	233.96	2861.1	52.7	-28.5	-44.8	2.76	53.1	237.49
2958.0	10.73	229.93	2953.6	69.5	-38.9	-57.9	1.23	69.8	236.14
3053.0	9.71	228.59	3047.1	86.3	-49.9	-70.7	1.10	86.5	234.81
3147.0	8.99	226.33	3139.9	101.6	-60.2	-82.0	0.86	101.7	233.71
3242.0	9.64	227.69	3233.6	116.9	-70.7	-93.2	0.72	117.0	232.84
3336 0	9.32	225.85	3326.3	132.3	-81.3	-104.5	0.47	132.4	232.13
3430.0	9.59	230.64	3419.1	147.8	-91.5	-116.0	0.88	147.8	231.73
3523.0	9.11	230.70	3510.8	162.9	-101.1	-127.7	0.52	162.9	231.63
3618.0	8.75	229.90	3604.7	177.6	-110.5	-139.1	0.40	177.6	231.52
3714.0	8.57	227.90	3699.6	192.1	-120.0	-150.0	0.37	192.1	231.32
3808.0	9.71	230.70	3792.4	207 0	-129.7	-161.3	1 30	207.0	231.19
3903.0	9 53	230.11	3886.1	222.9	-139.9	-173.5	0.22	222.9	231.13
3998.0	9.49	229.46	3979.7	238.6	-150.0	-185.5	0.12	238.6	231.04
4092.0	9.21	228.36	4072.5	253 8	-160.0	-197.0	0.35	253.8	230 91
4188.0	9.20	230.59	4167.3	269.2	-170.0	-208.7	0 37	269.2	230 83
4282.0	8 87	229.79	4260.1	283.9	-179.5	-220.0	0.38	283.9	230.80
4376.0	8.52	227.25	4353.0	298.1	-188.9	-230.7	0.55	298.1	230.69
4472 0	8.67	230.46	4447.9	312 5	-198.3	-241.5	0.52	312.5	230.61
4566.0	8.37	229.02	4540.9	326.4	-207.3	-252.1	0.39	326.4	230.57
4660 0	7.87	226.50	4634.0	339.6	-216.2	-261.9	0.65	339.6	230.46
4755.0	7 64	228.82	4728.1	352.4	-224.8	-271.4	0.41	352.4	230 36
4849 0	7.78	227.99	4821.2	365 0	-233.2	-280.8	0.19	365.0	230.29
4951.0	7.49	225.30	4922.3	378.6	-242.5	-290.7	0.45	378.6	230.16
5046.0	7.29	230.50	5016.5	390.7	-250.7	-299.7	0.73	390.8	230.09
5141.0	6.65	229.55	5110.8	402.3	-258.1	-308.6	0.68	402.3	230.09
5235.0	6.33	229 34	5204.2	412.9	-265.0	-316 7	0.34	412.9	230.07
5330.0	6.39	231.30	5298 7	423 4	-271.7	-324.8	0.24	423.4	230.08
5425.0	5.38	233.47	5393.2	433.2	-277.7	-332.5	1.09	433.2	230.13
5519.0	3.99	244.06	5486.8	440.7	-281.7	-338.9	1.74	440.7	230.27
5614.0	3 87	239.70	5581.6	447.1	-284.8	-344.7	0.34	447.1	230 43
5708 0	3.62	243.40	5675.4	453.1	-287.7	-350.1	0.37	453.1	230.58
5802.0	3.47	246.90	5769.2	458.8	-290 2	-355.3	0.28	458.8	230.76
5897.0	3.68	245.50	5864.1	464 5	-292.6	-360.8	0.24	464.5	230.96
5991.0	3.58	243 05	5957.9	470.3	-295 2	-366.1	0.20	470.3	231.13
6084.0	3.78	219.60	6050.7	476.1	-298.8	-370.7	1.62	476.1	231 12
6179.0	3.72	219.90	6145.5	482.2	-303.6	-374.6	0.07	482.2	230.98
6272.0	3.69	221.90	6238.3	488.1	-308.1	-378.6	0.14	488.1	230.86

Scientific Drilling

Scientific Drilling International, Inc.
Survey Report

Company:	COG RESOURCES	**Date:** 6/18/2010 **Time:** 09:22:13	**Page:** 2
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 #29	**Section (VS) Reference:**	Well (0.00N,0.00E,230.70Azi)
Wellpath:	DH - Job #32D0610416	**Survey Calculation Method:**	Minimum Curvature **Db:** Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	ClsD ft	ClsA deg
6367.0	3.87	221.30	6333.1	494.3	-312 8	-382.7	0.19	494.3	230.74
6461.0	4.11	218.16	6426.8	500.7	-317.9	-386.9	0.35	500.7	230.59
6557.0	2.62	215.81	6522.7	506.2	-322.3	-390.3	1.56	506.2	230.45
6652.0	2.46	214.63	6617.6	510.3	-325.8	-392.7	0.18	510.3	230.32
6746.0	2.79	210.17	6711.5	514.3	-329.4	-395.0	0.41	514.4	230.18
6841.0	2.64	238.12	6806 4	518.7	-332 6	-398.1	1.39	518.7	230.12
6936.0	2.58	237 49	6901.3	523.0	-334.9	-401.7	0.07	523.0	230.18
7031.0	2.52	239.59	6996.2	527.2	-337.1	-405 3	0.12	527.2	230.25
7086.0	2.66	239.42	7051.1	529.6	-338.4	-407.5	0.25	529.6	230.29