

Results of Directional Survey

API number:	30-025-38725		
OGRID:		Operator:	COG OPERATING LLC
		Property:	BC FEDERAL # 18

surface	ULSTR:	D	19	T	17S	R	32E
			642	FNL	742	FWL	

BH Loc	ULSTR:	D	19	T	17S	R	32E
			379	FNL	997	FWL	

Top Perf/OH	ULSTR:	D	19	T	17S	R	32E
		5346	384	FNL	973	FWL	

Bot Perf/OH	ULSTR:	D	19	T	17S	R	32E
		6650	380	FNL	990	FWL	

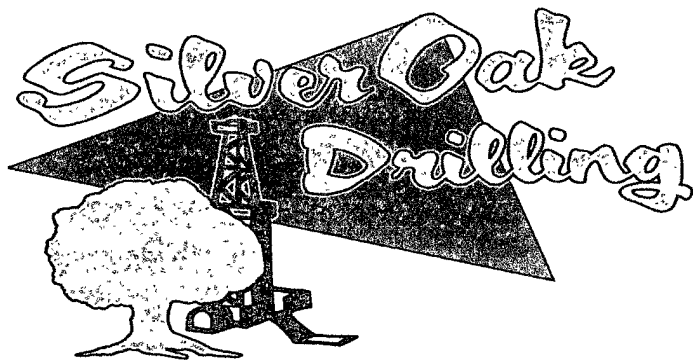
	MD	N/S	E/W	VD
	5339	257.63	231.28	5318.35
TOP PERFS/OH	5346	257.74	231.38	5325.35
	5433	259.10	232.62	5412.32
	5623	259.37	235.27	5602.3
BOT PERFS/OH	6650	261.65	248.47	6629.30
	5686	259.51	236.08	5665.30

NEXT TO LAST	5623	259.37	235.27	5602.3
LAST READING	5686	259.51	236.08	5665.30
TD	7180	262.83	255.29	7159.30

Surface Location	642	FN	742	FW
Projected BHL	379	FN	997	FW
Location of				
Top Perfs/OH	384	FN	973	FW
Bottom Perfs/OH	380	FN	990	FW

SUMMARY of Subsurface Locations

Surface Location	D-19-17S-32E	642	FN	742	FW	Vert. Depth
Top Perfs/OH	D-19-17S-32E	384	FN	973	FW	5325.35
Bottom Perfs/OH	D-19-17S-32E	380	FN	990	FW	6629.30
Projected TD	D-19-17S-32E	379	FN	997	FW	7159.30



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

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MAR 01 2010

HOBBSOCD

December 31, 2009

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

RE: BC Federal #18
642' FNL & 742' FWL
Sec. 19, T17S, R32E
Lea County, New Mexico

Dear Sir,

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

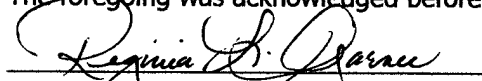
Very truly yours,

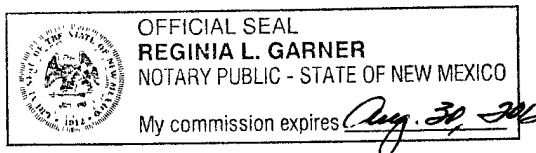

Eddie C. LaRue
Operations Manager

SUR: D-19-17s-32e, 642/N & 742/W
BHL: D-19-17s-32e, 379/N & 997/W
API # 30-025-38725

State of New Mexico }
County of Eddy }

The foregoing was acknowledged before me this 31st day of December, 2009.


Regina L. Garner
Notary Public



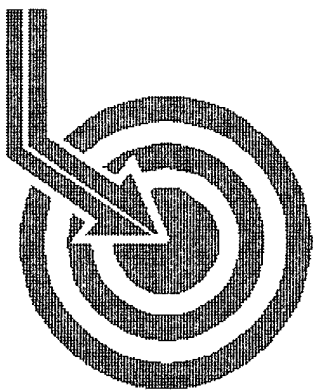
Pason DataHub Deviation Survey 2009/12/31 08:36:12

Well Dossier 1260666284 - BC FED 18

#

#	Date	Depth	Deviation	Direction	TVD
	12/13/2009	291	0.70	0.00	331
	12/13/2009	657	1.10	0.00	0
	12/15/2009	1128	0.70	0.00	1168
	12/15/2009	1602	0.70	0.00	0
	12/17/2009	2152	1.26	112.80	2197
	12/17/2009	2215	1.80	98.98	2260
	12/17/2009	2277	2.78	61.60	2376
	12/17/2009	2340	3.36	52.02	2385
	12/17/2009	2404	4.61	39.10	2449
	12/17/2009	2467	5.59	37.85	2512
	12/17/2009	2530	6.31	37.51	2575
	12/17/2009	2594	7.32	37.18	2639
	12/17/2009	2688	7.22	38.00	2733
	12/17/2009	2783	6.79	40.54	2828
	12/17/2009	2876	6.87	39.97	2921
	12/17/2009	2972	7.21	38.61	3017
	12/17/2009	3066	6.55	40.38	3111
	12/18/2009	3160	6.87	37.80	3205
	12/18/2009	3224	7.57	34.33	3237
	12/18/2009	3286	7.57	35.48	3301
	12/18/2009	3349	7.50	37.34	3363
	12/18/2009	3444	7.72	38.07	2489
	12/18/2009	3539	7.78	40.00	3584
	12/18/2009	3633	8.05	41.37	3678
	12/18/2009	3728	6.35	41.32	3773
	12/18/2009	3822	6.30	41.70	3867
	12/18/2009	3917	6.30	42.75	3962
	12/18/2009	4012	6.88	34.16	4057
	12/19/2009	4107	6.84	33.19	4151
	12/19/2009	4201	6.87	32.65	4246
	12/19/2009	4295	7.02	32.81	4339
	12/19/2009	4389	7.00	32.98	4434
	12/19/2009	4484	6.98	33.91	4529
	12/19/2009	4577	6.96	35.68	4622
	12/19/2009	4672	7.12	36.63	4717
	12/19/2009	4867	7.04	38.79	4917
	12/20/2009	4962	6.88	38.76	5011
	12/20/2009	5056	5.45	36.41	5106
	12/20/2009	5150	4.41	36.63	5200
	12/20/2009	5245	3.10	46.72	5224
	12/20/2009	5339	1.79	25.59	5318
	12/20/2009	5433	0.87	77.69	5412
	12/20/2009	5528	0.67	81.09	5507
	12/20/2009	5628	1.03	94.14	5673
	12/20/2009	5691	0.55	53.13	5736
	12/21/2009	5875	0.90	0.00	0
	12/21/2009	6347	0.80	0.00	0
	12/22/2009	6830	0.90	0.00	6890
	12/22/2009	7110	0.70	0.00	0

EOF



Scientific Drilling

SUR: D-19-17s-32e, 642/N & 742/W
BHL: D-19-17s-32e, 379/N & 997/W
API # 30-025-38725

COG RESOURCES

Field: Maljamar
Site: Lea County, NM
Well: BC Federal #18
Wellpath: DH - Job #32D1209552
Survey: 12/15/09-12/20/09

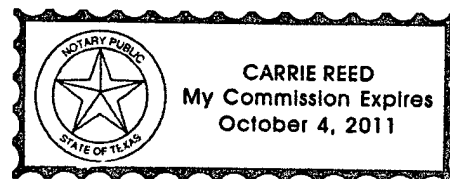
This survey is correct to the best of my knowledge
and is supported by actual field data.

.....Robertson.....Company Representative

Notorized this date 3/20 of December, 2009.

Carrie Reed

Notary Signature
County of Midland
State of Texas





Scientific Drilling International Survey Report

Company: COG RESOURCES	Date: 12/17/2009	Time: 09:58:02	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: BC Federal #18	Section (VS) Reference:	Well (0.00N,0.00E,41.98Azi)	
Wellpath: VH - Job #32K1209562	Survey Calculation Method:	Minimum Curvature	Db: Sybase

Survey: 12/15/09	Start Date: 12/15/2009
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
0.00	0.00	359.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.34	256.60	100.00	-0.24	-0.07	-0.29	0.34	0.30	256.60
200.00	0.28	239.72	200.00	-0.72	-0.26	-0.79	0.11	0.83	251.70
300.00	0.37	247.91	300.00	-1.24	-0.51	-1.30	0.10	1.39	248.73
400.00	0.65	202.57	399.99	-2.07	-1.15	-1.82	0.47	2.15	237.63
500.00	0.76	184.05	499.99	-3.13	-2.34	-2.08	0.25	3.13	221.68
600.00	0.80	189.59	599.98	-4.24	-3.69	-2.24	0.09	4.31	211.32
700.00	0.82	196.56	699.97	-5.48	-5.06	-2.56	0.10	5.67	206.87
800.00	0.67	179.59	799.96	-6.55	-6.33	-2.76	0.27	6.91	203.58
900.00	0.61	186.00	899.95	-7.42	-7.44	-2.81	0.09	7.96	200.71
1000.00	0.63	180.80	999.95	-8.26	-8.52	-2.88	0.06	9.00	198.66
1100.00	0.65	161.39	1099.94	-8.95	-9.61	-2.70	0.22	9.98	195.72
1200.00	0.67	151.55	1199.93	-9.43	-10.66	-2.24	0.11	10.90	191.89
1300.00	0.70	151.88	1299.93	-9.83	-11.72	-1.68	0.03	11.84	188.15
1400.00	0.73	120.67	1399.92	-9.91	-12.58	-0.84	0.39	12.61	183.83
1500.00	0.88	102.35	1499.91	-9.41	-13.07	0.46	0.30	13.08	178.00
1600.00	1.17	84.98	1599.89	-8.28	-13.14	2.22	0.42	13.33	170.40
1700.00	1.49	86.37	1699.87	-6.61	-12.97	4.54	0.32	13.74	160.72
1800.00	1.57	90.17	1799.83	-4.77	-12.89	7.20	0.13	14.77	150.80
1900.00	1.46	99.96	1899.80	-3.18	-13.12	9.83	0.28	16.39	143.16
2000.00	1.51	103.98	1999.76	-1.88	-13.66	12.36	0.12	18.42	137.85
2089.00	1.37	114.64	2088.73	-1.02	-14.38	14.47	0.34	20.40	134.83



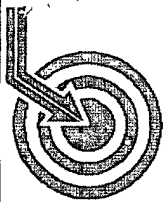
Scientific Drilling International Survey Report

Company: COG RESOURCES	Date: 12/29/2009	Time: 21:33:18	Page: 1
Field: Majamar	Co-ordinate(NE) Reference:	Site: Lea County, NM, True North	
Site: Lea County, NM	Vertical (TVD) Reference:	SITE 0.0	
Well: BC Federal #18	Section (VS) Reference:	Well (0.00N,0.00E,41.98Azi)	
Wellpath: DH - Job #32D1209552	Survey Calculation Method:	Minimum Curvature	Db: Sybase

Survey: 12/15/09-12/20/09	Start Date: 12/15/2009
MWD: 2152'-5686'	
Company: Scientific Drilling Internatio	Engineer: Lopez/Baldwin
Tool: MWD;MWD	Tied-to: From: Definitive Path

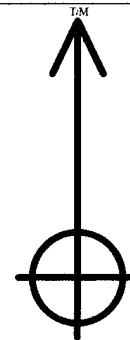
Survey

MD ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	ClsD ft	ClsA deg
2089.00	1.37	114.64	2088.73	-1.02	-14.38	14.47	0.00	20.40	134.83
2152.00	1.26	112.28	2151.72	-0.56	-14.96	15.79	0.19	21.75	133.45
2215.00	1.80	92.98	2214.69	0.30	-15.27	17.42	1.17	23.17	131.24
2277.00	2.78	61.60	2276.65	2.33	-14.61	19.72	2.51	24.54	126.54
2340.00	3.36	52.02	2339.56	5.59	-12.75	22.52	1.23	25.87	119.51
2404.00	4.61	39.10	2403.40	10.00	-9.60	25.62	2.39	27.36	110.54
2467.00	5.59	37.85	2466.15	15.59	-5.21	29.10	1.57	29.56	100.15
2530.00	6.30	37.51	2528.81	22.10	-0.04	33.08	1.13	33.08	90.08
2594.00	7.32	37.18	2592.36	29.66	5.99	37.69	1.59	38.16	80.97
2688.00	7.22	38.00	2685.60	41.52	15.42	44.94	0.15	47.51	71.07
2783.00	6.79	40.54	2779.90	53.09	24.39	52.27	0.56	57.68	64.99
2876.00	6.87	39.97	2872.24	64.14	32.83	59.41	0.11	67.88	61.08
2972.00	7.21	38.61	2967.51	75.90	41.94	66.86	0.39	78.93	57.90
3066.00	6.55	40.38	3060.83	87.14	50.63	74.02	0.74	89.68	55.63
3160.00	6.87	37.80	3154.19	98.11	59.16	80.94	0.47	100.25	53.84
3224.00	7.57	34.33	3217.68	106.11	65.66	85.66	1.29	107.93	52.53
3286.00	7.57	35.48	3279.14	114.21	72.36	90.33	0.24	115.74	51.30
3349.00	7.50	37.34	3341.60	122.43	79.01	95.23	0.40	123.74	50.32
3445.00	7.72	38.07	3436.75	135.11	89.07	103.01	0.25	136.18	49.15
3539.00	7.78	40.00	3529.89	147.77	98.91	110.99	0.28	148.67	48.29
3633.00	8.05	41.37	3623.00	160.71	108.72	119.43	0.35	161.51	47.69
3728.00	6.35	41.32	3717.25	172.61	117.66	127.30	1.79	173.35	47.25
3822.00	6.30	41.70	3810.67	182.97	125.42	134.16	0.07	183.65	46.93
3917.00	6.30	42.75	3905.10	193.39	133.14	141.17	0.12	194.05	46.68
4012.00	6.88	34.16	3999.47	204.24	141.67	147.90	1.20	204.81	46.23
4107.00	6.84	33.19	4093.79	215.47	151.11	154.19	0.13	215.90	45.58
4201.00	6.87	32.65	4187.12	226.55	160.53	160.29	0.08	226.86	44.96
4295.00	7.02	32.81	4280.43	237.77	170.09	166.44	0.16	237.98	44.38
4389.00	7.00	32.98	4373.73	249.10	179.73	172.67	0.03	249.23	43.85
4484.00	6.98	33.91	4468.02	260.53	189.37	179.04	0.12	260.61	43.39
4577.00	6.96	35.68	4560.34	271.72	198.64	185.48	0.23	271.77	43.04
4672.00	7.12	36.63	4654.62	283.31	208.04	192.35	0.21	283.33	42.76
4766.00	6.97	37.39	4747.91	294.79	217.25	199.29	0.19	294.81	42.53
4867.00	6.68	39.17	4848.20	306.77	226.67	206.72	0.36	306.78	42.36
4962.00	6.88	38.76	4942.53	317.97	235.39	213.77	0.22	317.97	42.24
5056.00	5.45	36.41	5035.99	328.03	243.37	219.94	1.54	328.03	42.11
5150.00	4.41	36.63	5129.64	336.07	249.87	224.75	1.11	336.07	41.97
5245.00	3.10	46.72	5224.43	342.27	254.56	228.80	1.54	342.27	41.95
5339.00	1.79	25.59	5318.35	346.21	257.63	231.28	1.67	346.21	41.92
5433.00	0.87	77.69	5412.32	348.20	259.10	232.62	1.52	348.20	41.92
5528.00	0.67	81.09	5507.31	349.22	259.34	233.87	0.22	349.22	42.04
5623.00	1.03	94.14	5602.30	350.17	259.37	235.27	0.43	350.18	42.21
5686.00	0.55	53.13	5665.30	350.82	259.51	236.08	1.13	350.82	42.29



Scientific
Drilling

Field: Maljamar
Site: Lea County, NM
Well: BC Federal #18
Wellpath: DH - Job #32D1209552
Survey: 12/15/09-12/20/09



Azimuths to True North
Magnetic North 0.00°

Magnetic Field
Strength 0nI
Dip Angle 0.00°
Date 12/29/2009
Model mgr2000

