

Results of Directional Survey

DD

API number:	30-005-29189			
OGRID:		Operator:	COG OPERATING LLC	
		Property:	HOPTOIT	# 2D

surface	ULSTR:	L	23	T	15S	R	31E
				1650	FSL	330	FWL

BH Loc	ULSTR:	L	23	T	15S	R	31E
9120	MD	9117.1	TVD	1600	FSL	365	FWL

Top Perf/OH	ULSTR:	L	23	T	15S	R	31E
4468	MD	4465.9	TVD	1577	FSL	351	FWL

Bot Perf/OH	ULSTR:	L	23	T	15S	R	31E
5244	MD	5241.9	TVD	1574	FSL	348	FWL

	MD	N/S	E/W	VD
	4400	-73.18	21.32	4397.93
TOP PERFS/OH	4468	-73.10	21.23	4465.93
	4500	-73.06	21.19	4497.93
	5200	-75.33	18.30	5197.91
BOT PERFS/OH	5244	-75.66	17.97	5241.91
	5300	-76.08	17.55	5297.90

NEXT TO LAST	9000	-53.62	30.33	8997.29
LAST READING	9065	-51.49	32.96	9062.20
TD	9120	-49.69	35.19	9117.12

Surface Location	1650	FS	330	FW
Projected BHL	1600	FS	365	FW
Location of				
Top Perfs/OH	1577	FS	351	FW
Bottom Perfs/OH	1574	FS	348	FW

SUMMARY of Subsurface Locations

Surface Location	L-23-15S-31E	1650	FS	330	FW	Vert. Depth
Top Perfs/OH	L-23-15S-31E	1577	FS	351	FW	4465.93
Bottom Perfs/OH	L-23-15S-31E	1574	FS	348	FW	5241.91
Projected TD	L-23-15S-31E	1600	FS	365	FW	9117.12

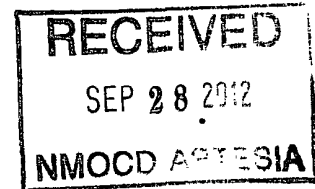
NOV 7 2012



A GYRO TECHNOLOGIES INC. COMPANY

PO Box 261021
Corpus Christi, Texas 78426
(361) 767-0602 • (800) 606-GYRO • Fax (361) 767-0612

30-005-29189



March 2, 2012

COG Operating
550 W. Texas Ave, Ste 100
Midland, Texas 79701

HOBBS OCD
OCT 11 2012

Attn: Kanica Castillo

RECEIVED

RE: Hoptoit State Com #2

Please find enclosed a copy of the survey from 0' to 9065' ran on the above referenced well.

If I can be of any further service please do not hesitate to call me at 800-606-4976.

Sincerely,

Keith Havelka
Operations

SUR: L-23-15s-31e, 1650/S & 330/W
BHL: L-23-15s-31e, 1600/S & 365/W
API # 30-005-29189

not certified



Company: COG
Lease/Well: Hoptoit State Com/#2
Location: S23, T15s, R31e
Rig Name: Silver Oak #12
State/County: New Mexico/Chaves
Latitude: 33.00

GRID North is 0.29 Degrees East of True North
VS-Azi: 0.00 Degrees

SUR: L-23-15s-31e, 1650/S & 330/W
BHL: L-23-15s-31e, 1600/S & 365/W
API # 30-005-29189

VES

VAUGHN ENERGY SERVICES

Depth Reference : RKB= 18 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: hoptoit state com #2_ed.ut

Minimum Curvature Method

Report Date/Time: 3/2/2012 / 10:45

Vaughn Energy Services

Gardendale, Texas

432-563-5444

Surveyor: Seth Hardin

Hoptoit State Com #2 / API# 05-123-29189

HOBBS OCD

OCT 11 2012

RECEIVED

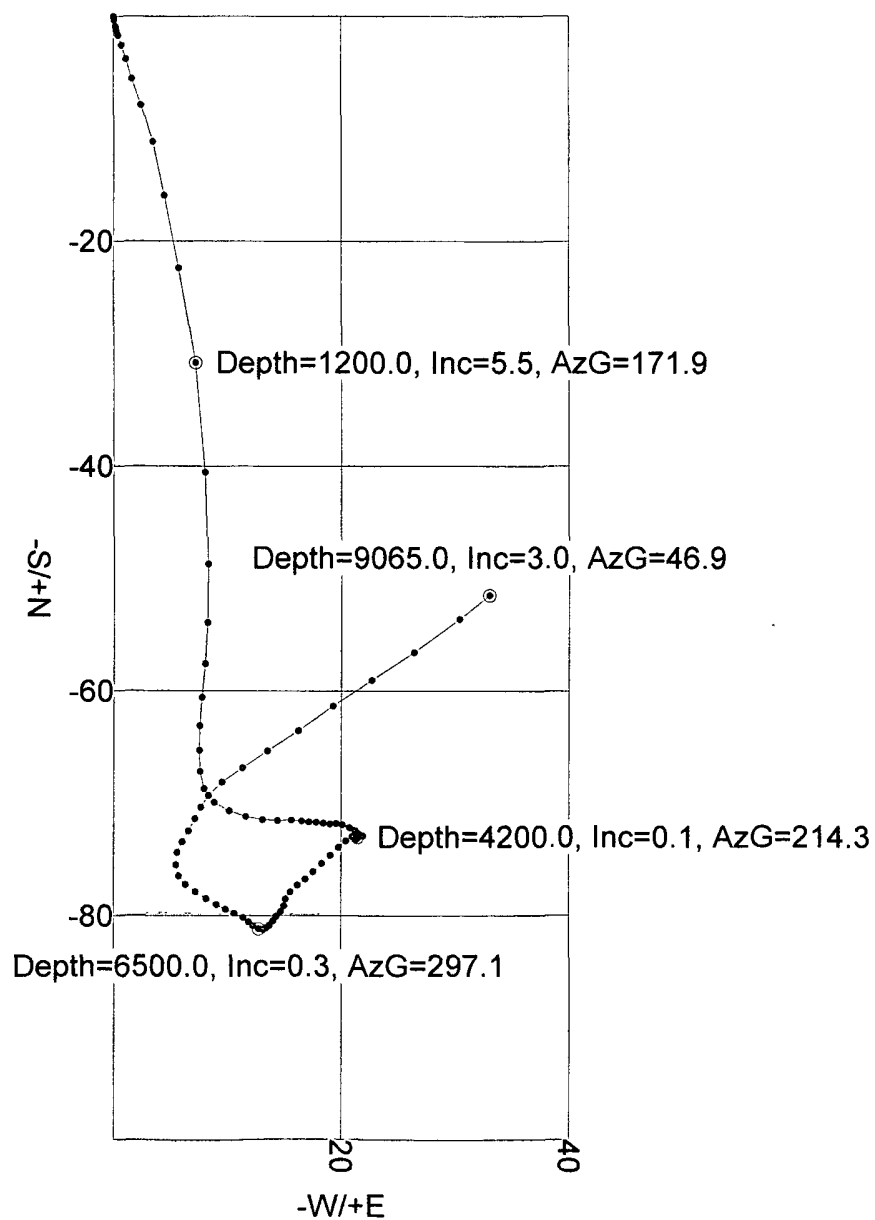
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
100.00	0.38	168.79	100.00	-0.32	0.06	0.33	168.79	0.38
200.00	0.32	169.28	200.00	-0.92	0.18	0.94	168.94	0.05
300.00	0.09	164.45	300.00	-1.27	0.25	1.30	168.75	0.24
400.00	0.40	160.66	400.00	-1.68	0.39	1.72	166.91	0.32
500.00	0.69	160.69	499.99	-2.58	0.71	2.67	164.69	0.28
600.00	0.77	163.45	599.98	-3.79	1.10	3.94	163.87	0.09
700.00	1.32	163.79	699.97	-5.54	1.61	5.77	163.80	0.56
800.00	1.52	158.12	799.93	-7.88	2.43	8.25	162.89	0.24
900.00	2.41	165.86	899.88	-11.16	3.44	11.67	162.88	0.92
1000.00	3.20	169.48	999.75	-15.94	4.46	16.55	164.37	0.81
1100.00	4.32	168.13	1099.54	-22.37	5.74	23.10	165.60	1.13
1200.00	5.46	171.89	1199.17	-30.77	7.19	31.60	166.85	1.18
1300.00	5.80	177.81	1298.69	-40.54	8.06	41.33	168.76	0.67
1400.00	3.56	179.21	1398.35	-48.70	8.29	49.40	170.34	2.24
1500.00	2.42	182.34	1498.21	-53.91	8.25	54.54	171.30	1.16
1600.00	1.80	184.06	1598.14	-57.58	8.05	58.14	172.04	0.62
1700.00	1.65	186.48	1698.10	-60.57	7.78	61.07	172.68	0.17
1800.00	1.26	181.38	1798.07	-63.10	7.59	63.56	173.14	0.40

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
1900.00	1.22	180.64	1898.04	-65.26	7.55	65.70	173.40	0.05
2000.00	0.94	174.61	1998.03	-67.14	7.62	67.57	173.53	0.30
2100.00	0.90	159.40	2098.01	-68.69	7.97	69.15	173.38	0.25
2200.00	0.90	127.42	2198.00	-69.90	8.87	70.46	172.77	0.50
2300.00	0.84	113.76	2297.99	-70.67	10.16	71.40	171.82	0.22
2400.00	0.94	103.83	2397.98	-71.16	11.63	72.11	170.72	0.18
2500.00	0.78	97.39	2497.97	-71.45	13.10	72.64	169.61	0.19
2600.00	0.73	88.68	2597.96	-71.52	14.41	72.96	168.61	0.12
2700.00	0.66	89.49	2697.95	-71.50	15.63	73.19	167.67	0.07
2800.00	0.38	100.24	2797.95	-71.55	16.54	73.44	166.98	0.30
2900.00	0.35	94.99	2897.94	-71.64	17.18	73.67	166.52	0.04
3000.00	0.38	90.37	2997.94	-71.67	17.81	73.85	166.04	0.04
3100.00	0.35	105.04	3097.94	-71.75	18.44	74.08	165.59	0.10
3200.00	0.33	89.69	3197.94	-71.83	19.03	74.31	165.16	0.09
3300.00	0.28	81.77	3297.94	-71.79	19.56	74.41	164.76	0.07
3400.00	0.39	116.55	3397.93	-71.91	20.11	74.67	164.37	0.22
3500.00	0.39	109.43	3497.93	-72.17	20.74	75.09	163.97	0.05
3600.00	0.25	128.55	3597.93	-72.42	21.23	75.47	163.66	0.18
3700.00	0.31	130.81	3697.93	-72.74	21.61	75.88	163.45	0.07
3800.00	0.12	72.40	3797.93	-72.88	21.91	76.11	163.27	0.27
3900.00	0.10	254.21	3897.93	-72.88	21.93	76.10	163.25	0.21
4000.00	0.12	270.07	3997.93	-72.90	21.75	76.07	163.39	0.03
4100.00	0.10	257.32	4097.93	-72.92	21.56	76.04	163.53	0.03
4200.00	0.12	214.28	4197.93	-73.02	21.42	76.10	163.66	0.08
4300.00	0.03	170.30	4297.93	-73.14	21.36	76.19	163.72	0.10
4400.00	0.05	253.62	4397.93	-73.18	21.32	76.22	163.76	0.06
4500.00	0.18	325.31	4497.93	-73.06	21.19	76.07	163.83	0.17
4600.00	0.07	37.78	4597.93	-72.88	21.13	75.89	163.83	0.17
4700.00	0.09	39.59	4697.93	-72.78	21.22	75.81	163.74	0.02
4800.00	0.40	234.46	4797.93	-72.92	20.99	75.88	163.94	0.48
4900.00	0.42	234.00	4897.92	-73.33	20.41	76.12	164.45	0.03
5000.00	0.57	224.10	4997.92	-73.91	19.77	76.51	165.03	0.18
5100.00	0.57	226.31	5097.92	-74.61	19.06	77.01	165.67	0.02
5200.00	0.63	226.53	5197.91	-75.33	18.30	77.52	166.35	0.06
5300.00	0.58	223.59	5297.90	-76.08	17.55	78.07	167.01	0.06
5400.00	0.52	230.68	5397.90	-76.73	16.85	78.56	167.61	0.09
5500.00	0.48	231.86	5497.90	-77.28	16.17	78.95	168.18	0.04
5600.00	0.52	222.23	5597.89	-77.88	15.53	79.41	168.72	0.09
5700.00	0.38	196.98	5697.89	-78.53	15.13	79.97	169.09	0.24

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
5800.00	0.33	190.05	5797.89	-79.13	14.98	80.53	169.28	0.07
5900.00	0.38	227.25	5897.89	-79.63	14.69	80.98	169.55	0.23
6000.00	0.27	217.46	5997.88	-80.05	14.30	81.32	169.87	0.12
6100.00	0.31	210.90	6097.88	-80.47	14.01	81.68	170.12	0.05
6200.00	0.27	223.22	6197.88	-80.87	13.72	82.03	170.37	0.07
6300.00	0.17	243.45	6297.88	-81.11	13.42	82.21	170.60	0.12
6400.00	0.16	241.23	6397.88	-81.24	13.17	82.30	170.79	0.01
6500.00	0.34	297.10	6497.88	-81.17	12.78	82.17	171.05	0.29
6600.00	0.32	299.55	6597.88	-80.90	12.27	81.82	171.38	0.03
6700.00	0.26	326.75	6697.88	-80.57	11.90	81.44	171.60	0.15
6800.00	0.49	300.17	6797.87	-80.16	11.40	80.97	171.90	0.28
6900.00	0.50	291.72	6897.87	-79.79	10.63	80.49	172.41	0.07
7000.00	0.46	297.87	6997.87	-79.43	9.87	80.05	172.92	0.06
7100.00	0.57	296.14	7097.86	-79.03	9.06	79.54	173.46	0.11
7200.00	0.63	304.35	7197.86	-78.50	8.16	78.92	174.07	0.10
7300.00	0.66	301.35	7297.85	-77.89	7.22	78.22	174.71	0.05
7400.00	0.60	311.50	7397.85	-77.24	6.34	77.50	175.31	0.13
7500.00	0.52	336.29	7497.84	-76.48	5.76	76.70	175.69	0.25
7600.00	0.68	354.44	7597.84	-75.47	5.52	75.68	175.82	0.24
7700.00	0.62	18.22	7697.83	-74.37	5.63	74.58	175.67	0.27
7800.00	0.57	31.50	7797.82	-73.43	6.06	73.68	175.28	0.15
7900.00	0.71	26.73	7897.82	-72.45	6.60	72.75	174.79	0.15
8000.00	0.69	27.36	7997.81	-71.36	7.16	71.72	174.27	0.03
8100.00	0.63	27.51	8097.80	-70.35	7.68	70.77	173.77	0.06
8200.00	0.82	36.12	8197.80	-69.29	8.36	69.79	173.12	0.22
8300.00	1.12	50.96	8297.78	-68.10	9.54	68.76	172.03	0.39
8400.00	1.38	58.13	8397.76	-66.84	11.32	67.79	170.39	0.30
8500.00	1.70	52.90	8497.72	-65.31	13.52	66.70	168.30	0.35
8600.00	2.03	59.15	8597.67	-63.51	16.23	65.55	165.67	0.39
8700.00	2.27	50.28	8697.60	-61.33	19.28	64.29	162.55	0.41
8800.00	2.46	61.34	8797.51	-59.04	22.68	63.25	158.98	0.49
8900.00	2.65	51.49	8897.41	-56.57	26.37	62.42	155.01	0.48
9000.00	3.01	54.91	8997.29	-53.62	30.33	61.60	150.50	0.40
9065.00	2.96	46.90	9062.20	-51.49	32.96	61.13	147.37	0.65



Vaughn Energy Services
Gardendale, Texas
432-563-5444
Surveyor: Seth Hardin
Hoptoit State Com #2 / API# 05-123-29189



VES Survey Date: 02/24/2012