ARCADIS TETRAPLAN

Imagine the Result

Bandeirantes Landfill Gas to Energy Project (BLFGE)

Monitoring Report – Version 04
4th Verification
Monitoring Period: 01/01/2007 to 30/06/2007

São Paulo, November 8th, 2007

Clean Development Mechanism

Monitoring Report – Version 04

Bandeirantes Landfill Gas to Energy Project (BLFGE)

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Biogás Energia Ambiental SA

São Paulo
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Glossary

CDM	Clean Development Mechanism
CDM-EB	Clean Development Mechanism Executive Board
PDD	Project Design Document
CER	Certified Emission Reduction
GHG	Greenhouse Gas
GWP	Global Warming Potential
CH_4	Methane
EF	Grid CO_2 Electricity Emission Factor

1. General Project Activity and Monitoring Information

1.1. Title and Registration Number of the Project Activity

Bandeirantes Landfill Gas to Energy Project (BLFGE), Registration Number 0164

1.2. Short Description of the Project Activity:

Bandeirantes Landfill Gas to Energy Project (BLFGE) is a project designed to explore the landfill gas produced in Bandeirantes landfill, one of the biggest landfills in Brazil. This landfill is located in the metropolitan region of São Paulo, Brazil's biggest city and financial center of the country. With an estimated population of around 10 million citizens in 2000, São Paulo generates nearly 15.000 tons of waste daily. Bandeirantes Landfill Gas to Energy Project (BLFGE)'s goal is to explore the gas produced in Bandeirantes landfill, using it to generate electricity.

1.3. Real Project Implementation

Bandeirantes landfill is divided into 5 cells, named AS-1, AS-2, AS-3, AS-4 and AS-5. The former 3 are the oldest ones, which operated from 1978 until 1995. Bandeirantes Landfill Gas to Energy Project (BLFGE) has since its start been extracting gas from the newest cells, where there is still waste being disposed. Two main units can be detached: the degassing stations and the power plant.

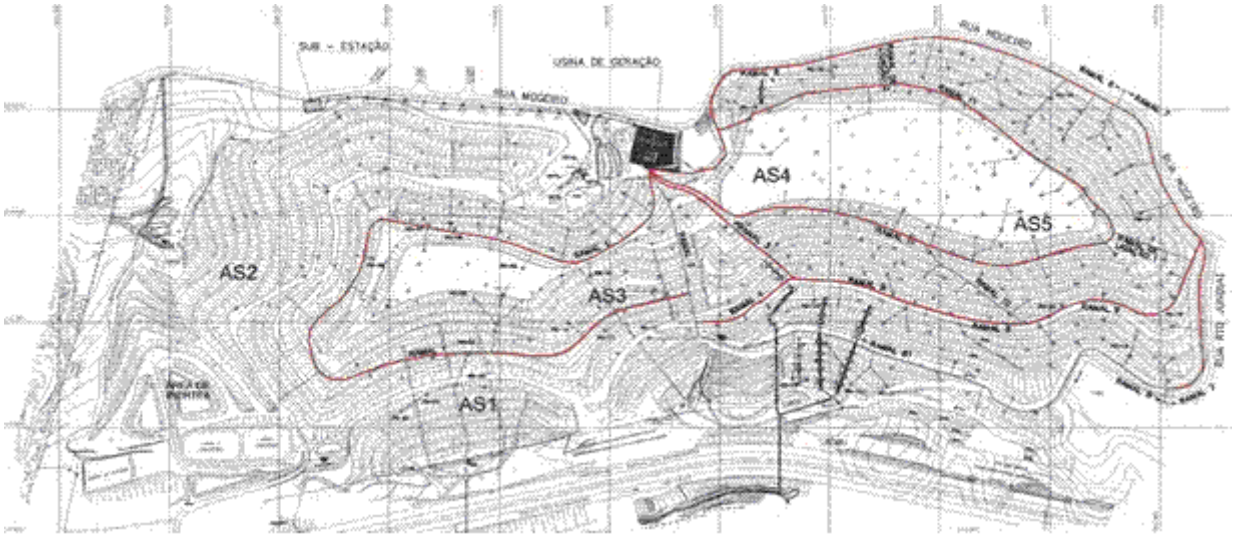


Figure 1.1. Bandeirantes Landfill Cells

The degassing stations are responsible for extracting the landfill gas from the landfill and transport it to the gas engines in the power plant. During the transportation, the gas goes through a treatment to allow its use as fuel for energy generation. Other functions of the

degassing stations are: drying landfill gas by gas coolers; and measuring and analyzing the quantity and quality of the landfill gas for safety, process and operating purposes.

Figure 1.2. Degassing Station (A) and Power Plant (B)

The landfill gas cools down when transported from the landfill, resulting in a condensate. This is drained to condensate shafts, placed nearby the gas pipes. Once in the degassing stations, the landfill gas has to be cooled again to remove moisture. This is a very important step in the gas treatment process, since the condensate, which contains silicium components, could block the gas pipes and also damage the gas engines, due to the silicium. After this step, the gas is heated again through a second heat exchanger, or economizer, to a temperature of around 25ºC, far enough from the dew point of 4°C to avoid further condensation.

Considering demoisturing is fundamental for the energy generation, as per the reasons mentioned in the previous paragraph, a demister has been installed for extra-safety reasons. The demister is a stainless steel high density filter which separates liquid particles (small amounts of condensate) from the landfill gas. This liquid is to be drained off to a condensate shaft as well.

The blowers are used for transportation of the landfill gas from the landfill to the gas engines, under correct suction and pre-pressure. Capacity and pressure are adjusted through frequency controlled electromotors. Moreover, the blowers are equipped with all the necessary safety equipment, including a noise reducing housing.

Figure 1.3. Compressors (blue) and dryers (metal)

On the pressure side of the degassing station, all kinds of gas analyzing and gas measuring instruments are present. These instruments are very important for safety, process and operating purposes. After the described treatment, analyzing and measurement, the landfill gas is transported as a fuel to the gas engines. These drive electrical generators in order to generate electrical power. An occasional surplus of the landfill gas can be burned off by the flares.

Figure 1.4. Turbine Flow-meter

Figure 1.5. Generators used to produce electricity

Figure 1.6. Flare used to destroy the surplus gas collected

The whole process is controlled by an electrical control system. This control system is provided with a PLC (Programmable Logical Controller). All the measured process signals are processed by the PLC to output signals for the gas-coolers, blowers, flares and gas-engines. Also the system counts on a SCADA system (process visualization on a personal computer). With this system it is possible to control and monitor the installation at a distance, including through the internet.

Figure 1.7. PLC Controlling System panel

For electricity generation, a total of 24 Caterpillar engines, nominal capacity of 925 kW, model 3516 A were installed. They will burn the gas and generate energy, which is to be sent to Eletropaulo's – the electric distributor supplying São Paulo metropolitan region – grid. This electricity will in fact not be commercialized directly; it will supply Unibanco's branches over São Paulo state.

1.4. Changes against the PDD

The changes made against the presented in the registered PDD are:

- Installation of 4 new flow-meters to measure the gas flow to the power house (please refer to Annex II);
- periodical monitoring of methane content in the exhaust flare gas, made by a specialized company on gas analysis;
- changes in the gas station's lay-out (please refer to Annex III). This change was necessary in order to adapt the gas station to treat an increase of landfill gas collected (average 17.000 Nm^3/h).

1.5. Monitoring Period

The monitoring period is from 01/01/2007 to 30/06/2007.

1.6. Methodology applied to the project activity

1.6.1. Baseline methodology

The baseline applied to this project activity is **ACM0001 – version 2: "Consolidated baseline methodology for landfill gas project activities".**

1.6.2. Monitoring methodology

The monitoring methodology applied to this project activity is **ACM0001 – version 2: "Consolidated monitoring methodology for landfill gas project activities".**

1.7. Changes since last verification

The major changes from the last verification are the installation of 4 new flow-meters to measure the gas flow to the power house (as mentioned in 1.4) and a change in the gas station's lay-out (as mentioned in 1.4).

1.8. Resolution of CARs and FARs from the previous Verifications

The following table presents the issues raised during the last Verificat and their resolutions:

TYPE OF ISSUE RAISED	RESOLUTION
Forward Action Request #4 (Verification Report Nº. 806898 – Version 2, amended according to EB meetings 26, 27 and 28, from 05/02/2007): Standard procedures for CDM activities within Bandeirantes LFGTE project are necessary. They could be part of the upcoming ISO 9001:2000 implementation. A delay of ISO implementation could lead to the same errors in the next verification activity. Procedures should include: - Document Control - Data safety measures (backup and sabotage) - Monitoring Report Preparation (frequency, responsibilities, crosschecking measures, legal binding signature in monitoring reports,etc.) - Data Spreadsheets - Error management (including software errors, material errors, etc.)	Biogás is already developing the procedures to implement such Program. The on-site audit is scheduled to October/2007.
Corrective Action Request #1 (Verification Report 961118 – Version 1, from 30/03/2007): Project Proponent should explain how this data was recovered from the logger until they have a procedure to reduce errors in this operation. This means an internal audit of data collected.	The company responsible for the system automation identified that the problem was the "competition" between the PLC and the anti-virus and suggested the installation of an exclusive computer to the PLC, without internet access. Also, the internal procedure was strengthed.
Forward Action Request #1 (Verification Report 961118 – Version 1, from 30/03/2007): Given that the technical arguments for calculation of LFG to Energy flow by the difference between LFG to flare flow and total LFG flow are reasonable, also taking into	As requested, the data from the new flow-meters are available on items 2.1.1 and 2.1.2 of the Monitoring Report.

account uncertainties of measurements, results could be considered acceptable for this opportunity again. For the next verification the project proponent should include the new measures (manually and by PLC), considering the data obtained by the difference between LFG to Flare flow and total LFG flow, mentioning in the 4th Monitoring Report, the date in which the 4 new Flow meters come in operation, thus reflecting in the calculations. Raw data should be shown. This will be part of the next verification activity (4th).	
Forward Action Request 2 (Verification Report 961118 – Version 1, from 30/03/2007): In the next verification, Project Proponent should evidence the certificates from Pressure, Temperature and Logger installation related to the new equipment (flow meters to the Powerhouse).	All documents were presented to the Verification Team, during the on-site audit.

1.9. Person(s) responsible for the preparation and submission of the monitoring report

This monitoring report was developed and reviewed by:

Eduardo Cardoso Filho
ARCADIS Tetraplan S/A
Avenida Nove de Julho, 5966 – Térreo
São Paulo – SP
Brazil
CEP: 01406-200
Phone/Fax: + 55 (11) 3060-8457
http://www.tetraplan.com.br
eduardo@tetrapan.com.br

Antônio Carlos Delbin
Biogás Energia Ambiental
Rua Mogeiro, 1510
São Paulo – SP
Brazil
CEP: 05206-240
Phone/Fax: + 55 (11) 3819-4833
http://www.biogas-ambiental.com.br
delbin@biogas-ambiental.com.br

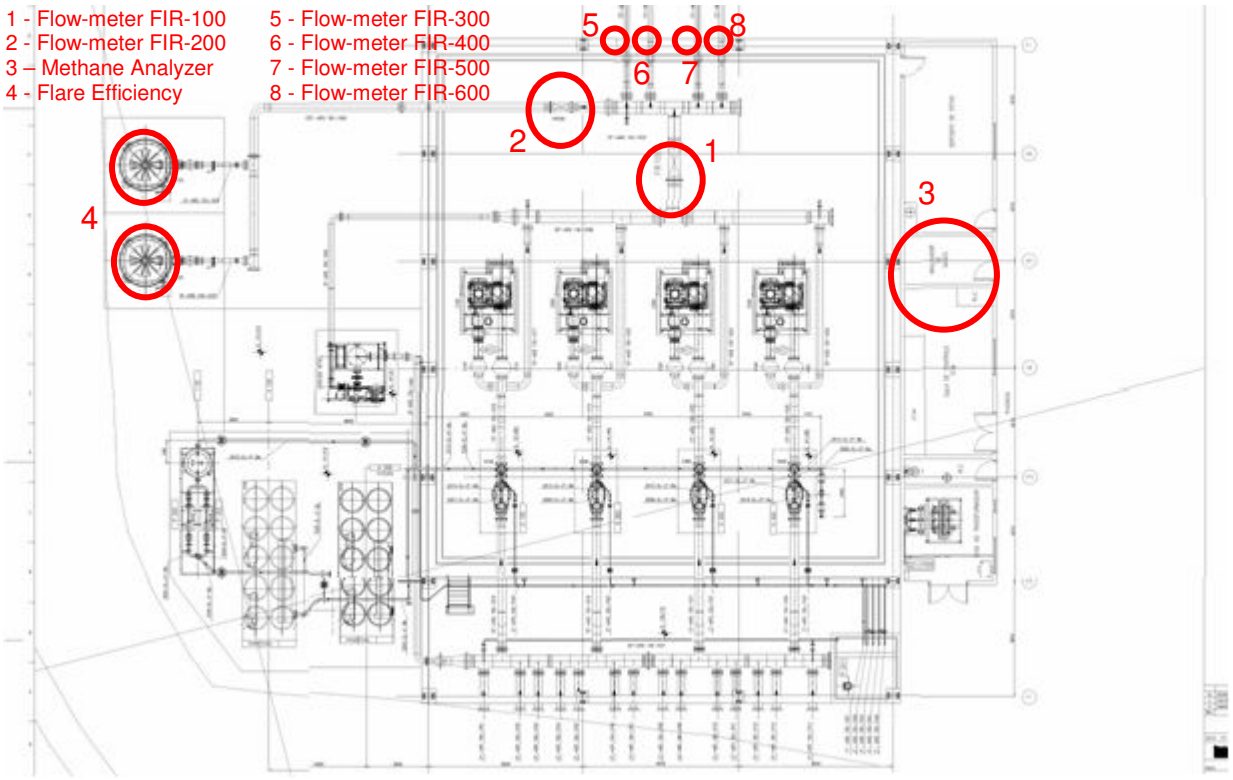
2. Key monitoring activities according to the monitoring plan

2.1. Monitoring equipment

The following equipment are used to monitor the operation of the project and to monitor the Emission Reduction

2.1.1. Before the change in the lay-out

2.1.1.1. Degassing Station



1 – Flow-meter FIR100 (Total Gas Collected)

Variable	Type of Equipment	Manufacturer	Model	Error (+/- %)
Gas Flow	Flow Meter	Instromet	SM-RI X K	0,600
Temperature	Temperature Transmiter	Instromet	model 333-H	0,100
Pressure	Pressure Transmiter	Instromet	model 333-H	0,100

2 – Flow-meter FIR200 (Gas sent to Flares)

Variable	Type of Equipment	Manufacturer	Model	Error (+/- %)
Gas Flow	Flow Meter	Instromet	SM-RI X K	0,600
Temperature	Temperature Transmiter	Instromet	model 333-H	0,100
Pressure	Pressure Transmiter	Instromet	model 333-H	0,100

3 – Methane Analyzer

Variable	Type of Equipment	Manufacturer	Model	Error (+/- %)
Methane Analyzer	Analyzer Panel	NUK	BINOS 100	1,000

4 – Exhaust Gas Methane Concentration

Analysis made by specialized company (reports are available in Annex 1).

5 – Flow-meter FIR300 (Gas sent to the Power House)

Variable	Type of Equipment	Manufacturer	Model	Error (+/- %)
Gas Flow	Flow Meter	Instromet	SM-RI X K	0,7720
Temperature	Temperature Transmiter	Instromet	model 333-H	0,0500
Pressure	Pressure Transmiter	Instromet	model 333-H	0,0337

6 – Flow-meter FIR400 (Gas sent to the Power House)

Variable	Type of Equipment	Manufacturer	Model	Error (+/- %)
Gas Flow	Flow Meter	Instromet	SM-RI X K	0,5960
Temperature	Temperature Transmiter	Instromet	model 333-H	0,0500
Pressure	Pressure Transmiter	Instromet	model 333-H	0,0381

7 – Flow-meter FIR500 (Gas sent to the Power House)

Variable	Type of Equipment	Manufacturer	Model	Error (+/- %)
Gas Flow	Flow Meter	Instromet	SM-RI X K	0,8100
Temperature	Temperature Transmiter	Instromet	model 333	0,0500
Pressure	Pressure Transmiter	Instromet	model 333	0,3700

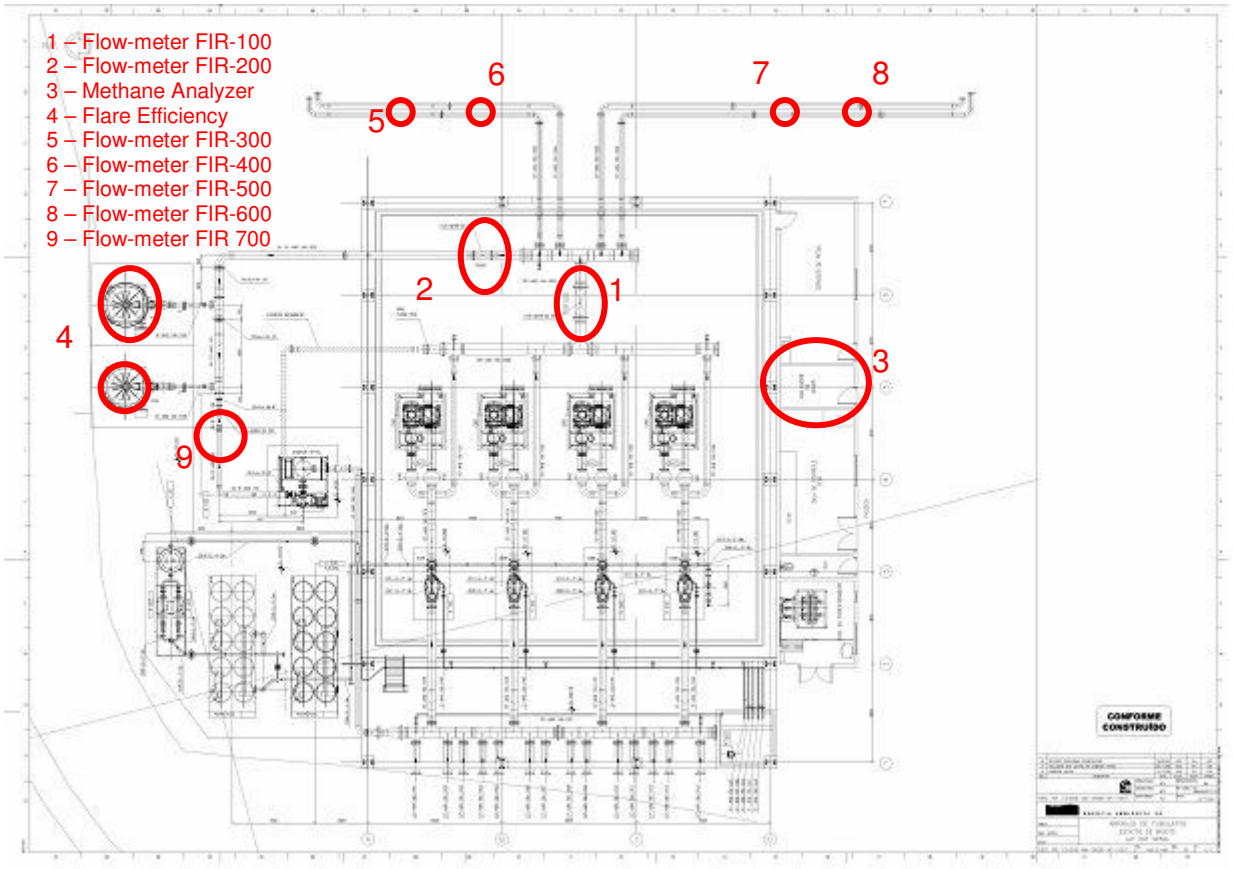
8 – Flow-meter FIR600 (Gas sent to the Power House)

Variable	Type of Equipment	Manufacturer	Model	Error (+/- %)
Gas Flow	Flow Meter	Instromet	SM-RI X K	0,6320
Temperature	Temperature Transmiter	Instromet	model 333-H	0,0500
Pressure	Pressure Transmiter	Instromet	model 333-H	0,4440

2.1.1.2. Power House

Variable	Type of Equipment	Manufacturer	Model	Error (+/- %)
Electricity Dispathced	Electricity Meter	Merlin Gerin	0011001426 - CM 4000 0011001414 - CM 4000	0,04

2.1.2. After the change in the lay-out



The equipment from 1 to 8 are the same previously presented. The new equipment 9 is a flow-meter with the following characteristics:

9 – Flow-meter FIR700 (Gas sent to Flare F200)

Variable	Type of Equipment	Manufacturer	Model	Error (+/- %)
Gas Flow	Flow Meter	TZ	G 1600	0,3300

2.1.3. Involvement of Third Parties

BFLGE has two third parties involved:

- Specialized company on gas analysis: As the analysis of methane concentration in the exhaust gas is made periodically, Biogás hired TASQA, a national and certified laboratory, to developed the analysis. The collection was made on 30/11/2006 and 22/03/2007

- Sotreq: Sotreq is the company that produces the electricity in ICEs, using the gas from the landfill. Sotreq is responsible to monitor the electricity displaced to the local grid. The amount of electricity dispatched is monitored by Sotreq's PLC and by Biogás's PLC.

2.2. Data collection (accumulated data for the monitoring period)

2.2.1. List of fixed default values

Global Warming Potential of CH_4 (GWP_{CH4}) = 21 tCO_2e/tCH_4;
Emission Factor of the S-SE-CO Brazilian Grid (EF) = 0,2677 tCO_2e/MWh;
Methane Destruction in the Baseline = 20% of total gas collected;
Density of Methane, at STP (D_{CH4}) = 0,0007168 $tons/m^3$

2.2.2. List of variables

$Q_{biogas,\ collected}$ = amount of biogas collected from the landfill (Nm^3)
$Q_{biogas,\ flares}$ = amount of biogas sent to flares (Nm^3)
$Q_{biogas,\ power\ house}$ = amount of biogas sent to the power house (Nm^3)
$\%_{CH4}$ = percentage of methane in the biogas (% volume);
EG_y = amount of electricity dispatched to the grid (MWh);
FE = Flare Efficiency (calculated using data from methane sent to flares and methane content in the exhaust gas)

2.2.3. Data concerning GHG emissions of the project activity

As BLFGE does not consume electricity that are not taken account in the Net Electricity value, $PE_y = 0$.

2.2.4. Data concerning GHG emissions of the baseline

The following table presents the collected data from the period 01/01/2007 to 30/06/2007, divided in three parts:

a) Part 1: form 01/01/2007 to 31/01/2007 – degassing station operating with one flow-meter to measure the total gas collected and one flow-meter to measure the gas sent to the flares F100 and F200.

b) Part 2: from 01/02/2007 to 31/05/2007 – degassing station operating with four flow-meters to measure the gas to the power house and one flow-meter to measure the gas sent to the flares F100 and F200.

c) Part 3: from 01/06/2007 to 30/06/2007 – after the change in the lay-out, the degassing station began to operate with one flow-meter to measure the gas sent to each one of the flares and four flow-meters to measure the gas sent to the power house.

a) Part 1

DAY	COLLECTING SYSTEM			FLARING SYSTEM			ELECTRICITY GENERATION	
	LFG Collected (Nm3)	Methane (%)	Methane Collected (N.m³)	Methane sent to Flares (Nm³)	Flare Efficiency (%)	Methane Destroyed (Nm³)	Methane Destroyed in the Power House (Nm³)	Eletricity Exported (MWh)
1/1/2007	279.034	50,7127	141.505,6753	20.206,9824	99,99860	20.206,6995	121.298,6928	383,6800
2/1/2007	294.983	50,4818	148.912,7281	18.216,8623	99,99860	18.216,6072	130.695,8657	409,0700
3/1/2007	300.762	50,6689	152.392,7970	19.812,5532	99,99860	19.812,2758	132.580,2437	407,7800
4/1/2007	301.896	51,0627	154.156,2488	22.079,5114	99,99860	22.079,2022	132.076,7373	404,9900
5/1/2007	295.351	50,9358	150.439,3947	27.658,6487	99,99860	27.658,2614	122.780,7459	381,3400
6/1/2007	299.267	50,3713	150.744,6784	26.489,7629	99,99860	26.489,3920	124.254,9154	390,2100
7/1/2007	301.328	53,3894	160.877,2112	27.252,0853	99,99860	27.251,7037	133.625,1258	390,1000
8/1/2007	260.490	50,3525	131.163,2273	36.564,4749	99,99860	36.563,9629	94.598,7523	299,3900
9/1/2007	292.450	49,7114	145.380,9893	34.472,8674	99,99860	34.472,3847	110.908,1218	353,1500
10/1/2007	302.198	49,5004	149.589,2188	26.408,9584	99,99860	26.408,5886	123.180,2603	380,1600
11/1/2007	296.568	47,8243	141.831,5700	19.729,9149	99,99860	19.729,6386	122.101,6550	389,8423
12/1/2007	286.984	48,4365	139.005,0052	29.517,2031	99,99860	29.516,7898	109.487,8020	342,0500
13/1/2007	302.977	48,4456	146.779,0255	29.252,9066	99,99860	29.252,4970	117.526,1188	362,3200
14/1/2007	298.484	51,1736	152.745,0082	18.570,3877	99,99860	18.570,1277	134.174,6205	392,0500
15/1/2007	260.136	53,1888	138.363,2168	28.623,5527	99,99860	28.623,1519	109.739,6640	313,0600
16/1/2007	257.770	49,1409	126.670,4979	46.207,1882	99,99860	46.206,5412	80.463,3096	254,6600
17/1/2007	290.344	50,9894	148.044,6635	25.547,2190	99,99860	25.546,8613	122.497,4444	372,3700
18/1/2007	294.562	51,3496	151.256,4088	34.154,1594	99,99860	34.153,6812	117.102,2493	347,1800
19/1/2007	298.960	49,9156	149.227,6778	37.890,4328	99,99860	37.889,9023	111.337,2449	335,7800
20/1/2007	307.918	50,1387	154.386,0823	33.897,2709	99,99860	33.896,7963	120.488,8113	355,7400
21/1/2007	308.068	49,7609	153.297,4094	30.340,2159	99,99860	30.339,7911	122.957,1934	369,7000
22/1/2007	308.597	50,6979	156.452,1985	29.056,9944	99,99860	29.056,5876	127.395,2040	374,8300
23/1/2007	298.291	50,8709	151.743,3163	24.245,5796	99,99860	24.245,2401	127.497,7366	380,5000

DAY	COLLECTING SYSTEM			FLARING SYSTEM			ELECTRICITY GENERATION	
	LFG Collected (Nm3)	Methane (%)	Methane Collected (N.m³)	Methane sent to Flares (Nm³)	Flare Efficiency (%)	Methane Destroyed (Nm³)	Methane Destroyed in the Power House (Nm³)	Eletricity Exported (MWh)
24/1/2007	298.882	50,2721	150.254,2579	35.373,4604	99,99860	35.372,9651	114.880,7974	343,7100
25/1/2007	303.096	50,0989	151.847,7619	26.498,8111	99,99860	26.498,4401	125.348,9507	374,2400
26/1/2007	304.493	49,7604	151.516,9348	18.976,1285	99,99860	18.975,8628	132.540,8062	398,4000
27/1/2007	306.447	49,5510	151.847,5530	19.788,6873	99,99860	19.788,4102	132.058,8656	396,1000
28/1/2007	304.948	49,5634	151.142,5970	17.740,7233	99,99860	17.740,4749	133.401,8736	399,4100
29/1/2007	305.989	49,5676	151.671,4036	18.240,8768	99,99860	18.240,6214	133.430,5267	407,5000
30/1/2007	305.204	50,4791	154.064,2324	16.062,4496	99,99860	16.062,2247	138.001,7827	417,3100
31/1/2007	301.584	50,3100	151.726,9104	15.511,0761	99,99860	15.510,8589	136.215,8343	415,1800

b) Part 2:

DAY	COLLECTING SYSTEM			FLARING SYSTEM			ELECTRICITY GENERATION				
	LFG Collected (Nm3)	Methane (%)	Methane Collected (N.m³)	Methane sent to Flares (Nm³)	Flare Efficiency (%)	Methane Destroyed (Nm³)	Methane FIR300 (Nm³)	Methane FIR400 (Nm³)	Methane FIR500 (Nm³)	Methane FIR600 (Nm³)	Eletricity Exported (MWh)
01/02/2007	298.854	49,5176	147.985,3283	19.818,4290	99,99860	19.818,1515	33.830,9194	30.596,9250	22.649,8454	41.426,4241	398,0500
02/02/2007	303.559	48,9181	148.495,2951	16.781,3542	99,99860	16.781,1192	31.573,2092	30.858,0266	25.120,4227	41.864,1099	393,9700
03/02/2007	299.860	49,0011	146.934,6984	13.677,1870	99,99860	13.676,9955	30.678,6086	34.027,8338	24.161,4623	42.274,2289	393,8700
04/02/2007	302.951	49,2292	149.140,3536	16.903,3381	99,99860	16.903,1014	35.058,0824	32.955,0110	21.621,4646	42.954,4461	404,5600
05/02/2007	293.672	49,2789	144.718,3312	11.252,8368	99,99860	11.252,6792	34.013,2823	34.281,3595	21.363,8815	41.580,0574	391,2200
06/02/2007	297.810	51,0708	152.093,9494	10.968,4757	99,99860	10.968,3221	34.376,7768	35.567,7479	25.500,6718	43.710,4763	410,2600
07/02/2007	251.837	53,1209	133.778,0809	11.917,6739	99,99860	11.917,5070	31.109,1926	30.731,5030	24.290,0627	36.992,3342	333,2000
08/02/2007	276.287	50,5850	139.759,7789	18.762,9882	99,99860	18.762,7255	28.094,4031	29.051,4713	22.074,7881	39.805,3187	363,9500
09/02/2007	295.926	50,4366	149.255,0129	6.723,7031	99,99860	6.723,6089	36.382,9457	37.693,2886	30.460,6802	39.525,0838	430,3400
10/02/2007	295.143	49,5930	146.370,2679	7.445,3970	99,99860	7.445,2927	39.194,3397	32.713,5265	26.879,4060	41.550,5031	424,3800
11/02/2007	298.793	50,5123	150.927,2165	4.076,8477	99,99860	4.076,7906	35.141,4071	35.542,9798	32.482,9447	42.295,4641	437,8100
12/02/2007	284.680	52,5583	149.622,9684	868,2631	99,99860	868,2509	34.480,8727	34.013,6294	37.246,4904	41.956,7653	434,3400

DAY	COLLECTING SYSTEM			FLARING SYSTEM			ELECTRICITY GENERATION				
	LFG Collected (Nm3)	Methane (%)	Methane Collected (N.m³)	Methane sent to Flares (Nm³)	Flare Efficiency (%)	Methane Destroyed (Nm³)	Methane FIR300 (Nm³)	Methane FIR400 (Nm³)	Methane FIR500 (Nm³)	Methane FIR600 (Nm³)	Eletricity Exported (MWh)
13/02/2007	263.876	51,1147	134.879,4257	17.826,2516	99,99860	17.826,0020	32.232,4186	32.576,9317	19.485,9459	32.016,5964	346,3500
14/02/2007	277.151	50,2921	139.385,0580	15.425,0899	99,99860	15.424,8739	31.175,0669	28.579,4916	24.234,2542	39.450,6320	368,6900
15/02/2007	287.099	51,2806	147.226,0897	6.403,9213	99,99860	6.403,8316	34.548,2530	29.725,3125	31.833,9708	43.258,2629	416,2400
16/02/2007	285.460	50,4420	143.991,7332	3.227,7835	99,99860	3.227,7383	32.938,6260	34.647,0965	30.551,7105	43.202,0597	419,4900
17/02/2007	283.505	48,7857	138.309,8987	2.874,4534	99,99860	2.874,4131	31.168,2080	31.745,3428	33.846,5429	39.532,0284	415,6300
18/02/2007	288.235	48,8052	140.673,6682	2.629,6241	99,99860	2.629,5872	33.965,9789	29.460,2828	34.876,1959	39.316,0049	416,7400
19/02/2007	289.814	48,9972	142.000,7452	1.114,1963	99,99860	1.114,1807	33.523,8842	28.236,5963	35.682,2109	43.229,7395	420,4200
20/02/2007	280.638	48,4318	135.918,0348	3.307,4076	99,99860	3.307,3612	32.234,2688	27.494,2485	33.627,1673	39.273,8309	398,6900
21/02/2007	287.206	48,6011	139.585,2752	2.390,6881	99,99860	2.390,6546	33.551,2833	26.803,0206	33.621,2689	42.285,8730	410,7200
22/02/2007	283.613	48,5547	137.707,4413	1.638,7211	99,99860	1.638,6981	31.527,5378	30.398,6410	32.003,8594	41.284,6047	405,6000
23/02/2007	272.510	48,4983	132.162,7173	3.585,4793	99,99860	3.585,4291	30.932,7007	29.010,2281	33.184,0617	37.378,6097	394,3700
24/02/2007	275.783	47,7810	131.771,8752	1.033,0252	99,99860	1.033,0107	31.415,5296	29.003,1233	33.933,5883	38.028,8979	388,9000
25/02/2007	269.826	48,2163	130.100,1136	1.043,4007	99,99860	1.043,3860	30.411,4668	25.353,5770	32.538,7700	39.961,6694	395,9000
26/02/2007	275.920	48,8144	134.688,6924	597,9764	99,99860	597,9680	29.222,2524	33.057,5998	32.078,2348	41.617,2048	395,2500
27/02/2007	273.076	49,5470	135.300,9657	3.986,5516	99,99860	3.986,4957	26.637,4581	33.629,0353	32.118,3472	37.802,8745	387,6500
28/02/2007	269.863	49,3580	133.198,9795	766,0361	99,99860	766,0253	24.256,0019	33.220,4019	32.475,5896	42.027,8434	400,3000
01/03/2007	270.914	49,4666	134.011,9447	649,9911	99,99860	649,9820	29.410,8616	31.059,0888	30.641,5907	40.936,5794	398,9300
02/03/2007	267.572	48,6798	130.253,5144	2.401,3745	99,99860	2.401,3408	28.412,9388	29.937,5902	33.720,0106	35.398,4901	387,0900
03/03/2007	272.052	48,2118	131.161,1661	1.368,7330	99,99860	1.368,7138	31.729,1498	30.804,4474	33.992,6938	32.462,9334	389,3400
04/03/2007	273.347	47,9119	130.965,7412	317,6558	99,99860	317,6513	32.386,5279	28.367,6777	33.515,8114	34.370,0805	391,6200
05/03/2007	273.128	47,6838	130.237,8092	598,9085	99,99860	598,9001	31.061,7041	25.980,0415	31.401,6896	40.270,8764	391,0100
06/03/2007	271.845	48,6061	132.133,2525	1.255,9816	99,99860	1.255,9640	31.752,4208	28.598,8571	28.337,8423	41.757,9865	381,4700
07/03/2007	278.609	49,0432	136.638,7690	281,9984	99,99860	281,9944	32.430,7968	27.317,0624	34.912,3827	40.368,9292	393,7800
08/03/2007	277.206	50,8851	141.056,5503	4.897,6908	99,99860	4.897,6222	33.166,9081	30.942,2116	30.194,2006	41.157,3954	389,6000

DAY	COLLECTING SYSTEM			FLARING SYSTEM			ELECTRICITY GENERATION				
	LFG Collected (Nm3)	Methane (%)	Methane Collected (N.m³)	Methane sent to Flares (Nm³)	Flare Efficiency (%)	Methane Destroyed (Nm³)	Methane FIR300 (Nm³)	Methane FIR400 (Nm³)	Methane FIR500 (Nm³)	Methane FIR600 (Nm³)	Eletricity Exported (MWh)
09/03/2007	237.751	50,2705	119.518,6164	19.145,5199	99,99860	19.145,2518	21.322,7352	29.343,8962	22.524,6792	25.590,7007	258,6900
10/03/2007	274.563	48,2194	132.392,6312	19.654,2274	99,99860	19.653,9522	29.231,5646	22.279,7737	29.661,8824	30.123,1413	326,6400
11/03/2007	287.103	48,4613	139.133,8461	2.206,4429	99,99860	2.206,4120	34.808,2979	25.818,7268	36.280,0676	39.439,2597	401,8100
12/03/2007	288.152	48,8745	140.832,8492	296,1794	99,99860	296,1752	35.827,4522	26.595,5479	34.157,4105	44.239,7311	408,5600
13/03/2007	270.793	47,7774	129.377,8547	3.606,2381	99,99860	3.606,1876	30.594,7358	25.137,6012	31.301,3636	38.306,0082	373,0100
14/03/2007	285.344	48,0587	137.132,6169	813,1532	99,99860	813,1418	33.041,7980	27.506,8775	36.393,8923	38.899,1923	401,5200
15/03/2007	282.154	49,1757	138.751,2045	1.102,0274	99,99860	1.102,0119	31.718,8182	30.365,9947	33.594,3794	41.772,7901	395,8100
16/03/2007	275.899	49,0017	135.195,2002	8.717,4024	99,99860	8.717,2803	31.759,4718	25.873,8776	32.496,9474	35.543,8731	371,1700
17/03/2007	289.194	49,8516	144.167,8361	1.660,0582	99,99860	1.660,0349	37.237,1511	26.998,6295	36.377,2110	41.823,4983	414,8600
18/03/2007	281.710	49,7748	140.220,5890	254,3492	99,99860	254,3456	35.364,4976	25.042,6973	35.839,3492	44.024,3173	418,3500
19/03/2007	286.864	49,5095	142.024,9320	2.461,6123	99,99860	2.461,5778	31.642,0165	28.486,2810	35.731,9963	43.190,1074	419,3400
20/03/2007	289.278	49,0221	141.810,1504	362,7635	99,99860	362,7584	36.603,3314	26.868,0325	35.685,1474	43.073,7583	427,5200
21/03/2007	291.184	48,8027	142.105,6539	4.719,7091	99,99860	4.719,6430	33.227,3182	26.244,6279	35.249,7021	42.051,8225	412,3800
22/03/2007	291.496	49,2435	143.542,8327	3.473,6364	99,99860	3.473,5877	33.349,1755	30.673,7761	37.127,6292	39.015,1326	412,2700
23/03/2007	290.270	49,3801	143.335,6162	2.775,1616	99,99860	2.775,1227	36.213,3901	30.939,1016	36.426,2183	34.794,2060	414,8500
24/03/2007	290.858	49,0717	142.728,9651	10.760,9330	99,99860	10.760,7823	36.265,4584	30.854,3220	30.410,7139	32.748,4897	391,7600
25/03/2007	272.382	50,4864	137.515,8660	8.261,5944	99,99860	8.261,4787	30.690,1776	31.988,1830	32.663,1862	31.836,5650	396,5600
26/03/2007	266.586	49,9124	133.059,4706	11.615,6137	99,99860	11.615,4510	23.683,4337	30.294,8303	28.579,1067	37.743,2577	352,5900
27/03/2007	282.517	49,4236	139.630,0720	11.754,9090	99,99860	11.754,7444	27.519,3565	29.423,3517	30.090,5703	39.952,0612	374,3500
28/03/2007	291.758	49,7909	145.268,9340	7.583,1540	99,99860	7.583,0478	25.411,7794	28.697,9810	41.795,9751	39.791,8914	406,1700
29/03/2007	292.936	50,4192	147.695,9877	7.982,3677	99,99860	7.982,2559	30.975,2083	26.335,4607	41.152,6552	39.803,4374	405,3500
30/03/2007	280.527	50,4538	141.536,5315	12.814,7606	99,99860	12.814,5811	19.052,8684	27.366,6456	41.138,0103	38.947,8109	393,3300
31/03/2007	299.377	50,0890	149.954,9455	14.593,9310	99,99860	14.593,7266	23.807,3639	29.339,1308	42.754,4677	37.835,7279	396,8900
01/04/2007	291.904	50,1755	146.464,2915	12.856,9701	99,99998	12.856,9675	20.803,7658	28.864,4598	43.188,5616	39.026,0021	400,3850

DAY	COLLECTING SYSTEM			FLARING SYSTEM			ELECTRICITY GENERATION				
	LFG Collected (Nm3)	Methane (%)	Methane Collected (N.m³)	Methane sent to Flares (Nm³)	Flare Efficiency (%)	Methane Destroyed (Nm³)	Methane FIR300 (Nm³)	Methane FIR400 (Nm³)	Methane FIR500 (Nm³)	Methane FIR600 (Nm³)	Eletricity Exported (MWh)
02/04/2007	289.091	50,3050	145.427,2275	11.390,5611	99,99998	11.390,5588	26.470,4910	28.279,4588	42.340,7124	38.808,7983	404,9940
03/04/2007	289.937	50,4845	146.373,2447	17.528,2184	99,99998	17.528,2148	29.517,7823	27.761,9313	34.689,9193	37.187,3875	385,7400
04/04/2007	290.363	49,8974	144.883,5875	13.349,5503	99,99998	13.349,5476	29.974,3661	27.812,3117	38.242,3653	34.752,5411	397,1400
05/04/2007	296.012	49,7161	147.165,6219	12.695,0061	99,99998	12.695,0035	30.564,4639	27.171,8372	42.479,9216	33.723,9221	404,3700
06/04/2007	301.083	51,0628	153.741,4101	16.820,5969	99,99998	16.820,5935	31.275,4543	27.352,8100	39.861,1535	37.385,1183	399,5400
07/04/2007	278.477	50,0253	139.308,9546	22.392,3247	99,99998	22.392,3202	24.619,9513	25.310,3005	33.259,3207	32.682,0287	352,6700
08/04/2007	302.367	50,3867	152.352,7531	17.077,5642	99,99998	17.077,5607	27.511,1382	27.808,9235	39.430,6159	40.495,7907	405,8100
09/04/2007	298.370	50,1079	149.506,9412	12.333,0574	99,99998	12.333,0549	29.615,7732	29.512,5509	36.325,7221	41.484,3304	416,9400
10/04/2007	300.257	50,1817	150.674,0669	12.697,9773	99,99998	12.697,9747	30.262,0741	28.741,5686	40.497,1337	37.174,6033	414,7400
11/04/2007	298.606	50,1011	149.604,8906	15.166,1039	99,99998	15.166,1008	30.336,2160	31.552,6707	42.811,3899	28.286,5800	403,8400
12/04/2007	301.772	49,5114	149.411,5420	4.665,4592	99,99998	4.665,4582	29.846,9572	36.094,3057	40.829,0808	36.709,2373	441,3400
13/04/2007	306.146	51,2729	156.969,9324	8.097,0163	99,99998	8.097,0146	31.448,7459	36.230,9693	39.067,3861	41.105,4839	437,1200
14/04/2007	284.718	49,4512	140.796,4676	26.487,0517	99,99998	26.487,0464	22.770,7940	30.411,9934	31.954,8709	27.428,6025	346,2600
15/04/2007	315.176	49,2825	155.326,6122	20.138,3079	99,99998	20.138,3038	24.426,3783	33.474,6453	40.933,5516	35.491,2852	407,7800
16/04/2007	303.586	48,9516	148.610,2043	13.098,4691	99,99998	13.098,4664	24.334,8193	34.094,7894	41.964,2486	35.151,8980	422,8600
17/04/2007	306.593	47,9768	147.093,5104	17.462,5956	99,99998	17.462,5921	26.876,1235	33.408,6446	37.353,2971	29.930,8064	401,5500
18/04/2007	297.678	48,1958	143.468,2935	19.248,9205	99,99998	19.248,9166	29.887,6614	25.879,6987	39.238,6105	27.798,8554	381,7800
19/04/2007	299.422	48,6781	145.752,9405	12.343,7925	99,99998	12.343,7900	29.994,9584	24.850,6568	41.130,5605	36.743,2034	408,2100
20/04/2007	296.411	48,3826	143.411,3484	13.726,6274	99,99998	13.726,6246	28.872,8003	29.153,4194	33.831,0492	39.233,9341	409,8200
21/04/2007	311.077	49,0095	152.457,2823	7.594,0220	99,99998	7.594,0204	26.055,4105	35.381,4283	42.051,1311	40.758,7506	443,8200
22/04/2007	247.767	51,5213	127.652,7793	8.289,2619	99,99998	8.289,2602	26.565,4837	30.627,2017	29.819,2741	30.553,4493	401,3400
23/04/2007	302.268	48,5213	146.664,3630	17.510,8519	99,99998	17.510,8483	29.565,4837	33.627,2017	30.819,2741	33.553,4493	441,8200
24/04/2007	305.486	49,0535	149.851,5750	10.058,9107	99,99998	10.058,9086	29.960,4061	35.794,3389	35.385,2327	41.220,6371	438,1000
25/04/2007	304.453	49,3372	150.208,5855	10.182,2113	99,99998	10.182,2092	29.282,1215	29.419,2789	40.859,0955	40.419,9944	425,3900

DAY	COLLECTING SYSTEM			FLARING SYSTEM			ELECTRICITY GENERATION				
	LFG Collected (Nm3)	Methane (%)	Methane Collected (N.m³)	Methane sent to Flares (Nm³)	Flare Efficiency (%)	Methane Destroyed (Nm³)	Methane FIR300 (Nm³)	Methane FIR400 (Nm³)	Methane FIR500 (Nm³)	Methane FIR600 (Nm³)	Eletricity Exported (MWh)
26/04/2007	306.971	49,1458	150.863,3537	16.346,8759	99,99998	16.346,8726	30.540,6744	29.210,7891	34.591,7627	41.040,1832	420,2900
27/04/2007	306.971	47,9479	147.186,1481	15.948,4304	99,99998	15.948,4272	28.876,1432	28.769,6989	37.752,2585	35.074,3683	451,9400
28/04/2007	308.126	47,7602	147.161,5938	3.941,1717	99,99998	3.941,1709	34.555,4599	29.450,3721	41.107,6817	36.716,6089	460,4000
29/04/2007	304.265	48,8248	148.556,7777	1.211,8315	99,99998	1.211,8312	34.361,4294	30.473,9989	42.029,8525	41.249,6322	464,5000
30/04/2007	298.450	50,5084	150.742,3198	17.325,3913	99,99998	17.325,3878	32.451,1419	28.970,6080	34.355,3085	36.433,2241	404,8500
01/05/2007	280.285	53,5031	149.961,1638	36.143,4841	99,99998	36.143,4768	32.938,6484	27.350,2496	24.944,7503	26.496,8752	327,3400
02/05/2007	314.966	50,6303	159.468,2734	14.685,8287	99,99998	14.685,8257	36.721,1538	31.048,5335	42.474,7826	33.347,1497	433,5800
03/05/2007	322.202	50,2339	161.854,6823	15.413,2724	99,99998	15.413,2693	37.111,8125	30.049,4262	41.927,7380	36.084,0266	439,4400
04/05/2007	321.255	49,7650	159.872,6630	11.627,1027	99,99998	11.627,1003	36.832,5953	28.711,4392	40.326,5984	41.996,2153	451,1000
05/05/2007	315.843	49,0825	155.023,6956	22.238,7978	99,99998	22.238,7933	35.758,0864	25.240,6846	41.285,7595	29.581,0516	413,4900
06/05/2007	314.458	48,9282	153.858,7114	13.154,8420	99,99998	13.154,8393	35.180,8601	28.308,4019	40.867,2982	34.356,4196	440,1400
07/05/2007	309.938	48,9139	151.602,8789	14.066,1809	99,99998	14.066,1780	35.122,1635	20.537,4948	41.232,0034	41.634,0759	431,3400
08/05/2007	310.535	48,4997	150.608,3967	15.581,9684	99,99998	15.581,9652	35.307,7472	19.725,2937	39.901,1493	40.876,4773	423,4700
09/05/2007	314.724	47,6120	149.846,5287	12.572,9124	99,99998	12.572,9098	30.048,4369	25.698,6006	40.469,7611	40.488,3298	431,1400
10/05/2007	300.219	48,5110	145.639,2177	15.884,4395	99,99998	15.884,4363	27.118,1301	29.653,3146	34.657,2235	38.538,5880	403,9000
11/05/2007	305.365	48,9039	149.335,2710	17.831,8143	99,99998	17.831,8107	28.794,1035	25.075,4540	35.724,2694	41.592,7326	411,4900
12/05/2007	306.628	49,3121	151.204,5733	11.954,7219	99,99998	11.954,7195	30.175,5268	26.005,2062	41.684,9609	41.687,4265	432,9100
13/05/2007	304.801	49,5378	150.991,8537	4.517,8516	99,99998	4.517,8506	34.775,5687	29.297,6736	40.378,7946	41.315,5553	455,4700
14/05/2007	307.577	49,1801	151.266,8127	7.780,2988	99,99998	7.780,2972	31.630,7016	29.387,1034	41.470,6649	41.212,9610	446,4800
15/05/2007	290.943	48,8712	142.187,2788	8.805,1206	99,99998	8.805,1188	23.034,4535	24.757,1626	41.353,3268	41.772,6415	446,2900
16/05/2007	290.950	50,6819	147.459,1173	14.720,5707	99,99998	14.720,5677	27.720,9963	25.694,7321	39.511,6438	39.979,9450	410,6400
17/05/2007	311.902	49,0989	153.140,5040	22.031,6660	99,99998	22.031,6615	28.078,6886	25.686,5894	41.002,9965	36.452,5089	409,5000
18/05/2007	314.394	49,1040	154.379,9389	19.653,3734	99,99998	19.653,3694	33.531,1377	24.685,0573	41.258,6296	34.772,9771	420,1400
19/05/2007	325.366	48,9711	159.335,3962	25.799,9484	99,99998	25.799,9432	35.112,7875	27.898,3612	40.740,5494	28.512,9488	417,6300

DAY	COLLECTING SYSTEM			FLARING SYSTEM			ELECTRICITY GENERATION				
	LFG Collected (Nm3)	Methane (%)	Methane Collected (N.m³)	Methane sent to Flares (Nm³)	Flare Efficiency (%)	Methane Destroyed (Nm³)	Methane FIR300 (Nm³)	Methane FIR400 (Nm³)	Methane FIR500 (Nm³)	Methane FIR600 (Nm³)	Eletricity Exported (MWh)
20/05/2007	315.650	49,6405	156.690,2439	26.139,6954	99,99998	26.139,6901	35.682,0890	29.088,8376	33.792,2751	30.141,2162	405,3400
21/05/2007	315.156	49,6886	156.596,7188	28.529,2274	99,99998	28.529,2216	32.820,8349	24.548,6707	38.513,6620	31.857,3723	398,2100
22/05/2007	313.502	49,7507	155.969,4527	35.109,0719	99,99998	35.109,0648	29.704,6529	25.374,3516	37.455,8126	27.149,4568	375,1000
23/05/2007	331.302	49,0692	162.567,1602	28.446,3824	99,99998	28.446,3767	33.620,7270	31.818,4162	41.202,8960	27.317,3007	423,9400
24/05/2007	331.263	48,6170	161.050,2554	26.028,1031	99,99998	26.028,0978	33.120,8426	34.951,7602	39.797,9065	25.611,9412	431,6200
25/05/2007	239.600	51,6168	123.673,9536	28.001,1045	99,99998	28.001,0988	22.430,6149	26.041,7291	26.477,8914	18.777,1748	294,0300
26/05/2007	333.011	49,6870	165.463,2989	32.961,8835	99,99998	32.961,8769	32.990,2051	34.255,7339	36.665,5552	26.169,6655	422,4500
27/05/2007	302.499	51,7484	156.538,4224	46.960,6470	99,99998	46.960,6376	34.296,7761	28.718,2975	26.031,0026	17.567,0327	338,5100
28/05/2007	337.735	49,2979	166.496,2447	34.634,2359	99,99998	34.634,2289	33.131,1431	31.006,4038	39.599,5199	27.399,2769	421,8600
29/05/2007	234.135	55,1929	129.225,8555	53.562,4848	99,99998	53.562,4740	28.296,9157	28.959,7054	11.151,7219	8.387,1104	228,4200
30/05/2007	327.038	49,3061	161.249,7327	36.376,0794	99,99998	36.376,0721	31.739,8254	32.254,5813	32.249,1576	25.825,0639	399,7100
31/05/2007	305.092	50,1101	152.881,9201	25.854,3084	99,99998	25.854,3032	32.280,9293	31.640,5222	32.528,9743	28.784,2462	405,7000

C) Part 3

DAY	COLLECTING SYSTEM			FLARE F200			FLARE F100			ELECTRICITY GENERATION				
	LFG Collected (Nm3)	Methane (%)	Methane Collected (N.m³)	Methane FIR700 (Nm³)	F200 Efficiency (%)	Methane Destroyed (Nm³)	Methane FIR200 (Nm³)	F100 Efficiency (%)	Methane Destroyed (Nm³)	Methane FIR300 (Nm³)	Methane FIR400 (Nm³)	Methane FIR500 (Nm³)	Methane FIR600 (Nm³)	Eletricity Exported (MWh)
01/06/2007	337.875	50,3552	170.137,6320	23.287,7693	99,99998	23.287,7646	21.475,4856	98,99998	21.260,7264	27.234,0914	33.597,9781	34.078,3664	28.476,3535	401,0600
02/06/2007	324.682	51,8773	168.436,1087	23.465,6387	99,99998	23.465,6340	25.051,5263	99,99998	25.051,5212	26.144,6503	32.960,8404	33.136,5276	28.892,1884	377,1200
03/06/2007	282.919	52,8657	149.567,2067	31.947,8205	99,99998	31.947,8141	18.547,4142	99,99998	18.547,4104	22.274,4484	21.221,6959	29.437,4769	27.269,1858	300,1100
04/06/2007	189.054	60,0000	113.432,4000	23.409,6000	99,99998	23.409,5953	31.605,0000	99,99998	31.604,9936	0,0000	5.944,7103	26.829,5094	25.429,5813	170,8300
05/06/2007	323.321	51,9086	167.831,4933	22.610,8790	99,99998	22.610,8744	24.643,1017	99,99998	24.643,0967	29.361,0769	23.995,2245	35.484,2552	28.648,6566	381,8700
06/06/2007	266.978	52,1870	139.327,8556	24.798,7488	99,99998	24.798,7438	13.771,6320	99,99998	13.771,6292	27.604,8448	22.787,6915	28.204,1224	23.417,0263	332,6600
07/06/2007	348.556	50,2114	175.014,9125	23.200,6881	99,99998	23.200,6834	15.885,3865	99,99998	15.885,3833	33.145,0595	33.755,7363	40.103,7650	27.080,6358	435,4600

DAY	COLLECTING SYSTEM			FLARE F200			FLARE F100			ELECTRICITY GENERATION				
	LFG Collected (Nm3)	Methane (%)	Methane Collected (N.m³)	Methane FIR700 (Nm³)	F200 Efficiency (%)	Methane Destroyed (Nm³)	Methane FIR200 (Nm³)	F100 Efficiency (%)	Methane Destroyed (Nm³)	Methane FIR300 (Nm³)	Methane FIR400 (Nm³)	Methane FIR500 (Nm³)	Methane FIR600 (Nm³)	Eletricity Exported (MWh)
08/06/2007	346.454	51,0421	176.837,3497	23.287,9518	99,99998	23.287,9471	15.385,6160	99,99998	15.385,6129	33.555,0675	33.974,9656	40.571,8457	31.785,2045	430,2100
09/06/2007	346.372	51,3198	177.757,3887	23.372,5727	99,99998	23.372,5680	16.703,0525	99,99998	16.703,0491	33.864,9041	34.173,9427	38.502,5334	32.326,9489	430,8200
10/06/2007	352.245	50,6807	178.520,2378	23.052,1171	99,99998	23.052,1124	18.531,3985	99,99998	18.531,3947	32.675,8756	32.108,2259	37.970,2036	33.396,2611	428,1000
11/06/2007	346.485	50,1056	173.608,3687	22.867,6922	99,99998	22.867,6876	18.236,9331	99,99998	18.236,9294	31.535,9600	31.303,5563	38.263,3531	33.311,7085	437,0900
12/06/2007	352.700	49,4576	174.437,0923	22.654,0714	99,99998	22.654,0668	20.165,3631	99,99998	20.165,3590	29.143,9028	30.924,3866	39.273,9342	33.148,6789	425,9000
13/06/2007	349.052	49,5663	173.012,1902	22.450,5636	99,99998	22.450,5591	21.040,8978	99,99998	21.040,8935	29.685,2620	30.937,6531	38.806,6164	32.063,1649	418,8800
14/06/2007	346.020	50,0751	173.269,8272	23.316,9650	99,99998	23.316,9603	20.417,1165	99,99998	20.417,1124	29.066,5868	29.241,5376	38.135,7648	32.054,0515	411,0400
15/06/2007	296.176	53,0811	157.213,3384	25.008,0763	99,99998	25.008,0712	27.623,9106	99,99998	27.623,9050	22.344,9999	21.083,9814	32.107,2133	27.663,8970	330,8300
16/06/2007	250.298	56,7512	142.047,1888	28.722,3640	99,99998	28.722,3582	25.237,8386	99,99998	25.237,8335	28.422,7137	19.593,9313	19.902,7762	19.649,6247	247,7900
17/06/2007	344.669	50,4509	173.888,5339	23.251,2957	99,99998	23.251,2910	22.362,8558	99,99998	22.362,8513	28.284,7797	30.488,5622	35.856,8943	32.428,2095	407,9000
18/06/2007	344.647	49,6175	171.005,1649	23.002,6648	99,99998	23.002,6601	19.661,9197	99,99998	19.661,9157	26.558,2536	32.748,1931	37.101,3874	32.681,8674	406,7200
19/06/2007	348.960	49,5550	172.927,0042	22.988,5480	99,99998	22.988,5434	19.603,9439	99,99998	19.603,9399	28.055,0476	29.877,9606	38.051,7184	32.801,8612	406,1100
20/06/2007	350.672	49,5544	173.773,5752	23.335,1897	99,99998	23.335,1850	17.851,9900	99,99998	17.851,9864	29.161,8017	32.780,0902	40.201,4815	30.970,2104	411,3600
21/06/2007	349.384	49,4212	172.669,6974	23.135,5372	99,99998	23.135,5325	17.720,9527	99,99998	17.720,9491	29.369,5249	34.521,2667	40.174,6475	28.339,8117	418,1600
22/06/2007	347.886	49,5417	172.348,7310	23.167,1976	99,99998	23.167,1929	15.225,1634	99,99998	15.225,1603	29.008,6626	35.016,9374	36.974,8117	32.241,8899	419,9200
23/06/2007	347.778	49,4460	171.962,2856	23.046,7773	99,99998	23.046,7726	15.134,9240	99,99998	15.134,9209	28.774,6011	34.363,8064	38.039,5672	33.604,8580	423,0700
24/06/2007	267.319	53,9131	144.119,9173	27.897,3253	99,99998	27.897,3197	25.525,6888	99,99998	25.525,6836	22.169,2613	25.959,8413	22.668,2040	19.079,0210	269,4400
25/06/2007	332.746	49,4162	164.430,4325	23.656,5237	99,99998	23.656,5189	23.282,9373	99,99998	23.282,9326	20.796,8082	25.700,7032	35.866,5141	34.232,1676	380,0000
26/06/2007	340.560	50,1983	170.955,2075	23.801,0048	99,99998	23.801,0000	22.857,7794	99,99998	22.857,7748	21.202,7427	30.873,8589	35.285,2781	38.848,1333	396,3500
27/06/2007	342.510	49,5070	169.566,4857	22.852,9343	99,99998	22.852,9297	12.083,6728	99,99998	12.083,6703	23.430,6812	33.898,5138	39.452,6592	39.698,2162	427,4400
28/06/2007	315.207	51,3038	161.713,2301	14.753,4393	99,99998	14.753,4363	28.850,1898	99,99998	28.850,1840	20.523,0668	29.286,5985	30.243,0052	36.204,2183	365,1000
29/06/2007	344.801	49,6233	171.101,7089	21.450,6732	99,99998	21.450,6689	13.259,8477	99,99998	13.259,8450	24.640,9565	32.972,4854	39.478,9870	40.406,0280	431,8700
30/06/2007	347.755	49,6580	172.688,1296	23.410,7609	99,99998	23.410,7562	15.678,0193	99,99998	15.678,0161	29.380,1474	31.616,0993	32.501,1172	40.088,0696	422,3000

Obs 1: Flare Efficiency from 01/01/2007 to 31/03/2007 was calculated using TASQA's analysis made on December/2006.
Obs 2: Flare Efficiency from 01/04/2007 to 30/06/2007 was calculated using TASQA's analysis made on March/2007.

2.2.5. Data concerning leakage

According with ACM0001 – version 02, no leakage needs to be considered.

2.3. Special event log

As for the table of 2.2.4:

- From 01/01/2007 to 31/01/2007, the gas sent to the power house was calculated as the difference between the total gas collected and the gas sent to the flares, minus a relative error;

- the flow-meters installed to measure the gas-flow to the power house were installed on 01/02/2007. From this date to 31/03/2007, the readings were made manually. After 22/04/2007, the meters were connected to the PLC system and the readings have been made automatically.

- In 01/06/2007, the lay-out of the Degassing Facility was changed in order to increase the gas collection demand (Please, refer to Annex III). The flow-meter FIR700 was installed in order to measure the gas sent to the flare F200 and the flow-meter FIR200 began to read only the flow to the flare F100.

- In 20/03/2007, Bandeirantes Landfill stopped receiving municipal solid waste.

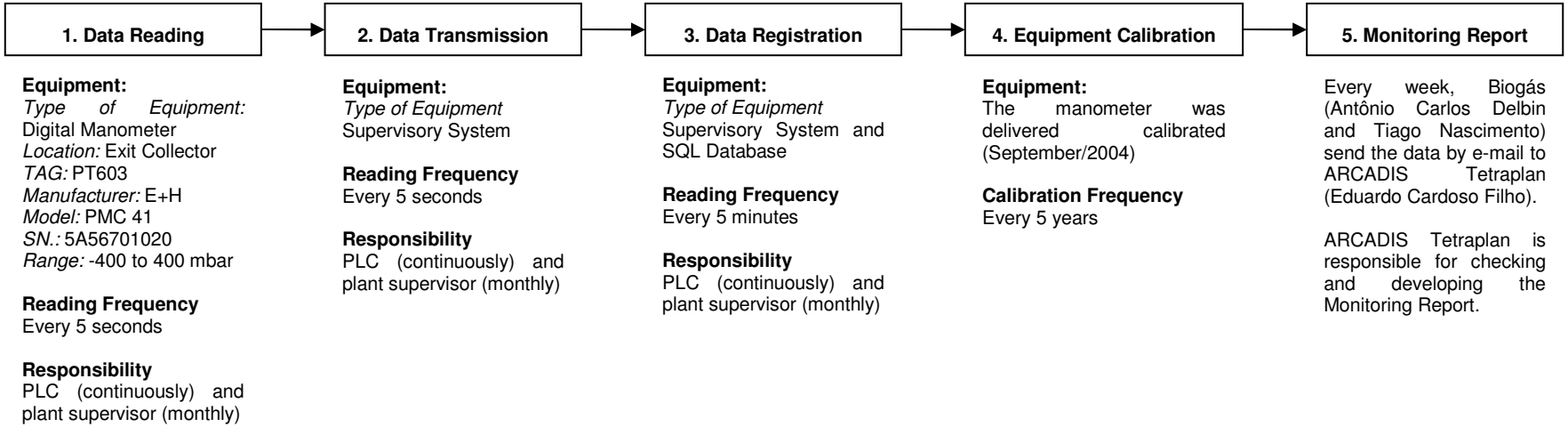
3. Quality assurance and quality control measures

3.1. Documented procedures and management plan

3.1.1. Roles and responsibilities

The following flow-chart represents the procedures and responsibilities on the monitoring of each parameter:

a) Pressure Readings



b) Temperature Readings

1. Data Reading	2. Data Transmission	3. Data Registration	4. Equipment Calibration	5. Monitoring Report
Equipment: *Type of Equipment:* Digital Termometer *Location:* Exit Collector *TAG:* TT804 *Manufacturer:* E+H *Model:* TST 10 *S.N:* 42622123 *Range:* 0 to 100°C **Reading Frequency** Every 5 seconds **Responsibility** PLC (continuously) and plant supervisor (monthly)	**Equipment:** *Type of Equipment* Supervisory System **Reading Frequency** Every 5 seconds **Responsibility** PLC (continuously) and plant supervisor (monthly)	**Equipment:** *Type of Equipment* Supervisory System and SQL Database **Reading Frequency** Every 5 minutes **Responsibility** PLC (continuously) and plant supervisor (monthly)	**Equipment:** The manometer was delivered calibrated (September/2004) **Calibration Frequency** Every 5 years	Every week, Biogás (Antônio Carlos Delbin and Tiago Nascimento) send the data by e-mail to ARCADIS Tetraplan (Eduardo Cardoso Filho). ARCADIS Tetraplan is responsible for checking and developing the Monitoring Report.

c) Total Flow (FIR100)

1. Data Reading	2. Data Transmission	3. Data Registration	4. Equipment Calibration	5. Monitoring Report
Equipment: *Type of Equipment:* Digital Flow-meter *Location:* Exit Collector *TAG:* FIR100 *Manufacturer:* Instromet *Model:* SM-RI-X-K *S.N.:* 10400826 *Range:* 800-16.000 m^3/h **Reading Frequency** Every 5 seconds **Responsibility** PLC (continuously) and plant supervisor (monthly)	**Equipment:** *Type of Equipment* Supervisory System **Reading Frequency** Every 5 seconds **Responsibility** PLC (continuously) and plant supervisor (monthly)	**Equipment:** *Type of Equipment* Supervisory System and SQL Database **Reading Frequency** Every 5 minutes **Responsibility** PLC (continuously) and plant supervisor (monthly)	**Equipment:** The manometer was delivered calibrated (September/2004) **Calibration Frequency** Every 5 years	Every week, Biogás (Antônio Carlos Delbin and Tiago Nascimento) send the data by e-mail to ARCADIS Tetraplan (Eduardo Cardoso Filho). ARCADIS Tetraplan is responsible for checking and developing the Monitoring Report.

d) Flow to Flare F100 (FIR200)

1. Data Reading	2. Data Transmission	3. Data Registration	4. Equipment Calibration	5. Monitoring Report
Equipment: *Type of Equipment:* Digital Flows-meter *Location:* Entrance of flares F100 *TAG:* FIR200 *Manufacturer:* Instromet *Model:* SM-RI-X-K *S.N.:* 10400827 *Range:* 320-6.500 m^3/h **Reading Frequency** Every 5 seconds **Responsibility** PLC (continuously) and plant supervisor (monthly)	**Equipment:** *Type of Equipment* Supervisory System **Reading Frequency** Every 5 seconds **Responsibility** PLC (continuously) and plant supervisor (monthly)	**Equipment:** *Type of Equipment* Supervisory System and SQL Database **Reading Frequency** Every 5 minutes **Responsibility** PLC (continuously) and plant supervisor (monthly)	**Equipment:** The manometer was delivered calibrated (September/2004) **Calibration Frequency** Every 5 years	Every week, Biogás (Antônio Carlos Delbin and Tiago Nascimento) send the data by e-mail to ARCADIS Tetraplan (Eduardo Cardoso Filho). ARCADIS Tetraplan is responsible for checking and developing the Monitoring Report.

e) Flow to the Power House (FIR300)

1. Data Reading	2. Data Transmission	3. Data Registration	4. Equipment Calibration	5. Monitoring Report
Type of Equipment: Digital flow-meter *Location:* entrance of the power house *TAG:* FIR300 *Manufacturer:* Instromet *Model:* VG083B6 *Range:* 500-7.000 m^3/h **Reading Frequency** Every 5 seconds **Responsibility** PLC (continuously) and plant supervisor (monthly)	**Equipment:** *Type of Equipment* Supervisory System **Reading Frequency** Every 5 seconds **Responsibility** PLC (continuously) and plant supervisor (monthly)	**Equipment:** Supervisory System and SQL Database **Reading Frequency** Every 5 minutes **Responsibility** PLC (continuously) and plant supervisor (monthly)	**Equipment:** The flow-meter was delivered calibrated (December/2006) **Calibration Frequency** Every 5 years	Every week, Biogás (Antônio Carlos Delbin and Tiago Nascimento) send the data by e-mail to ARCADIS Tetraplan (Eduardo Cardoso Filho). ARCADIS Tetraplan is responsible for checking and developing the Monitoring Report.

f) Flow to the Power House (FIR400)

1. Data Reading	2. Data Transmission	3. Data Registration	4. Equipment Calibration	5. Monitoring Report
Type of Equipment: Digital flow-meter *Location:* entrance of the power house *TAG:* FIR400 *Manufacturer:* Instromet *Model:* VG084B6 *Range:* 500-7.000 m^3/h **Reading Frequency** Every 5 seconds **Responsibility** PLC (continuously) and plant supervisor (monthly)	**Equipment:** *Type of Equipment* Supervisory System **Reading Frequency** Every 5 seconds **Responsibility** PLC (continuously) and plant supervisor (monthly)	**Equipment:** Supervisory System and SQL Database **Reading Frequency** Every 5 minutes **Responsibility** PLC (continuously) and plant supervisor (monthly)	**Equipment:** The flow-meter was delivered calibrated (December/2006) **Calibration Frequency** Every 5 years	Every week, Biogás (Antônio Carlos Delbin and Tiago Nascimento) send the data by e-mail to ARCADIS Tetraplan (Eduardo Cardoso Filho). ARCADIS Tetraplan is responsible for checking and developing the Monitoring Report.

g) Flow to the Power House (FIR500)

1. Data Reading	2. Data Transmission	3. Data Registration	4. Equipment Calibration	5. Monitoring Report
Type of Equipment: Digital flow-meter *Location:* entrance of the power house *TAG:* FIR500 *Manufacturer:* Instromet *Model:* VG085B6 *Range:* 500-7.000 m^3/h **Reading Frequency** Every 5 seconds **Responsibility** PLC (continuously) and plant supervisor (monthly)	**Equipment:** *Type of Equipment* Supervisory System **Reading Frequency** Every 5 seconds **Responsibility** PLC (continuously) and plant supervisor (monthly)	**Equipment:** Supervisory System and SQL Database **Reading Frequency** Every 5 minutes **Responsibility** PLC (continuously) and plant supervisor (monthly)	**Equipment:** The flow-meter was delivered calibrated (December/2006) **Calibration Frequency** Every 5 years	Every week, Biogás (Antônio Carlos Delbin and Tiago Nascimento) send the data by e-mail to ARCADIS Tetraplan (Eduardo Cardoso Filho). ARCADIS Tetraplan is responsible for checking and developing the Monitoring Report.

h) Flow to the Power House (FIR600)

1. Data Reading	2. Data Transmission	3. Data Registration	4. Equipment Calibration	5. Monitoring Report
Type of Equipment: Digital flow-meter *Location:* entrance of the power house *TAG:* FIR600 *Manufacturer:* Instromet *Model:* VG086B6 *Range:* 500-7.000 m^3/h **Reading Frequency** Every 5 seconds **Responsibility** PLC (continuously) and plant supervisor (monthly)	**Equipment:** *Type of Equipment* Supervisory System **Reading Frequency** Every 5 seconds **Responsibility** PLC (continuously) and plant supervisor (monthly)	**Equipment:** Supervisory System and SQL Database **Reading Frequency** Every 5 minutes **Responsibility** PLC (continuously) and plant supervisor (monthly)	**Equipment:** The flow-meter was delivered calibrated (December/2006) **Calibration Frequency** Every 5 years	Every week, Biogás (Antônio Carlos Delbin and Tiago Nascimento) send the data by e-mail to ARCADIS Tetraplan (Eduardo Cardoso Filho). ARCADIS Tetraplan is responsible for checking and developing the Monitoring Report.

i) Flow to Flare F200 (FIR700)

1. Data Reading	2. Data Transmission	3. Data Registration	4. Equipment Calibration	5. Monitoring Report
Type of Equipment: Digital flow-meter *Location:* after the mini-blower *TAG:* FIR700 *Manufacturer:* TZ *Model:* G 1600 *S.N.:* 1373501001 *Range:* 130-2.500 m^3/h **Reading Frequency** Every 5 seconds **Responsibility** PLC (continuously) and plant supervisor (monthly)	**Equipment:** *Type of Equipment* Supervisory System **Reading Frequency** Every 5 seconds **Responsibility** PLC (continuously) and plant supervisor (monthly)	**Equipment:** Supervisory System and SQL Database **Reading Frequency** Every 5 minutes **Responsibility** PLC (continuously) and plant supervisor (monthly)	**Equipment:** The flow-meter was delivered calibrated (May/2007) **Calibration Frequency** Every 5 years	Every week, Biogás (Antônio Carlos Delbin and Tiago Nascimento) send the data by e-mail to ARCADIS Tetraplan (Eduardo Cardoso Filho). ARCADIS Tetraplan is responsible for checking and developing the Monitoring Report.

j) Methane Concentration

1. Data Reading	2. Data Transmission	3. Data Registration	4. Equipment Calibration	5. Monitoring Report
Equipment: *Type of Equipment:* Methane Analyzer *Location:* Analyzer Room *TAG:* A100 *Manufacturer:* NUK *Model:* Binos 100-CH_4-O_2 *Range:* O_2 (0-21%) CH_4 (0-100%) **Reading Frequency** Every 5 minutes **Responsibility** PLC (continuously) and plant supervisor (monthly)	**Equipment:** *Type of Equipment* Supervisory System **Reading Frequency** Every 5 minutes **Responsibility** PLC (continuously) and plant supervisor (monthly)	**Equipment:** *Type of Equipment* Supervisory System and SQL Database **Reading Frequency** Every 5 minutes **Responsibility** Plant supervisor (monthly)	**Equipment:** The manometer was delivered calibrated (December/2003) **Calibration Frequency** Weekly, with a standard gas certified by INMETRO	Every week, Biogás (Antônio Carlos Delbin and Tiago Nascimento) send the data by e-mail to ARCADIS Tetraplan (Eduardo Cardoso Filho). ARCADIS Tetraplan is responsible for checking and developing the Monitoring Report.

k) Flare Efficiency

1. Data Reading	2. Data Transmission	3. Data Registration	4. Equipment Calibration	5. Monitoring Report
Equipment: *Type of Equipment:* According with APEX-EPA 18 *Location:* *Manufacturer:* *Model:* *Range:* **Reading Frequency** Every 3 months **Responsibility** Specialized company on gas analysis	**Equipment:** *Type of Equipment* MS Excel spreadsheet **Reading Frequency** NA **Responsibility** Plant supervisor (every 3 months)	**Equipment:** *Type of Equipment* MS Excel spreadsheet **Reading Frequency** NA **Responsibility** Plant supervisor (every 3 months)	**Equipment:** NA **Calibration Frequency** NA	Every 3 months, Biogás (Antônio Carlos Delbin and Tiago Nascimento) send the data by e-mail to ARCADIS Tetraplan (Eduardo Cardoso Filho). ARCADIS Tetraplan is responsible for checking and developing the Monitoring Report.

3.1.2. Trainings

All training was supplied before the project's implementation and as verified during the 1st verification. The following table presents the employees were hired during the Monitoring Period – all of them received the proper training, as checked by the Verification Team

Employee	Function	Admission Date
Caio Takase	Monitoring Supervisor	01/04/2007
Juliana Gonçalez Justi	Technical Assistant	01/05/2007
Francisco Antonio dos Santos	Assistant	14/05/2007
Manoel Messias da Silva Filho	Electric Operator	01/06/2007

4. Calculation of GHG emission reductions

4.1. Table providing the formulas used

a) Part 1: From 01/01/2007 to 31/01/2007

Variable	Description
A	Total methane sent to flares
B	Flare Efficiency
C = A . (1-B)	Total methane destroyed in the flares
D	Gas-flow error
E	Temperature error
F	Pressure error
G	Methane Concentration error
H =	Total error from measuring equipment
I = C . (1-H)	**Total methane corrected destroyed at the flares**
J	Total methane sent to the electricity facility
K = $\sqrt{H^2 + H^2}$	Total errors of electricity's measurements
L = J . (1-K)	**Total methane corrected destroyed at the electricity**
M = I + L	Total methane destroyed in the period
N = 0,0007168	Density of Methane at the STPC
O = M . N	Total weight of methane destroyed
P = 21	CO_2 equivalency
Q = O . P	Total equivalent carbon
R = 20%	Baseline
S = Q . (1-R)	**Total Liquid Carbon**
T	Total electricity exported
U	Total electricity imported
V = 0,2677	Emission Factor
W = (T – U) . V	**Total CO_2e from the energy export**
X = S + W	**TOTAL CREDITS DURING THE PERIOD**

b) Part 2: From 01/02/2007 to 31/05/2007:

Variable	Description
A	Total methane sent to flares
B	Flare Efficiency
C = A . (1-B)	Total methane destroyed in the flares
D	Gas-flow error

E	Temperature error
F	Pressure error
G	Methane Concentration error
H = $\sqrt{D^2 + E^2 + F^2 + G^2}$	Total error from measuring equipment
I = C . (1-H)	**Total methane corrected destroyed at the flares**
J_{FIRi}[1]	Methane flow measured by FIRi
K_{FIRi}[1]	Gas-flow error of FIRi
L_{FIRi}[1]	Temperature error of FIRi
M_{FIRi}[1]	Pressure error of FIRi
N_{FIRi}[1]	Methane Concentration error
O_{FIRi}[1] = $\sqrt{K_{F-i}^2 + L_{F-i}^2 + M_{F-i}^2 + N_{F-i}^2}$	Total measuring error from FIRi
P_{FIRi}[1] = J_{FIRi} . (1 – O_{FIRi})	**Total methane corrected measured by FIRi**
Q = P_{FIR300} + P_{FIR400} + P_{FIR500} + P_{FIR600}	**Total methane corrected destroyed at the electricity**
R = Q + I	Total methane destroyed in the period
S = 0,0007168	Density of Methane at the STPC
T = R . S	Total weight of methane destroyed
U = 21	CO_2 equivalency
V = T . U	Total equivalent carbon
W = 20%	Baseline
X = V . (1-W)	**Total Liquid Carbon**
Y	Total electricity exported
Z	Total electricity imported
AA = 0,2677	Emission Factor
AB = (Y – Z) . AA	**Total CO_2e from the energy export**
AC = X + AB	**TOTAL CREDITS DURING THE PERIOD**

c) Part 3: From 01/06/2007 to 30/06/2007:

Variable	Description
A	Total methane sent to flares measured by FIR700
B	Total methane sent to flares measured by FIR200
C = A + B	Total methane sent to flares
D	Flare Efficiency
E = C . (1-D)	Total methane destroyed in the flares
F	Gas-flow error
G	Temperature error
H	Pressure error
I	Methane Concentration error

[1] Obs: calculation made individually for each Flow-Meter (FIR300, FIR400, FIR500 and FIR600)

$J = \sqrt{F^2 + G^2 + H^2 + I^2}$	Total error from measuring equipment
K = E . (1-J)	**Total methane corrected destroyed at the flares**
L_{FIRi} [2]	Methane flow measured by FIRi
M_{FIRi} [1]	Gas-flow error of FIRi
N_{FIRi} [1]	Temperature error of FIRi
O_{FIRi} [1]	Pressure error of FIRi
P_{FIRi} [1]	Methane Concentration error
Q_{FIRi} [1] $= \sqrt{L_{F-i}^2 + M_{F-i}^2 + N_{F-i}^2 + O_{F-i}^2}$	Total measuring error from FIRi
R_{FIRi} [1] = L_{FIRi} . (1 – Q_{FIRi})	**Total methane corrected measured by FIRi**
S = $R_{FIR-300}$ + $R_{FIR-400}$ + $R_{FIR-500}$ + $R_{FIR-600}$	**Total methane corrected destroyed at the electricity**
T = S + K	Total methane destroyed in the period
U = 0,0007168	Density of Methane at the STPC
V = T . U	Total weight of methane destroyed
W = 21	CO_2 equivalency
X = V . W	Total equivalent carbon
Y = 20%	Baseline
Z = X . (1-Y)	**Total Liquid Carbon**
AA	Total electricity exported
AB	Total electricity imported
AC = 0,2677	Emission Factor
AD = (AA – AB) . AC	**Total CO_2e from the energy export**
AE = Z + AD	**TOTAL CREDITS DURING THE PERIOD**

To calculate the Flare Efficiency, the following formulae were applied:

a) Calculate the volume of CH_4 sent to flares F_i ($Flow_{methane}$), measured by the equipment FIR_i:

$$\text{Flow}_{\text{methane}} = \text{Flow}_{\text{FIR i}} \times \frac{\%_{\text{methane}}}{100}$$

b) Calculate the volume of other gases (residual gases) sent to flares ($Flow_{remaining}$):

$$\text{Flow}_{\text{remaining}} = \text{Flow}_{\text{FIR i}} - \text{Flow}_{\text{methane}}$$

c) Calculate the total flow entering the flare F_i ($Flow_{Total}$):

$$\text{Flow}_{\text{Total}} = \text{Flow}_{\text{methane}} + \left(\text{Flow}_{\text{methane}} \times \text{air}_{\text{ratio}}\right) + \text{Flow}_{\text{remaining}}$$

[2] Obs: calculation made individually for each Flow-Meter (F-300, F-400, F-500 and F-600)

d) Calculate the mass of methane in the exhaust gas ($M_{methane}$):

$$M_{methane} = Flow_{Total} \times \frac{CH_{4,eg}}{1000}$$

e) Calculate the Flare Efficiency (FE):

$$FE = \frac{(Flow_{methane} \times 0{,}714) - \frac{M_{methane}}{1000}}{(Flow_{methane} \times 0{,}714)} \times 100$$

TASQA was hired to make two analysis (in December/2006 and March/2007) and the results were:

Flare	December/2006	March/2007
F100	2,9 mg/Nm^3	< 0,02 mg/Nm^3
F200	4,0 mg/Nm^3	< 0,02 mg/Nm^3

To calculate the amount of methane destroyed during the period between 01/01/2007 and 31/03/2007, the flare efficiency considered calculated considering the analysis of 4,0 mg/Nm^3, based on a conservative approach

The flare efficiency considered during the period from 01/04/2007 to 30/06/2007 was calculated adopting an analisys equal to 0,02 mg/Nm^3.

Other parameters used to calculate the flare efficiency were:

Measurement	LFG Flow		Methane %	
	F100	F200	F100	F200
December/2006	2.300 Nm^3/h	2.340 Nm^3/h	50,7%	50,0%
March/2007	2.310 Nm^3/h	2.350 Nm^3/h	50,0%	49,9%

4.2. Description and consideration of measurement uncertainties and error propagation

The formulae used to calculate the error was (given specific error for each monitoring equipment, as presented on 2.1):

$$\varepsilon_{FIR\text{-}i} = \sqrt{(\varepsilon_{Gas\ Flor})^2 + (\varepsilon_{Temperature})^2 + (\varepsilon_{Pressure})^2 + (\varepsilon_{Methane\ Analysis})^2}$$

4.2.1. Gas to Flares

$$\varepsilon_{FIR200} = \sqrt{0{,}6^2 + 0{,}01^2 + 0{,}01^2 + 1^2} = 1{,}1633\%$$

After 01/06/2007, the flow-meter FIR700 began to read the gas-flow to the flare F200 and the flow-meter FIR200 to read the gas-flow to the flare F100. The error of the FIR700 is calculated according with the formulae below:

$$\varepsilon_{FIR700} = \sqrt{0{,}330^2 + 0{,}010^2 + 0{,}010^2 + 1{,}000^2} = 1{,}0352\%$$

4.2.2. Gas to the Power House

As the methane sent to the electricity production was not measured but calculated, from 01/02/2007 to 31/01/2007 a new error of the equipment was calculated, assuming that the same equipment as the one described above would be used. So, the error is calculated as:

$$\varepsilon_{flow-meter} = \sqrt{\varepsilon_{FIR200}{}^2 + \varepsilon_{FIR200}{}^2}$$

$$\varepsilon_{flow-meter} = \sqrt{1{,}166^2 + 1{,}166^2} = 1{,}6494\%$$

After 01/02/2007 (when the new flow-meters were installed), the calculation have been made for each equipment, as presented below:

$$\varepsilon_{FIR300} = \sqrt{0{,}772^2 + 0{,}050^2 + 0{,}033^2 + 1{,}000^2} = 1{,}265\%$$

$$\varepsilon_{FIR400} = \sqrt{0{,}330^2 + 0{,}010^2 + 0{,}010^2 + 1{,}000^2} = 1{,}166\%$$

$$\varepsilon_{FIR500} = \sqrt{0{,}810^2 + 0{,}050^2 + 0{,}370^2 + 1{,}000^2} = 1{,}340\%$$

$$\varepsilon_{FIR600} = \sqrt{0{,}632^2 + 0{,}050^2 + 0{,}444^2 + 1{,}000^2} = 1{,}265\%$$

4.3. GHG emission reductions

Using the table from item 2.2 and the step-by-step calculation of item 4.1 the values are inserted in the formulae as follows:

a) Part 1: From 01/01/2007 to 31/01/2007

57.722 tCO_2e

b) Part 2: From 01/02/2007 to 31/05/2007

236.136 tCO_2e

c) Part 3: From 01/06/2007 to 30/06/2007

61.729 tCO_2e

4.3.2. Summary of the emissions reductions

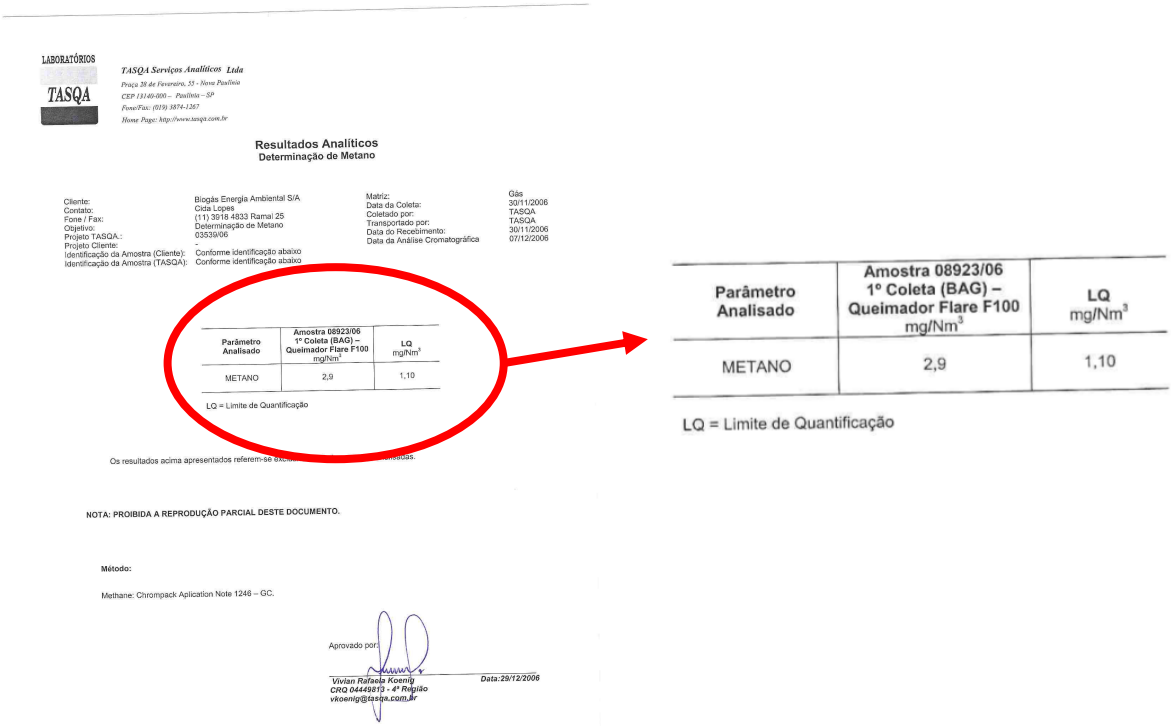
	Part 1	Part 2	Part 3	TOTAL
Total CO_2e from methane destroyed in flares	54.633	223.742	59.169	337.544
Total CO_2e from electricity dispatched	3.089	12.394	2.560	18.043
TOTAL CO_2e	**57.722**	**236.136**	**61.729**	**355.587**

Annex I. Analysis of Methane Content in the exhaust gas

During the Monitoring Period, two analysis of methane concentration were made: in December/2006 and in March/2007.

The company responsible for these analysis was TASQA and the report are presented below:

a) Flare F100



LABORATÓRIOS TASQA

TASQA Serviços Analíticos Ltda
Praça 26 de Fevereiro, 55 - Nova Paulista
CEP 13140-000 – Paulínia – SP
Fone/Fax: (019) 3874-1267
Home Page: http://www.tasqa.com.br

Resultados Analíticos
Determinação de Metano

Cliente:	Biogás Energia Ambiental S/A	Matriz:	Gás
Contato:	Cida Lopes	Data da Coleta:	30/11/2006
Fone / Fax:	(11) 3018 4833 Ramal 25	Coletado por:	TASQA
Objetivo:	Determinação de Metano	Transportado por:	TASQA
Projeto TASQA.:	03539/06	Data do Recebimento:	30/11/2006
Projeto Cliente:	-	Data da Análise Cromatográfica	07/12/2006
Identificação da Amostra (Cliente):	Conforme identificação abaixo		
Identificação da Amostra (TASQA):	Conforme identificação abaixo		

Parâmetro Analisado	Amostra 08923/06 1º Coleta (BAG) – Queimador Flare F100 mg/Nm³	LQ mg/Nm³
METANO	2,9	1,10

LQ = Limite de Quantificação

Os resultados acima apresentados referem-se exclusivamente às amostras analisadas.

NOTA: PROIBIDA A REPRODUÇÃO PARCIAL DESTE DOCUMENTO.

Método:

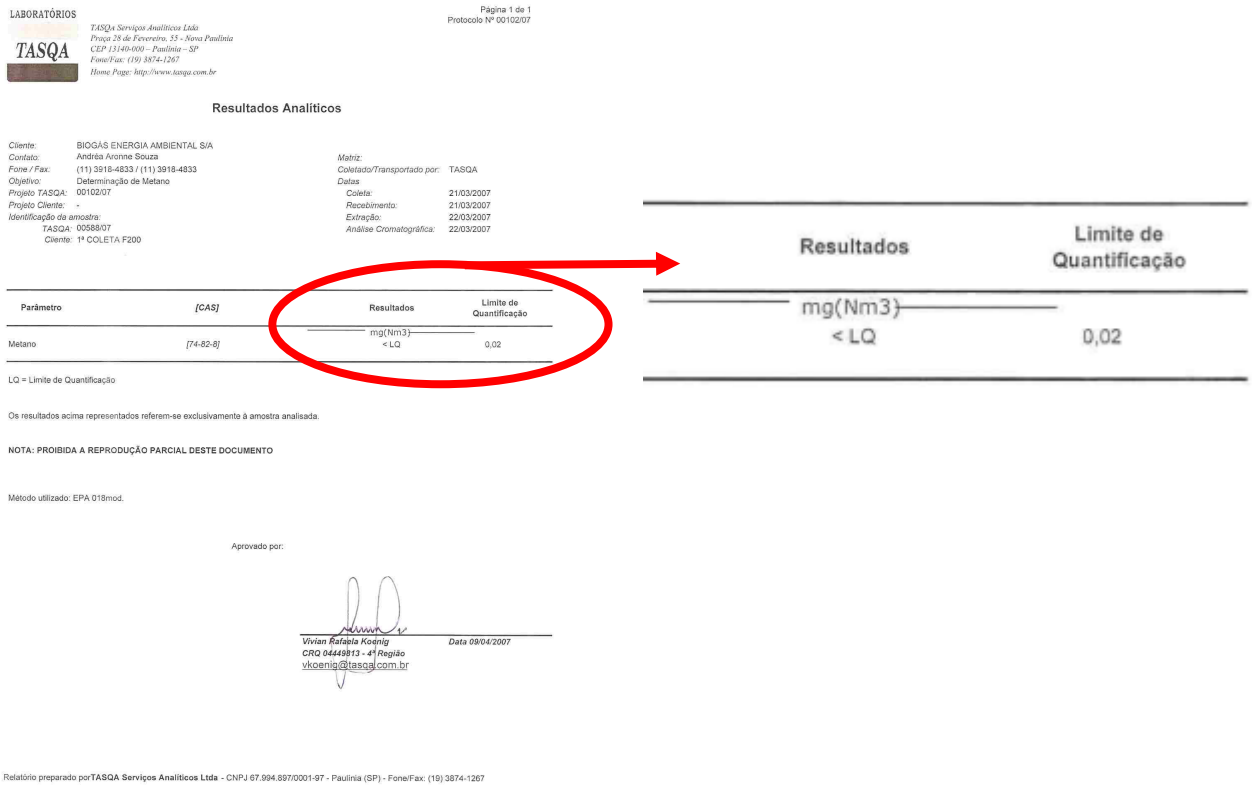
Methane: Chrompack Aplication Note 1246 – GC.

Aprovado por:
Vivian Rafaela Koenig
CRQ 04449813 - 4ª Região
vkoenig@tasqa.com.br
Data:29/12/2006

Parâmetro Analisado	Amostra 08923/06 1º Coleta (BAG) – Queimador Flare F100 mg/Nm³	LQ mg/Nm³
METANO	2,9	1,10

LQ = Limite de Quantificação

Methane Analysis made on December/2006



LABORATÓRIOS TASQA

TASQA Serviços Analíticos Ltda
Praça 28 de Fevereiro, 55 - Nova Paulínia
CEP 13140-000 – Paulínia – SP
Fone/Fax: (19) 3874-1267
Home Page: http://www.tasqa.com.br

Página 1 de 1
Protocolo Nº 00102/07

Resultados Analíticos

Cliente: BIOGÁS ENERGIA AMBIENTAL S/A
Contato: Andréa Aronne Souza
Fone / Fax: (11) 3918-4833 / (11) 3918-4833
Objetivo: Determinação de Metano
Projeto TASQA: 00102/07
Projeto Cliente: -
Identificação da amostra:
TASQA: 00588/07
Cliente: 1ª COLETA F200

Matriz:
Coletado/Transportado por: TASQA
Datas
Coleta: 21/03/2007
Recebimento: 21/03/2007
Extração: 22/03/2007
Análise Cromatográfica: 22/03/2007

Parâmetro	[CAS]	Resultados	Limite de Quantificação
		mg(Nm3)	
Metano	[74-82-8]	< LQ	0,02

LQ = Limite de Quantificação

Os resultados acima representados referem-se exclusivamente à amostra analisada.

NOTA: PROIBIDA A REPRODUÇÃO PARCIAL DESTE DOCUMENTO

Método utilizado: EPA 018mod.

Aprovado por:

Vivian Rafaela Koenig
CRQ 04449913 - 4ª Região
vkoenig@tasqa.com.br

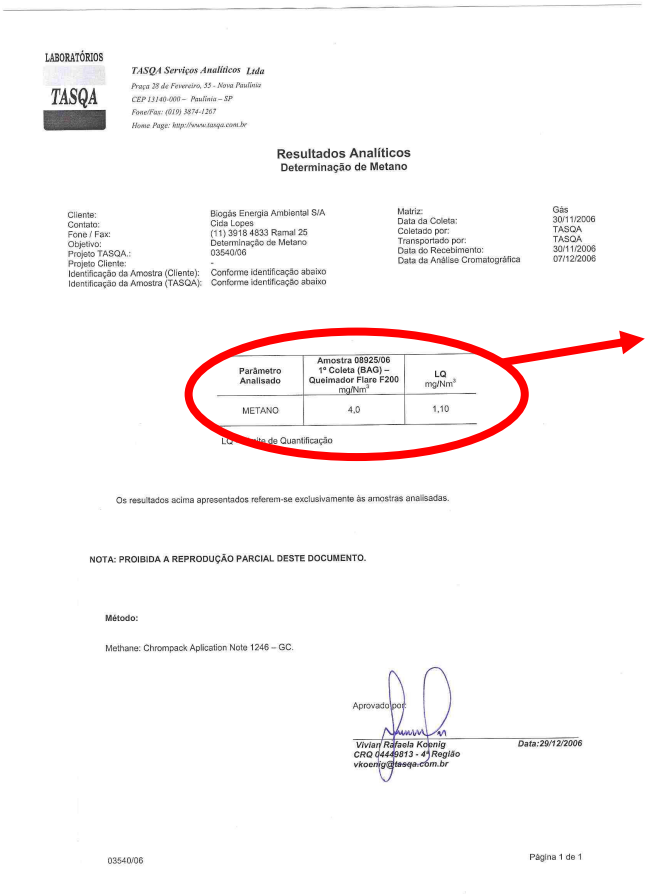
Data 09/04/2007

Relatório preparado por **TASQA Serviços Analíticos Ltda** - CNPJ 67.994.897/0001-97 - Paulínia (SP) - Fone/Fax: (19) 3874-1267

Resultados	Limite de Quantificação
mg(Nm3)	
< LQ	0,02

Methane Analysis made on March/2007

b) Flare F200



LABORATÓRIOS TASQA

TASQA Serviços Analíticos Ltda
Praça 28 de Fevereiro, 55 - Nova Paulínia
CEP 13140-000 – Paulínia – SP
Fone/Fax: (019) 3874-1267
Home Page: http://www.tasqa.com.br

Resultados Analíticos
Determinação de Metano

Cliente:	Biogás Energia Ambiental S/A	Matriz:	Gás
Contato:	Cida Lopes	Data da Coleta:	30/11/2006
Fone / Fax:	(11) 3918 4833 Ramal 25	Coletado por:	TASQA
Objetivo:	Determinação de Metano	Transportado por:	TASQA
Projeto TASQA.:	03540/06	Data do Recebimento:	30/11/2006
Projeto Cliente:	-	Data da Análise Cromatográfica	07/12/2006
Identificação da Amostra (Cliente):	Conforme identificação abaixo		
Identificação da Amostra (TASQA):	Conforme identificação abaixo		

Parâmetro Analisado	Amostra 08925/06 1º Coleta (BAG) – Queimador Flare F200 mg/Nm³	LQ mg/Nm³
METANO	4,0	1,10

LQ = Limite de Quantificação

Os resultados acima apresentados referem-se exclusivamente às amostras analisadas.

NOTA: PROIBIDA A REPRODUÇÃO PARCIAL DESTE DOCUMENTO.

Método:

Methane: Chrompack Aplication Note 1246 – GC.

Aprovado por:

Viviani Rafaela Koenig
CRQ 04449813 - 4ª Região
vkoenig@tasqa.com.br
Data:29/12/2006

03540/06

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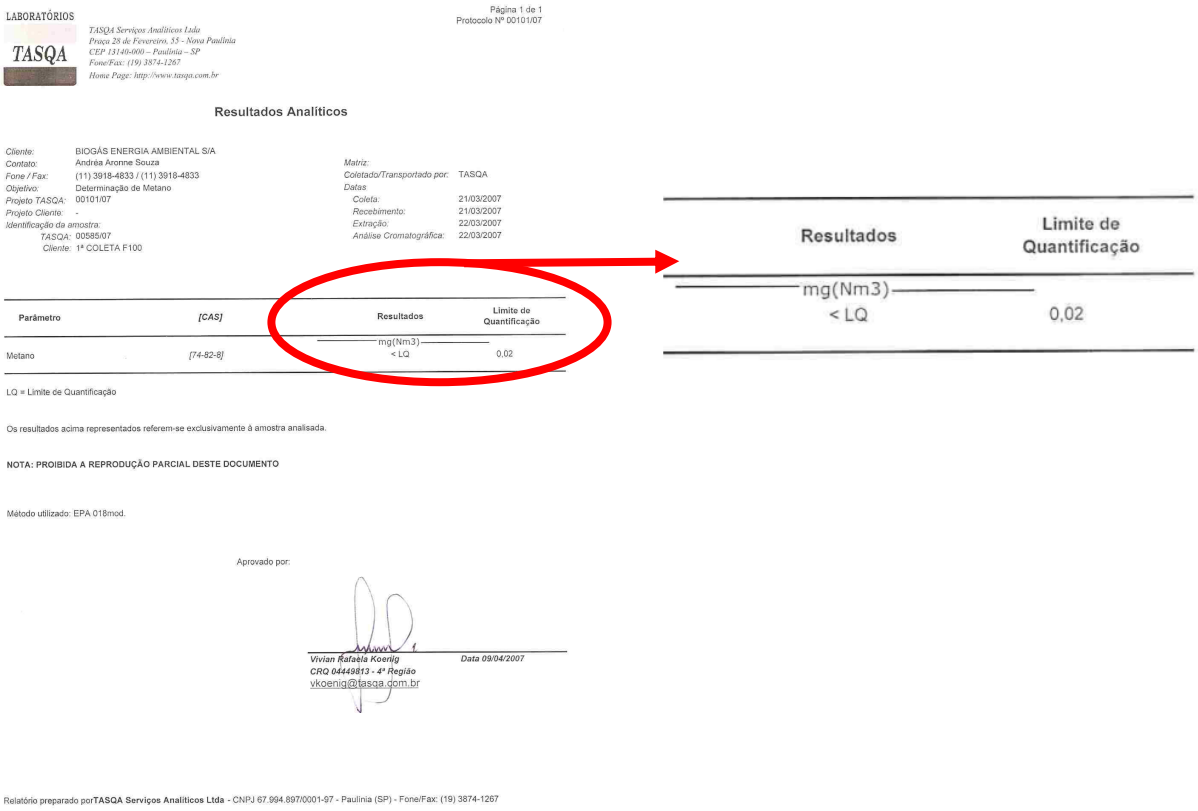
Parâmetro Analisado	Amostra 08925/06 1º Coleta (BAG) – Queimador Flare F200 mg/Nm³	LQ mg/Nm³
METANO	4,0	1,10

LQ = Limite de Quantificação

Methane Analysis made on December /2006



LABORATÓRIOS

TASQA

TASQA Serviços Analíticos Ltda
Praça 28 de Fevereiro, 55 - Nova Paulínia
CEP 13140-000 – Paulínia – SP
Fone/Fax: (19) 3874-1267
Home Page: http://www.tasqa.com.br

Página 1 de 1
Protocolo Nº 00101/07

Resultados Analíticos

Cliente: BIOGÁS ENERGIA AMBIENTAL S/A
Contato: Andréa Aronne Souza
Fone / Fax: (11) 3918-4833 / (11) 3918-4833
Objetivo: Determinação de Metano
Projeto TASQA: 00101/07
Projeto Cliente: -
Identificação da amostra:
TASQA: 00585/07
Cliente: 1ª COLETA F100

Matriz:
Coletado/Transportado por: TASQA
Datas
Coleta: 21/03/2007
Recebimento: 21/03/2007
Extração: 22/03/2007
Análise Cromatográfica: 22/03/2007

Parâmetro	[CAS]	Resultados	Limite de Quantificação
		mg(Nm3)	
Metano	[74-82-8]	< LQ	0,02

LQ = Limite de Quantificação

Os resultados acima representados referem-se exclusivamente à amostra analisada.

NOTA: PROIBIDA A REPRODUÇÃO PARCIAL DESTE DOCUMENTO

Método utilizado: EPA 018mod.

Aprovado por:

Vivian Rafaela Koenig *Data 09/04/2007*
CRQ 04449813 - 4ª Região
vkoenig@tasqa.com.br

Relatório preparado por **TASQA Serviços Analíticos Ltda** - CNPJ 67.994.897/0001-97 - Paulínia (SP) - Fone/Fax: (19) 3874-1267

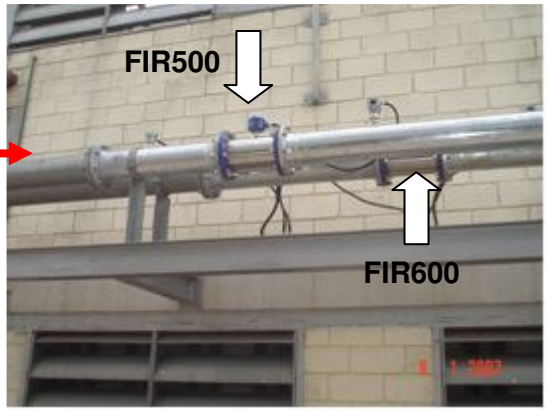
Resultados	Limite de Quantificação
mg(Nm3)	
< LQ	0,02

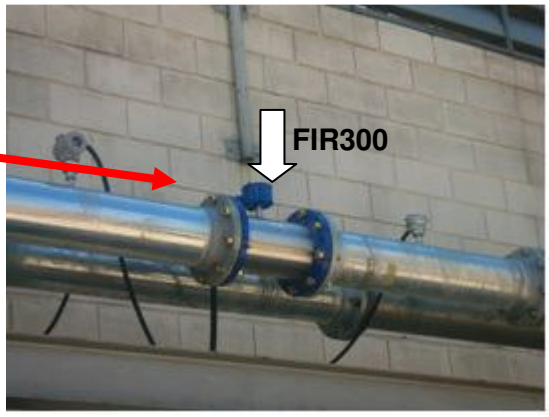
Methane Analysis made on March/2007

Annex II. Location of the new measuring equipment

In 01/02/2007, 4 (four) new flow-meters were installed in order to accomplish with the demands of **FAR #2** from the Verification Report from 05 February 2007.

The pictures below present the location of those equipment, which were connected to the PLC on 01/03/2007. The individual errors of each flow-meter were considered to calculate emission reductions.



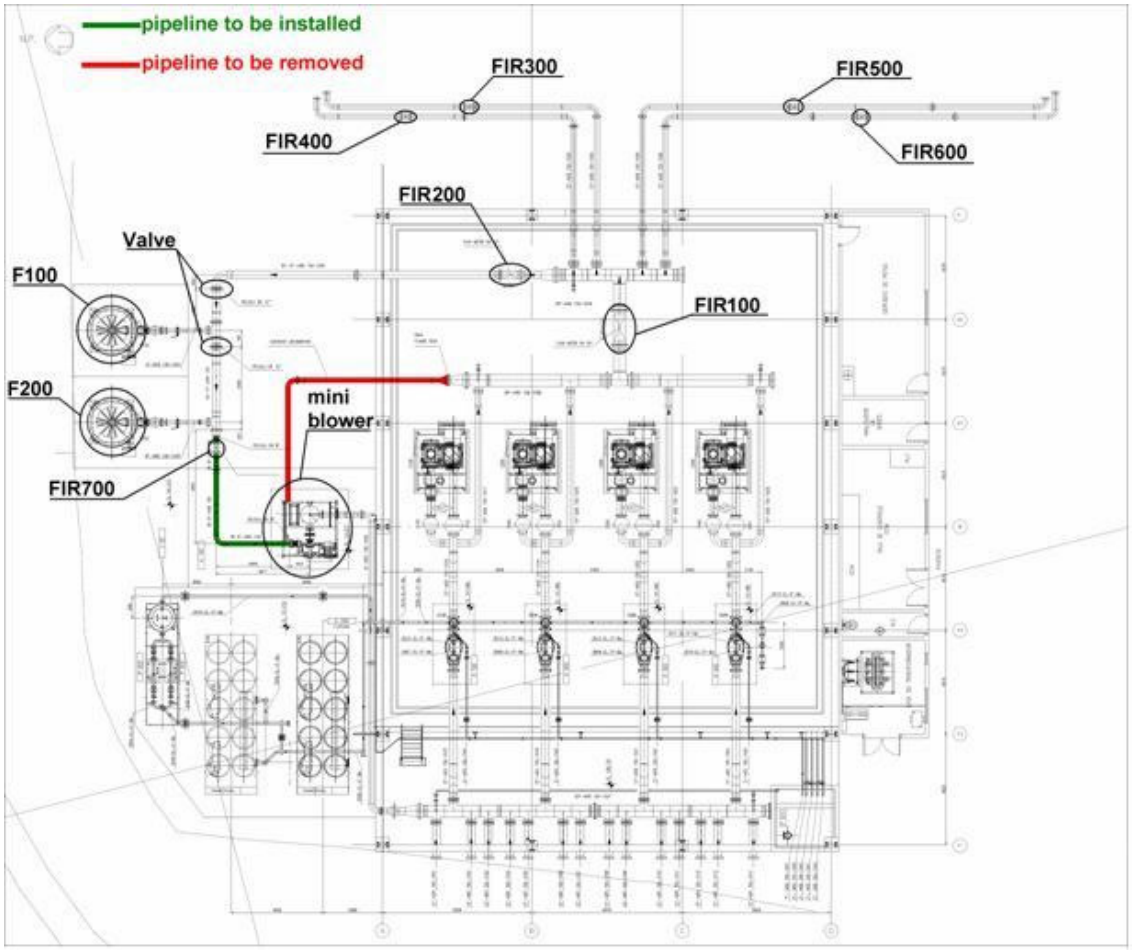


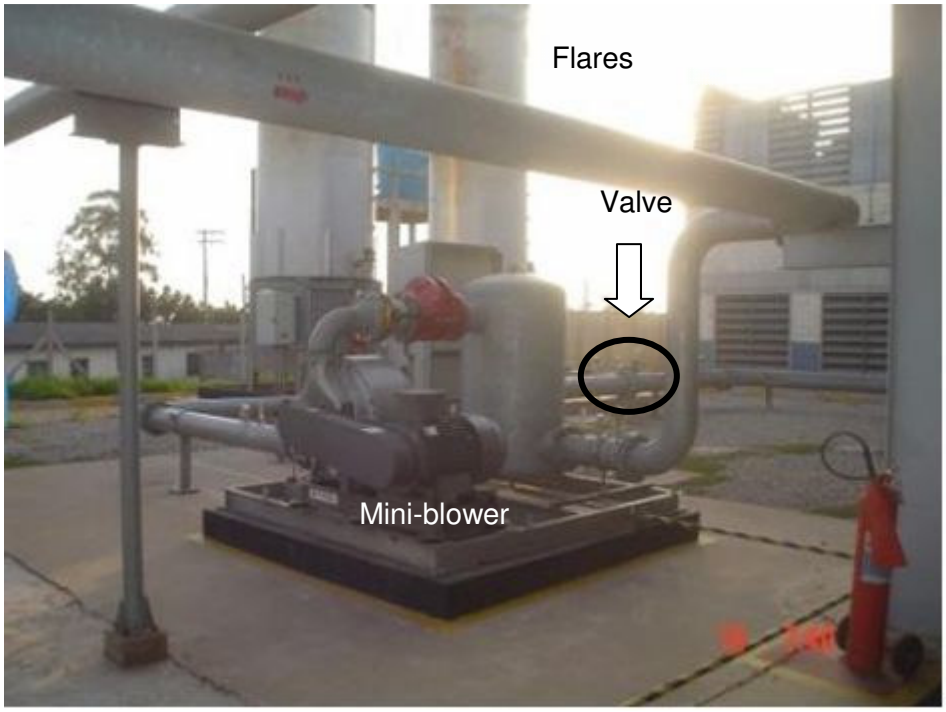
Annex III. Changes in the lay-out

On 01/06/2007, a change in the lay-out was made in order to increase the gas collection capacity from 14.500 Nm^3/h to 17.000 Nm^3/h of biogas. A new collecting line was installed and the gas collected is measured by the flow-meter FIR700 and is sent exclusively to the flare F200.

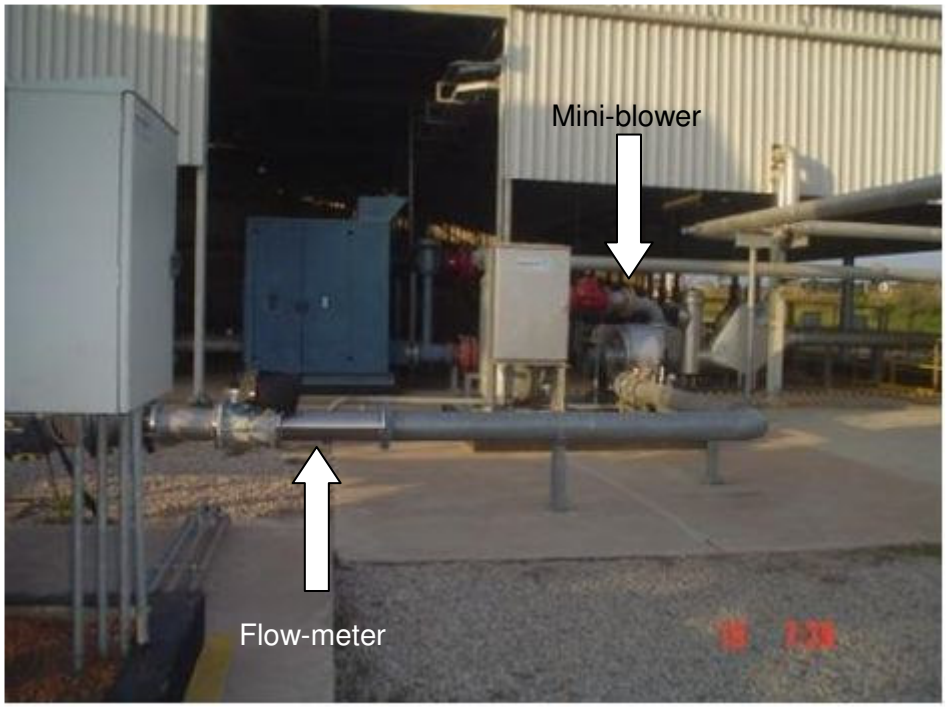
The pictures below present the new lay-out. The mini blower previously connected to the main pipeline will be connected directly to the flaring system – the existing pipeline will be removed and a new pipeline and the new flow-meter FIR700 will be installed.

The valve between the flares F100 and F200 will remain closed. Both flares F100 and F200 will be constantly operational. This valve will automatically open if necessary, according with an internal procedure PO-O16 (for example, when maintenance in the mini-blower is required). The readings from the new flow-meter will be made automatically and the monitoring will be made via the PLC system.





View of the mini-blower, indicating the flares and one of the valves.



View of the mini-blower, indicating the flow-meter.

ARCADIS Tetraplan S.A.

Av. Nove de Julho, 5966, Térreo,
Jardim Paulista, São Paulo-SP
Brazil
CEP 01406-200

Phone/fax: +55 (11) 3060-8457
E-mail: tetraplan@tetraplan.com.br

Website: www.tetraplan.com.br
www.arcadis-global.com