MONITORING REPORT FORM (CDM-MR)
Version 01 - in effect as of: 03/08/2010

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MONITORING REPORT
Version 01 - 03/08/2010

BANDEIRANTES LANDFILL GAS TO ENERGY PROJECT (BLFGE)
0164
15th Monitoring Period – From 01/01/2010 to 31/07/2010

SECTION A. General description of the project activity

A.1. Brief 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's goal is to explore the gas produced in Bandeirantes landfill, using it to generate electricity.

The project started construction on 2003. The flaring system started operation on November, 2003 and the first gas engine started operation, only for tests, on December, 2003. The project activity started on the 23rd of December 2003, when the final environmental license – working license – was issued.

The Project presents two main units: the degassing installation and the power plant. The degassing station is responsible for the gas treatment, before send it to the power plant. The equipments involved in this operation are: four heat exchange, four blowers, two flares and two chillers. The degassing station has installed too the flow meters, which are responsible for measure the volume of gas extracted from the landfill. The power plant has a total of 24 Caterpillar engines, nominal capacity of 925 kWh installed. The plant is able to generate 22MWh.

This Monitoring Report refers to the 15th Monitoring Period that complains the period from January 1st until July 31st. The total emission reductions achieved in this Monitoring Period is given on the table below:

Total CO_2e from methane destroyed	180,7341
Total CO_2e from electricity dispatched	11,743
TOTAL CO_2e	**192,477**

A.2. Project Participants

- Public entity: Prefeitura Municipal de São Paulo – municipality of São Paulo
- Private entity: Biogás Energia Ambiental S.A.

A.3. Location of the project activity:

Bandeirantes Landfill Gas to Energy Project (BLFGE) is located between km 24 and km 26 at Bandeirantes highway, which connects the city of São Paulo with Campinas metropolitan region, the richest area of state of São Paulo. Landfill covers an area of approximately 1.35 million m2, having Perus urban area (a São Paulo district) as north border; São Paulo – Jundiai old road as east border; to the south lies the connection between this road and Bandeirantes highway; and finally to the west by Bandeirantes highway.
The project is located at Rua Mogeiro, 1580, Bairro Jardim Perus, São Paulo. GPS coordinates from the location of the power house are the followings: Latitude -23°25´11.13'', Longitude - 45°45'21.69''.

A.4. Technical description of the project

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. Three main units can be detached: the substation, the degassing stations and the power plant.

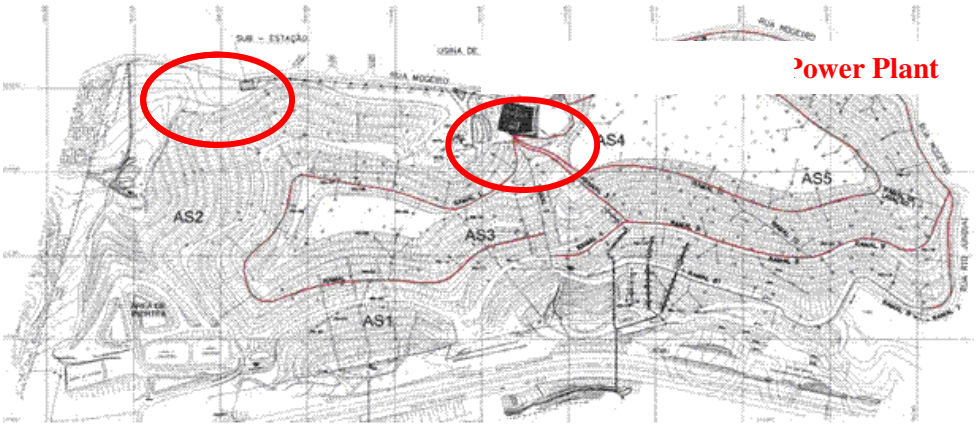


Figure 01 - Bandeirantes Landfill Cells

Roughly, the whole degasifying system, gas treatment and gas use can be described through the figure below.

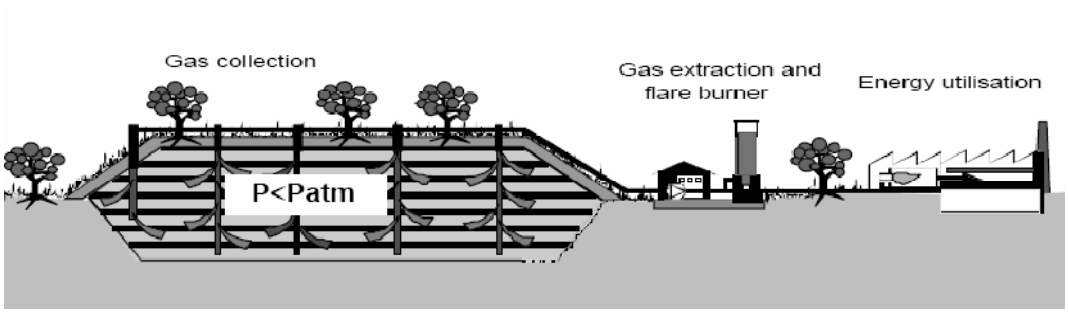


Figure 02 - Bandeirantes degasifying system

More technically, BLFGE project can be seen as displayed in the figure below.

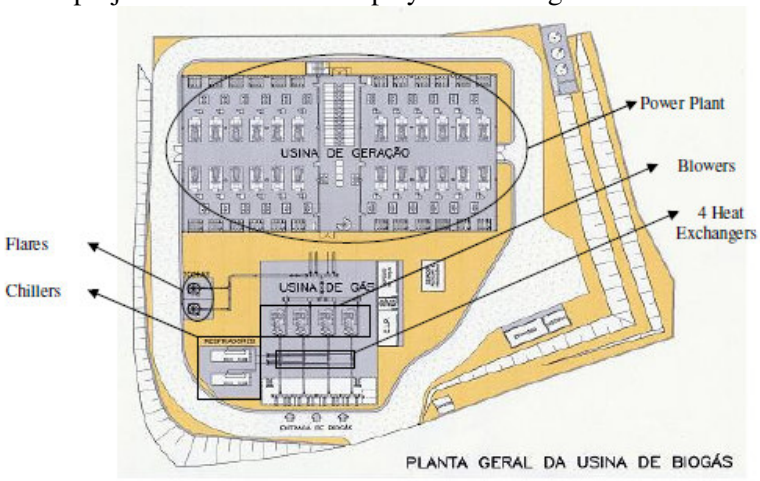


Figure 3 – Degassing installation and power plant.

From figure above, two main units can be detached: the degassing installations (USINA DE GÁS) and the power plant (USINA DE GERAÇÃO).

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 4 - 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 4ºC 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 5 - 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 6 -. Turbine Flow-meter

Figure 7 - Generators used to produce electricity

Figure 8 - Flare used to destroy the surplus gas collected

For electricity generation, a total of 24 Caterpillar engines, nominal capacity of 925 kW, model G3516A 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, measured at the substation. This electricity will in fact not be commercialized directly; it will supply Unibanco's branches over São Paulo state.

Nowadays about 13 Caterpillar engines are working in the power plant. This happens because the gas production in the landfill is lower nowadays.

A.5. Title, reference and version of the baseline and monitoring methodology applied to the project activity:

The project has name "Bandeirantes Landfill Gas to Energy" (BLFGE).

The methodology applied to BLFGE is **ACM0001 – version 02**, called "Consolidated baseline methodology for landfill gas project activities". The applicability conditions for ACM0001 have already been considered under the baseline section of the PDD. In fact, BLFGE is a project activity undertaken with the purpose of capturing and flaring methane from landfill operations, and also using this methane as fuel for a power plant, generating electricity that will avoid fossil fuelled plants at the margin of the Brazilian electricity system, therefore causing a reduction in GHG emissions. ACM0001 is therefore fully applicable to BLFGE.

The Monitoring Plan was developed based on **ACM0001 - version 02** of the **"Consolidated monitoring methodology for landfill gas project activities"**.

A.6. Registration date of the project activity:

The date of registration of the project is 20/02/2006.

A.7. Crediting period of the project activity and related information (start date and choice of crediting period):

BLFGE is in the first crediting period that had started on 23/12/2003. This period will finish on 22/12/2010, because the project proponent has chosen a renewable crediting period of 7 years.

A.8. Name of responsible person(s)/entity(ies):

ARCADIS Tetraplan S.A.
Cíntia Philippi Salles / Juliana Justi Pedott
cintia.salles@tetraplan.com.br/juliana.justi@tetraplan.com.br
Avenida Nove de Julho, 5960/5966 – Jd. Paulistano
CEP 01406-200
São Paulo – SP - Brazil
Phone + 55 11 3060-8457
www.arcadis-global.com | www.tetraplan.com.br

Biogás Energia Ambiental S.A.
Antonio Carlos Delbin
delbin@biogas-ambiental.com.br
Rua Mogeiro, 1580 – Jardim Perus
CEP 05206-240
São Paulo – SP - Brazil
Phone + 55 11 3918-4833
www.biogas-ambiental.com.br

SECTION B. Implementation of the project activity

B.1. Implementation status of the project activity

1) The starting date of operation of the project activity: the degassing station had started on 01/01/2004 and the power plant had started on 01/02/2004.

2) The events that occurred during this monitoring period are described on the table below:

Event	Description	How the event was considered
01	From April 19th to April 21st, 2010, maintenance in the grid solicited by AES Eletropaulo was realized.	The event was registered by the operators in the daily occurrence book.

No other events or rule/policy changes have taken place that could have affected the normal operation of the project and the applicability of the methodology.

B.2. Revision of the monitoring plan

A review of the BLFGE monitoring plan was submitted to the EB 36th Meeting and approved on 29/01/2008. The data to be collected or used to monitor emissions from the project activity, and how this data will be archived are presented in a table on item C.

B.3. Request for deviation applied to this monitoring period

During this monitoring period, no request for deviation has taken place.

B.4. Notification or request of approval of changes

Not applicable, as there has been no notification or request of approval of changes from the project activity as described in the registered CDM-PDD.

SECTION C. Description of the monitoring system

Monitoring Equipments:

The following equipments were installed in the Degassing Station, as per the revised Monitoring Plan:

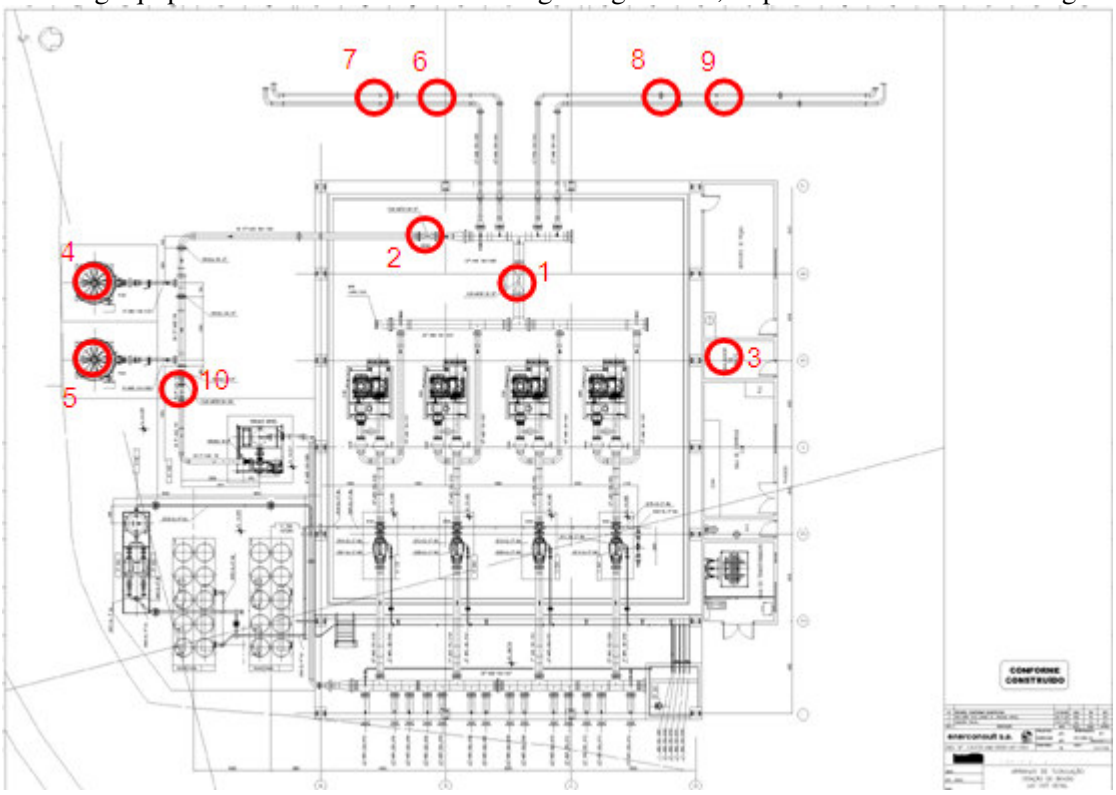


Figure 9 - Lay-out of the Degassing Station

PDD ID	Data variable	Data Unit	Measured (M) Calculated (C) Estimated (E)	Recording frequency	Proportion of data to be monitored	Data achievement: Electronic (E) Paper (P)	For how long is archived data kept?	Comment
1 - $LFG_{Total, y}$	Total amount of landfill gas captured	Nm^3	M	Continuously	100%	E / P	During the crediting period and two years after	Measured by a flow meter. Data will be aggregated monthly and yearly. Normal cubic meters represent the gas volume in cubic meters at STP.
2 - $LFG_{Flare, y}$	Total amount of landfill gas flared	Nm^3	M	Continuously	100%	E / P	During the crediting period and two years after	Measured by a flow meter, located in the gas line. Normal cubic meters represent the gas volume in cubic meters at STP. Data will be aggregated monthly and yearly. After the installation of the mini-blower, the measurements will be made by two flow meters – the first one was presented above

PDD ID	Data variable	Data Unit	Measured (M) Calculated (C) Estimated (E)	Recording frequency	Proportion of data to be monitored	Data achievement: Electronic (E) Paper (P)	For how long is archived data kept?	Comment
								and the second one located in a dedicated line connected to a mini-blower. Normal cubic meters represent the gas volume in cubic meters at STP.
3 - $LFG_{Electricity, y}$	Total amount of landfill gas combusted in power plant	Nm^3	M	Continuously	100%	E / P	During the crediting period and two years after	Measured by 4 flow meters. Data will be aggregated monthly and yearly. Normal cubic meters represent the gas volume in cubic meters at STP.
4 - FE	Flare/combustion efficiency, determined by: the operation hours (1) and methane content in the exhaust gas (2)	%	M / C	(1) Continuously, (2) quarterly, monthly if unstable	N/A	E	During the crediting period and two years after	(1) Continuous measurement of operation time of flare (e.g. with temperature). (2) Periodic measurement of methane content of flare exhaust gas.

PDD ID	Data variable	Data Unit	Measured (M) Calculated (C) Estimated (E)	Recording frequency	Proportion of data to be monitored	Data achievement: Electronic (E) Paper (P)	For how long is archived data kept?	Comment
5 - $w_{CH4, y}$	Methane fraction in the landfill gas	%	M	Continuously	100%	E	During the crediting period and two years after	Measured by continuous gas quality analyzer.
6	Regulatory requirements relating to landfill gas projects	Test	N/A	Annually	100%	E	During the crediting period and two years after	Required for any changes to the adjustment factor (AF) or directly $MD_{reg,y}$
7 - EG_y[1]	Net Electricity Exported to the Grid	MWh	M	Continuously	100%	E	During the crediting period and two years	The net quantity of electricity displaced will be measured by an electricity meter. BLFGE will measure the total electricity fed into the grid (via an electricity-meter).
8 - EF_y[1]	Emission Factor	tCO_2/MWh	C	At baseline renewal	100%	E	During the crediting period and two years	This data will be updated at the baseline renewal, in accordance with the considered methodology.

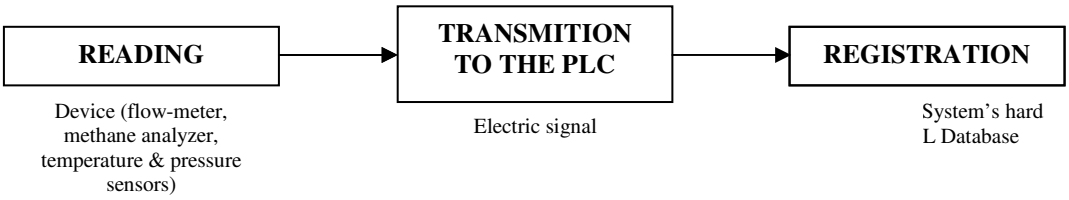
[1] Monitoring parameters as per methodology ACM0002 – version 03 to calculate emission reductions due to the displacement of fossil-fuel based energy in the Brazilian S-SE-CO Grid.

Data Acquisition:

All variables monitored are controlled by an electrical control system. This control system is provided with a PLC (Programmable Logical Computer). 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 10 - PLC Controlling System panel

For each parameter operationally monitored, the PLC makes a routine of reading / transmitting / registering in the Supervosory's System hard disk as presented in the figure below:



Depending on the parameter, the frequency of the PLC's routine may vary, as presented in the table below:

Methodology ID	Equipment TAG	Reading Frequency	Transmition Frequency	Registration Frequency	Comments
$LFG_{Total, y}$	FIR100	Continuously	Continuously	Every 5 minutes	- Data accumulated every 1 hour is registered in the SQL's database, in Nm^3; - Every 00:00, the PLC's counter is reseted; - The flow-computer installed in the flow-meter keeps registering the accumulated flow; - Every 00:00, the accumulated flow (in Nm^3) is manually registered by the operators; - Every 3 hours, the operators perform the "Print-Screen" of the controlling system panel; - Responsibilities of the routine: PLC (continuously) and plant supervisor (monthly)
$LFG_{Flare, y}$	FIR200 FIR700	Continuously Continuously	Continuously Continuously	Every 5 minutes Every 5 minutes	
$LFG_{Electricity, y}$	FIR300 FIR400 FIR500 FIR600	Continuously Continuously Continuously Continuously	Continuously Continuously Continuously Continuously	Every 5 minutes Every 5 minutes Every 5 minutes Every 5 minutes	

Methodology ID	Equipment TAG	Reading Frequency	Transmition Frequency	Registration Frequency	Comments
FE_{F100}	(1) TAC520 (2) N/A	(1) Continuously (2) Every 3 months, by a specialized company on gas analysis	(1) Continuously (2) Every 3 months, by a specialized company on gas analysis	(1) Every 5 minutes (2) Every 3 months, by a specialized company on gas analysis	- Temperatures below 900°C indicates that the flare is running out of the specified combustion temperature range; - A sudden decrease of temperature indicates that the main valve of the flare is closed and no gas is being sent to the flare (please, refer to item 3.1.1) - The methane analysis in the exhaust gas is made according with internal procedures from the hired company
FE_{F200}	(1) TAC570 (2) N/A	(1) Continuously (2) Every 3 months, by a specialized company on gas analysis	(1) Continuously (2) Every 3 months, by a specialized company on gas analysis	(1) Every 5 minutes (2) Every 3 months, by a specialized company on gas analysis	
$w_{CH4, y}$	A100	Continuously	Continuously	Every 5 minutes	- By the end of the day, an average of CH_4 concentration (registered every 5 minutes) is calculated. - Responsibilities of the routine: PLC (continuously) and plant supervisor (monthly)
EG_y	N/A	Continuously	Continuously	Every 15 minutes	- Sotreq's PLC registers the accumulated electricity sent to the grid every 00:00. Data is compared with Eletropaulo's invoices. - Responsibilities of the routine: PLC (continuously) and Sotreq's plant supervisor (monthly)

Involvement of third parties:

BFLGE has three third parties involved:

- Specialized company on gas analysis, to perform the analysis of methane concentration in the exhaust gas. For this monitoring period, Biogás hired CORPLAB, a certified national laboratory.
- Sotreq, the company responsible for the electricity production in the power house, using the gas from the landfill. Sotreq's PLC is responsible to monitor the electricity displaced to the local grid.
- ARCADIS Tetraplan is the company responsible to develop the Monitoring Report and is part of the quality assurance/quality control procedures.

Quality assurance and quality control measures:

Internal Procedures of ISO 14001

Biogás counts with the internal procedure SGA IT 4.4.6-26 which objective is to specify the monitoring procedures made inside the Degassing Station, as gas flows, temperature, pressure, electricity generation and methane concentration.

As presented in item Data Acquisition, all parameters monitored inside the Degassing Station have the same reading / transmitting / registration routine and all routines have one person responsible: the plant supervisor.

Every week, the plant supervisor downloads all data registered from the PLC and makes a complete check to identify unconformities, such as unread registrations or troubles with the PLC (this unconformities happens mainly due to electricity black-outs). All unconformities raised are promptly compared with operational events, registered by the operators in the Operation Diary. The event is informed to the Production Manager of Biogás, which is responsible for taking the necessary actions to avoid it to happen again.

In order to avoid data loss, the operators are oriented to register all gas flow data manually in proper sheets on a daily basis (0:00 hour), which are verified by the production manager weekly for legibility. Additionally, the operators are oriented to perform the "Print-Screen" of the control system panel of the PLC. The picture is saved in the computer's hard-disk.

Also, the BLGFE count with a third-party, non-responsible for the project's monitoring: ARCADIS Tetraplan, which is the responsible for the development of the Monitoring Report. ARCADIS Tetraplan's role in the Project is to assure the quality of the registered data, through a double-check process, and to assure the quality of the calculation of ERs and is in constant contact with the Production Manager of Biogás.

Moreover, Biogás was certified with ISO 14001 in 21/10/2008, as per raised during the 1st Verification, in March 2006. With this certification, errors will be minimized through reinforcement of the procedures, such as:

- 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.);

Organizational Structure, responsibilities and competencies:

Positions and roles for this CDM project activity are well defined, according with the organogram below:

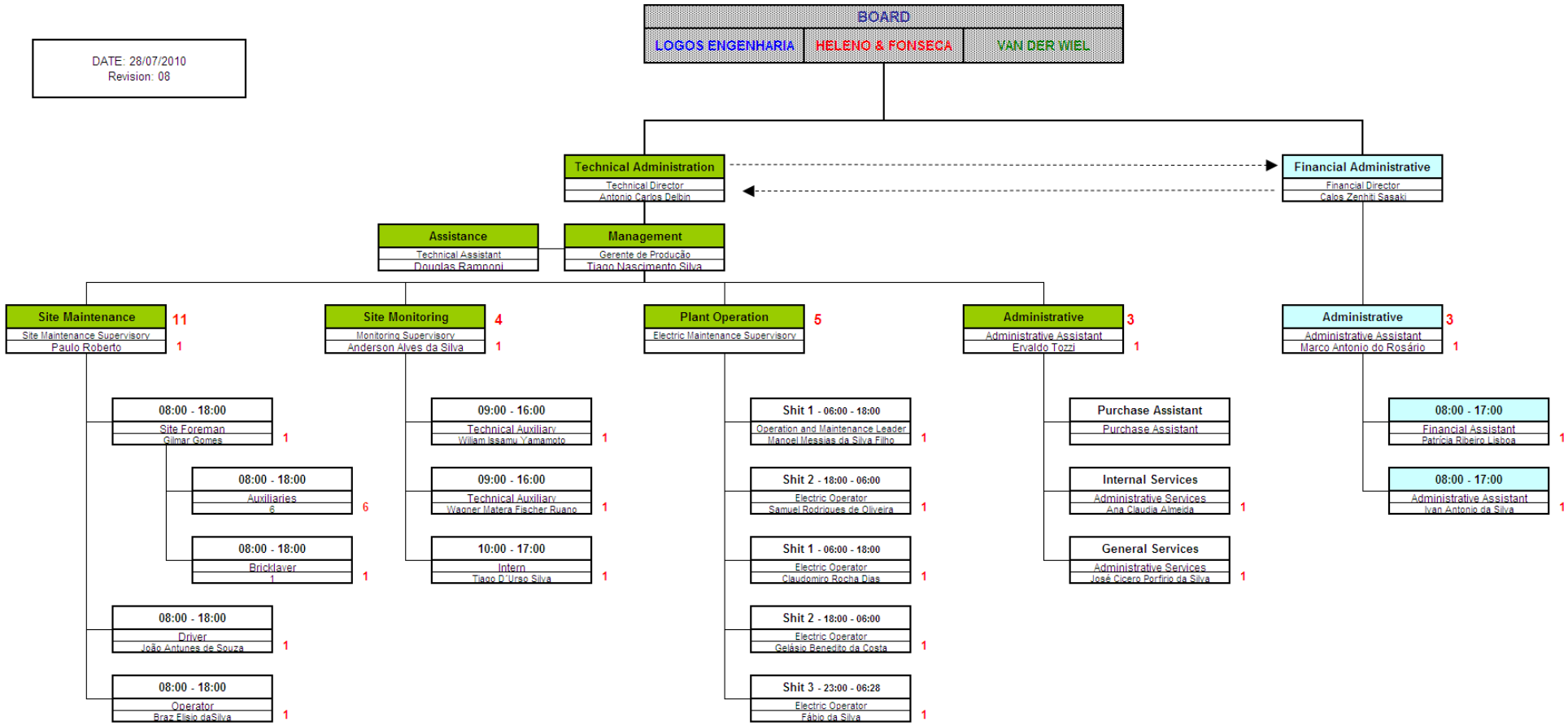


Figure 11 - General Organogram of Biogás

From the point of view of the plant operation, positions and roles are defined. Duties, personnel replacement in the case of non-availability of the supervisor of monitoring and/or the electrical supervisor and hiring requirements for job positions are determined in documented procedures, as presented in the figures below:

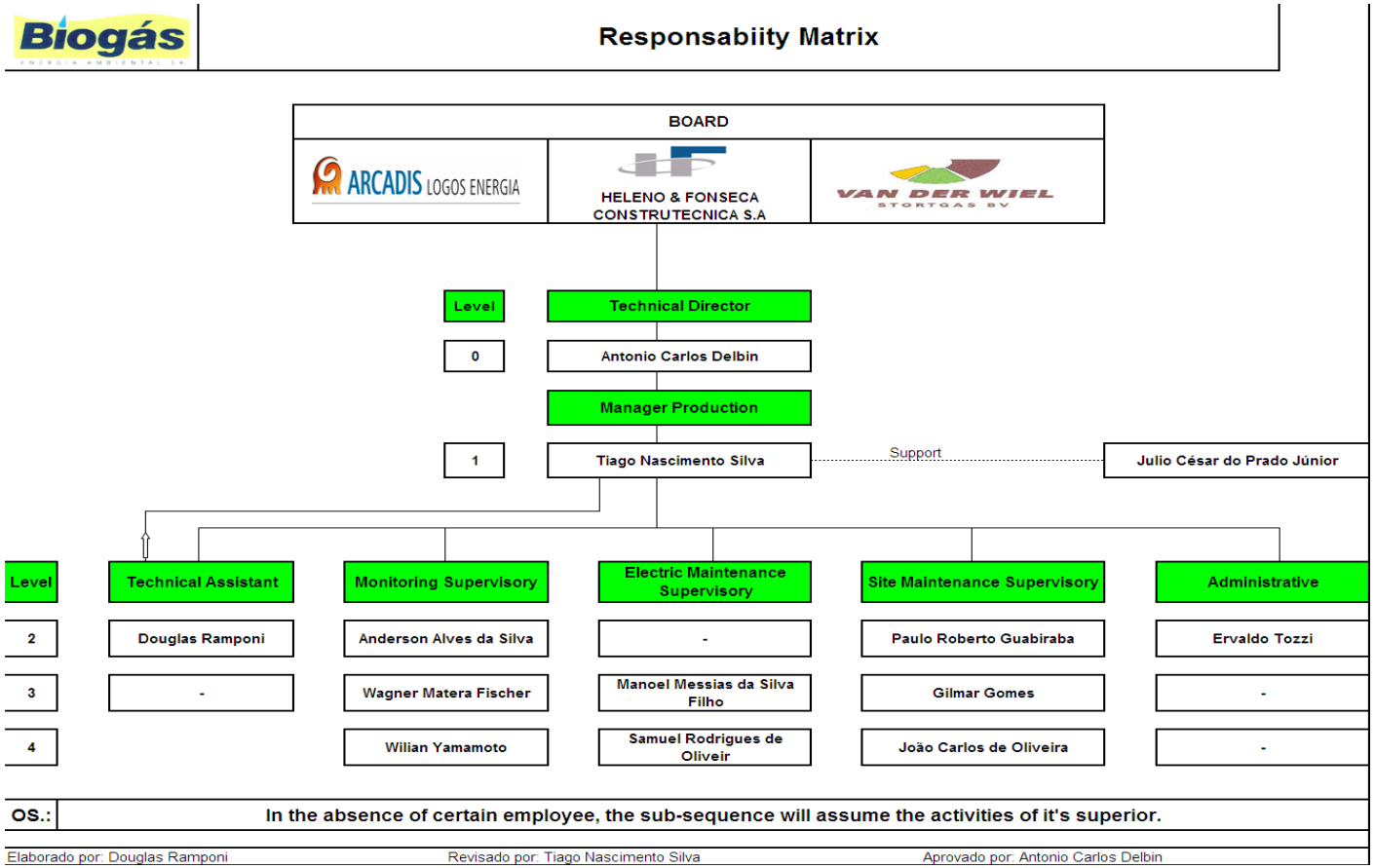


Figure 12 - Responsibility Matrix of Biogás Energia Ambiental

Trainings:
All training was supplied to operators and technical assistants before the project's implementation. The training certificates were presented to the Verification Team.

The Technical Assistant Douglas Ramponi was transferred from São João to Bandeirantes.

For this monitoring period, no new operators were hired.

Data protection measures:
As all data registered in the Supervisory System's hard disk is subjected to sabotage and technical failure, Biogás developed the following actions to protect the monitoring system:

- The PLC is not connected to the Internet, thus the risk of virus is minimized;
- Only defined persons have access to the data base of the system;
- Antivirus programmes are installed at the system;
- Data backup:
  - A weekly CD backup of the Supervisory System's hard disk;
  - A weekly backup of the Supervisory System's hard disk is made by the server of Heleno & Fonseca (one of Biogás shareholders);
  - Van der Wiel (another Biogás shareholder) has radio access to the Supervisory System, via a CARS (Central Alarming and Registration System);

SECTION D. Data and parameters

D.1. Data and parameters determined at registration and not monitored during the monitoring period, including default values and factors

Data / Parameter:	**GWP_{CH4}**
Data unit:	tCO_2e/tCH_4
Description:	Global Warming Potential value for methane
Source of data used:	1996 IPCC Guideline for National Greenhouse Gas Inventory
Value(s) :	21
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline calculation
Additional comment:	N/A

Data / Parameter:	**$\rho_{CH4,n,h}$**
Data unit:	tCH_4/m^3CH_4
Description:	Density of methane gas at normal conditions
Source of data used:	1996 IPCC Guideline for National Greenhouse Gas Inventory
Value(s) :	0.0007168
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline calculation
Additional comment:	N/A

Data / Parameter:	Rx
Data unit:	t
Description:	the amount of waste disposed in year x
Source of data used:	Records from landfill operator
Value(s) :	See table below
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline calculation
Additional comment:	N/A

Year	Waste Deposition (tonnes)	Year	Waste Deposition (tonnes)
1978	0	1993	1.377.148
1979	37.450	1994	1.616.710
1980	229.040	1995	1.823.170
1981	231.408	1996	1.971.651
1982	313.633	1997	1.992.386
1983	321.956	1998	1.874.272
1984	325.585	1999	1.741.945
1985	408.887	2000	1.746.225
1986	801.366	2001	1.761.378
1987	1.017.866	2002	1.973.004
1988	1.283.852	2003	1.792.587
1989	977.852	2004	1.845.724
1990	1.206.964	2005	1.850.000
1991	1.224.954	2006	1.850.000
1992	1.508.817	2007- on	0

Data / Parameter:	X
Data unit:	year
Description:	the year of waste input
Source of data used:	1996 IPCC Guideline for National Greenhouse Gas Inventory
Value(s) :	N/A
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline calculation
Additional comment:	N/A

Data / Parameter:	R
Data unit:	t/year
Description:	average annual waste acceptance rate during active life
Source of data used:	N/A
Value(s) :	N/A
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline calculation
Additional comment:	N/A

Data / Parameter:	L_0
Data unit:	(t/t of refuse)
Description:	methane generation potential
Source of data used:	Municipality of São Paulo data
Value(s) :	0.045
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline calculation
Additional comment:	N/A

Data / Parameter:	k
Data unit:	t/year
Description:	methane generation rate constant
Source of data used:	Based on Van der Wiel's field experience
Value(s) :	0.105
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline calculation
Additional comment:	N/A

Data / Parameter:	c
Data unit:	year
Description:	time since solid waste disposal site (SWDS) closure
Source of data used:	Municipality of São Paulo data
Value(s) :	2006
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline calculation
Additional comment:	N/A

Data / Parameter:	t
Data unit:	year
Description:	Time since SWDS opened
Source of data used:	Municipality of São Paulo data
Value(s) :	1978
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline calculation
Additional comment:	N/A

D.2. Data and parameters monitored

Data / Parameter:	$LFG_{Total, y}$
Data unit:	Nm³/h
Description:	Total amount of landfill gas captured from the landfill site at Normal Temperature and Pressure in year $_y$
Measured /Calculated /Default:	Measured
Source of data:	Project participant
Value(s) of monitored parameter:	This value is indicated on table E.1.
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Manufacturer: Endresser + Hauser Type: t-mass 65 l DN175/7" (177.75 mm) TAG: FIR100 Accuracy class: 1.5300% (error) Serial number: 9407D902000 Calibration frequency: 5 years Date of last calibration: 25/04/2007 Validity: 25/04/2012
Measuring/ Reading/ Recording frequency:	Data is measured by a continuous flow meter. Measurements of the flow are recorded electronically by PLC at least each five minutes and once per hour, and aggregated. The data is archived electronically.
Calculation method (if applicable):	N/A
QA/QC procedures applied:	Flow meters will be subject to a regular maintenance and testing regime to ensure accuracy, in compliance with national laws (example in Germany and in Italy, for turbine meters of this size, calibration is never required; in Brazil there are no requirements concerning the device's calibration). The calibration will be undertaken according with the manufacturer's recommendation.

Data / Parameter:	$LFG_{Flare, y}$
Data unit:	Nm³/h
Description:	Amount of landfill gas captured and sent to the flare at Normal Temperature and Pressure in year y
Measured /Calculated /Default:	Measured
Source of data:	Project proponent
Value(s) of monitored parameter:	This value is indicated on table E.1.
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last	Manufacturer: Incontrol Type: VTGEX-200 TAG: FIR200 Accuracy class: 0.8900 % (error)

calibration, validity)	Serial number: VG15239 Calibration frequency: 5 years Date of last calibration: 01/07/2009 Validity: 01/07/2014
Measuring/ Reading/ Recording frequency:	Data is measured by a continuous flow meter. Measurements of the flow are recorded electronically by PLC at least each five minutes and once per hour, and aggregated. The data is archived electronically.
Calculation method (if applicable):	N/A
QA/QC procedures applied:	Flow meters will be subject to a regular maintenance and testing regime to ensure accuracy, in compliance with national laws (example in Germany and in Italy, for turbine meters of this size, calibration is never required; in Brazil there are no requirements concerning the device's calibration). The calibration will be undertaken according with the manufacturer's recommendation.

Data / Parameter:	**$LFG_{Electricity, y}$**
Data unit:	Nm^3/h
Description:	Amount of landfill gas captured and sent to the generators in power plant at Normal Temperature and Pressure in year y
Measured /Calculated /Default:	Measured
Source of data:	Project proponent
Value(s) of monitored parameter:	This value is indicated on table E.1.
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Manufacturer: Incontrol Type: VTGEX - 200 TAG: FIR300 Accuracy class: 0.7720 %(error) Serial number: VG083B6 Calibration frequency: 5 years Date of last calibration: 12/12/2006 Validity: 12/12/2011
Measuring/ Reading/ Recording frequency:	Data is measured by a continuous flow meter. Measurements of the flow are recorded electronically by PLC at least each five minutes and once per hour, and aggregated. The data is archived electronically.
Calculation method (if applicable):	N/A
QA/QC procedures applied:	Flow meters will be subject to a regular maintenance and testing regime to ensure accuracy, in compliance with national laws (example in Germany and in Italy, for turbine meters of this size, calibration is never required; in Brazil there are no requirements concerning the device's calibration). The calibration will be undertaken according with the manufacturer's recommendation.

Data / Parameter:	$LFG_{Electricity, y}$
Data unit:	Nm³/h
Description:	Amount of landfill gas captured and sent to the generators in power plant at Normal Temperature and Pressure in year y
Measured /Calculated /Default:	Measured
Source of data:	Project proponent
Value(s) of monitored parameter:	This value is indicated on table E.1.
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Manufacturer: Incontrol Type: VTGEX - 200 TAG: FIR400 Accuracy class: 0.5960 % (error) Serial number: VG084B6 Calibration frequency: 5 years Date of last calibration: 12/12/2006 Validity: 12/12/2011
Measuring/ Reading/ Recording frequency:	Data is measured by a continuous flow meter. Measurements of the flow are recorded electronically by PLC at least each five minutes and once per hour, and aggregated. The data is archived electronically.
Calculation method (if applicable):	N/A
QA/QC procedures applied:	Flow meters will be subject to a regular maintenance and testing regime to ensure accuracy, in compliance with national laws (example in Germany and in Italy, for turbine meters of this size, calibration is never required; in Brazil there are no requirements concerning the device's calibration). The calibration will be undertaken according with the manufacturer's recommendation.

Data / Parameter:	$LFG_{Electricity, y}$
Data unit:	Nm³/h
Description:	Amount of landfill gas captured and sent to the generators in power plant at Normal Temperature and Pressure in year y
Measured /Calculated /Default:	Measured
Source of data:	Project proponent
Value(s) of monitored parameter:	This value is indicated on table E.1.
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last	Manufacturer: Incontrol Type: VTGEX - 200 TAG: FIR500 Accuracy class: 0.6320 %(error)

calibration, validity)	Serial number: VG086B6 Calibration frequency: 5 years Date of last calibration: 12/12/2006 Validity: 12/12/2011
Measuring/ Reading/ Recording frequency:	Data is measured by a continuous flow meter. Measurements of the flow are recorded electronically by PLC at least each five minutes and once per hour, and aggregated. The data is archived electronically.
Calculation method (if applicable):	N/A
QA/QC procedures applied:	Flow meters will be subject to a regular maintenance and testing regime to ensure accuracy, in compliance with national laws (example in Germany and in Italy, for turbine meters of this size, calibration is never required; in Brazil there are no requirements concerning the device's calibration). The calibration will be undertaken according with the manufacturer's recommendation.

Data / Parameter:	**$LFG_{Electricity, y}$**
Data unit:	Nm^3/h
Description:	Amount of landfill gas captured and sent to the generators in power plant at Normal Temperature and Pressure in year y
Measured /Calculated /Default:	Measured
Source of data:	Project proponent
Value(s) of monitored parameter:	This value is indicated on table E.1.
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Manufacturer: Incontrol Type: VTGEX - 200 TAG: FIR600 Accuracy class: 0.8110 % (error) Serial number: VG085B6 Calibration frequency: 5 years Date of last calibration: 12/12/2006 Validity: 12/12/2011
Measuring/ Reading/ Recording frequency:	Data is measured by a continuous flow meter. Measurements of the flow are recorded electronically by PLC at least each five minutes and once per hour, and aggregated. The data is archived electronically.
Calculation method (if applicable):	N/A
QA/QC procedures applied:	Flow meters will be subject to a regular maintenance and testing regime to ensure accuracy, in compliance with national laws (example in Germany and in Italy, for turbine meters of this size, calibration is never required; in Brazil there are no requirements concerning the device's calibration). The calibration will be undertaken according with the manufacturer's recommendation.

Data / Parameter:	**FE_{F100}**
Data unit:	**°C**
Description:	Temperature of the exhaust gas in the flare F100.
Measured /Calculated /Default:	Measured
Source of data:	Project proponent
Value(s) of monitored parameter:	This value is indicated on table E.1.
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Manufacturer: Thermocouple Jumo Type: "S" L750 TAG:TAC 520 Accuracy class: not applicable Serial number: 32950/030 Calibration frequency: not applicable Date of last calibration: not applicable Validity: not applicable
Measuring/ Reading/ Recording frequency:	Data is measured by a thermometer installed in the flare. Measurements of the temperature of the exhaust gas are recorded electronically by PLC at least each five minutes and once per hour, and aggregated. The data is archived electronically.
Calculation method (if applicable):	N/A
QA/QC procedures applied:	Thermocouples will be replaced or calibrated every year.

Data / Parameter:	**FE_{F100}**
Data unit:	Not applicable
Description:	Methane content of flare exhaust gas
Measured /Calculated /Default:	Measured/ Calculated
Source of data:	Analysis made by a third party.
Value(s) of monitored parameter:	Explained on item E.1.
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	N/A
Measuring/ Reading/ Recording frequency:	The data is measured with a chromatographer each three months by a specialized lab – CORPLAB, as explained on item E.1.
Calculation method (if applicable):	Flare Efficiency Spreadsheet
QA/QC procedures applied:	Calculated as per the Version 1 of the Tool to determine project

	emissions from flaring gases containing methane.

Data / Parameter:	**FE_{F200}**
Data unit:	**°C**
Description:	Temperature of the exhaust gas in the flare F200.
Measured /Calculated /Default:	Measured
Source of data:	Project proponent
Value(s) of monitored parameter:	This value is indicated on table E.1.
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Manufacturer: Thermocouple Jumo Type: "S" L750 TAG: TAC 570 Accuracy class: not applicable Serial number: 32411/030 Calibration frequency: not applicable Date of last calibration: not applicable Validity: not applicable
Measuring/ Reading/ Recording frequency:	N/A
Calculation method (if applicable):	N/A
QA/QC procedures applied:	Thermocouples will be replaced or calibrated every year.

Data / Parameter:	**FE_{F200}**
Data unit:	Not applicable
Description:	Methane content of flare exhaust gas
Measured /Calculated /Default:	Measured/ Calculated
Source of data:	Analysis made by a third part.
Value(s) of monitored parameter:	Explained on item E.1.
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Not Applicable
Measuring/ Reading/ Recording frequency:	The data is measured by a chromatographer each three months by a specialized lab – CORPLAB, as explained on item E.1.
Calculation method (if applicable):	Flare Efficiency Spreadsheet
QA/QC procedures applied:	Calculated as per the Version 1 of the Tool to determine project

	emissions from flaring gases containing methane.

Data / Parameter:	$W_{CH4,y}$
Data unit:	%
Description:	Methane fraction in the landfill gas.
Measured /Calculated /Default:	Measured
Source of data:	To be measured continuously by project participant using qualified gas analyzer.
Value(s) of monitored parameter:	This value is indicated on table E.1.
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Manufacturer: Rosemount - NUK Type: Binos 100 TAG: A100 Accuracy class: 1,0000% (error) Serial number: 9965398 Calibration frequency: weekly, with a standard gas Date of last calibration: not applicable Validity: not applicable
Measuring/ Reading/ Recording frequency:	Measured by continuous gas quality analyzer weekly. Measurements are recorded in a handbook every calibration.
Calculation method (if applicable):	The calibration is made using a standard gas. The cylinders have calibration certificate.
QA/QC procedures applied:	The gas analyzer is recalibrated every week against a standard certified gas cylinder, according with an internal procedure.

Data / Parameter:	EG_y
Data unit:	**MWh**
Description:	Net quantity of electricity delivered to the grid which is produced by using LFG under the project activity.
Measured /Calculated /Default:	Measured
Source of data:	Project participant
Value(s) of monitored parameter:	See section E.1.
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Manufacturer: Merlin Gerin Type: Power Logic – CM4000 TAG: Not applicable Accuracy class: 1,0000% (error) Serial number: 0011001414 Calibration frequency: 2 years Date of last calibration: Oct/2009

	Validity: Oct/2011
Measuring/ Reading/ Recording frequency:	Directly measured by electricity meter installed at the project site and the connected substation. The data is measured and recorded hourly, and aggregated monthly. The data is monitored and archived electronically. Double-check by electricity sale receipts.
Calculation method (if applicable):	N/A
QA/QC procedures applied:	Electricity meters will be subject to regular (in accordance with stipulation of the meter supplier) maintenance and testing to ensure accuracy.

Data / Parameter:	**P**
Data unit:	**mbar**
Description:	Pressure Transmitter
Measured /Calculated /Default:	Measured
Source of data:	Project participant
Value(s) of monitored parameter:	N/A
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Manufacturer: SMAR Type: LD291M TAG: TPF201 Accuracy class: 0,0851% (error) Serial number: L454793/L42236 Calibration frequency: 5 years Date of last calibration: 27/03/2009 Validity: 27/03/2014
Measuring/ Reading/ Recording frequency:	Measured to determine the density of methane. The measurements are undertaken automatically and continuously by a gas flow meter, expressing LFG volumes in normalized cubic meters. The data is archived electronically.
Calculation method (if applicable):	N/A
QA/QC procedures applied:	Pressure transmitter is subject to regular maintenance and testing regime, in accordance to appropriate national standards. The calibration will be undertaken according with the manufacturer's recommendation.

Data / Parameter:	**P**
Data unit:	**mbar**
Description:	Pressure Transmitter
Measured /Calculated /Default:	Measured
Source of data:	Project participant
Value(s) of monitored parameter:	N/A

Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Manufacturer: SMAR Type: LD291M TAG: TPF301 Accuracy class: 0,0567% (error) Serial number: 33007-06 Calibration frequency: 5 years Date of last calibration: 06/05/2009 Validity: 06/05/2014
Measuring/ Reading/ Recording frequency:	Measured to determine the density of methane. The measurements are undertaken automatically and continuously by a gas flow meter, expressing LFG volumes in normalized cubic meters. The data is archived electronically.
Calculation method (if applicable):	N/A
QA/QC procedures applied:	Pressure transmitter is subject to regular maintenance and testing regime, in accordance to appropriate national standards. The calibration will be undertaken according with the manufacturer's recommendation.

Data / Parameter:	**P**
Data unit:	**mbar**
Description:	Pressure Transmitter
Measured /Calculated /Default:	Measured
Source of data:	Project participant
Value(s) of monitored parameter:	N/A
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Manufacturer: SMAR Type: LD291M TAG: TPF401 Accuracy class: 0,0317% (error) Serial number: L454794/L42237 Calibration frequency: 5 years Date of last calibration: 27/03/2009 Validity: 27/03/2014
Measuring/ Reading/ Recording frequency:	Measured to determine the density of methane. The measurements are undertaken automatically and continuously by a gas flow meter, expressing LFG volumes in normalized cubic meters. The data is archived electronically.
Calculation method (if applicable):	N/A
QA/QC procedures applied:	Pressure transmitter is subject to regular maintenance and testing

	regime, in accordance to appropriate national standards. The calibration will be undertaken according with the manufacturer's recommendation.

Data / Parameter:	**P**
Data unit:	**mbar**
Description:	Pressure Transmitter
Measured /Calculated /Default:	Measured
Source of data:	Project participant
Value(s) of monitored parameter:	N/A
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Manufacturer: SMAR Type: LD291M TAG: TPF501 Accuracy class: 0,0417% (error) Serial number: 33006-06 Calibration frequency: 5 years Date of last calibration: 23/06/2009 Validity: 23/06/2014
Measuring/ Reading/ Recording frequency:	Measured to determine the density of methane. The measurements are undertaken automatically and continuously by a gas flow meter, expressing LFG volumes in normalized cubic meters. The data is archived electronically.
Calculation method (if applicable):	N/A
QA/QC procedures applied:	Pressure transmitter is subject to regular maintenance and testing regime, in accordance to appropriate national standards. The calibration will be undertaken according with the manufacturer's recommendation.

Data / Parameter:	**P**
Data unit:	**mbar**
Description:	Pressure Transmitter
Measured /Calculated /Default:	Measured
Source of data:	Project participant
Value(s) of monitored parameter:	N/A
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration	Manufacturer: SMAR Type: LD291M TAG: TPF601

frequency, date of last calibration, validity)	Accuracy class: 0,0417% (error) Serial number: 33005-06 Calibration frequency: 5 years Date of last calibration: 17/04/2008 Validity: 17/04/2013
Measuring/ Reading/ Recording frequency:	Measured to determine the density of methane. The measurements are undertaken automatically and continuously by a gas flow meter, expressing LFG volumes in normalized cubic meters. The data is archived electronically.
Calculation method (if applicable):	N/A
QA/QC procedures applied:	Pressure transmitter is subject to regular maintenance and testing regime, in accordance to appropriate national standards. The calibration will be undertaken according with the manufacturer's recommendation.

Data / Parameter:	**T**
Data unit:	**°C**
Description:	Temperature of the landfill gas
Measured /Calculated /Default:	Measured
Source of data:	Project participant
Value(s) of monitored parameter:	N/A
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Manufacturer: ASTA Type: PT - 100 TAG: TTF201 Accuracy class: 0,6471% (error) Serial number: S377815 Calibration frequency: 5 years Date of last calibration: 26/03/2009 Validity: 26/03/2014
Measuring/ Reading/ Recording frequency:	Measured to determine the density of methane. The measurements are undertaken automatically and continuously by a gas flow meter, expressing LFG volumes in normalized cubic meters. The data is archived electronically.
Calculation method (if applicable):	N/A
QA/QC procedures applied:	Temperature transmitter is subject to regular maintenance and testing regime, in accordance to appropriate national standards. The calibration will be undertaken according with the manufacturer's recommendation.

Data / Parameter:	**T**
Data unit:	**°C**
Description:	Temperature of the landfill gas

Measured /Calculated /Default:	Measured
Source of data:	Project participant
Value(s) of monitored parameter:	N/A
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Manufacturer: ASTA Type: PT - 100 TAG: TTF301 Accuracy class: 0,5993% (error) Serial number: S502986 Calibration frequency: 5 years Date of last calibration: 26/03/2009 Validity: 26/03/2014
Measuring/ Reading/ Recording frequency:	Measured to determine the density of methane. The measurements are undertaken automatically and continuously by a gas flow meter, expressing LFG volumes in normalized cubic meters. The data is archived electronically.
Calculation method (if applicable):	N/A
QA/QC procedures applied:	Temperature transmitter er is subject to regular maintenance and testing regime, in accordance to appropriate national standards. The calibration will be undertaken according with the manufacturer's recommendation.

Data / Parameter:	**T**
Data unit:	**°C**
Description:	Temperature of the landfill gas
Measured /Calculated /Default:	Measured
Source of data:	Project participant
Value(s) of monitored parameter:	N/A
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Manufacturer: ASTA Type: PT - 100 TAG: TTF401 Accuracy class: 0,1775% (error) Serial number: S502987 Calibration frequency: 5 years Date of last calibration: 26/03/2009 Validity: 26/03/2014
Measuring/ Reading/ Recording frequency:	Measured to determine the density of methane. The measurements are undertaken automatically and continuously by a gas flow meter,

	expressing LFG volumes in normalized cubic meters. The data is archived electronically.
Calculation method (if applicable):	N/A
QA/QC procedures applied:	Temperature transmitter is subject to regular maintenance and testing regime, in accordance to appropriate national standards. The calibration will be undertaken according with the manufacturer's recommendation.

Data / Parameter:	**T**
Data unit:	**°C**
Description:	Temperature of the landfill gas
Measured /Calculated /Default:	Measured
Source of data:	Project participant
Value(s) of monitored parameter:	N/A
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Manufacturer: ASTA Type: PT - 100 TAG: TTF501 Accuracy class: 0,8717% (error) Serial number: S502988 Calibration frequency: 5 years Date of last calibration: 26/03/2009 Validity: 26/03/2014
Measuring/ Reading/ Recording frequency:	Measured to determine the density of methane. The measurements are undertaken automatically and continuously by a gas flow meter, expressing LFG volumes in normalized cubic meters. The data is archived electronically.
Calculation method (if applicable):	N/A
QA/QC procedures applied:	Temperature transmitter is subject to regular maintenance and testing regime, in accordance to appropriate national standards. The calibration will be undertaken according with the manufacturer's recommendation.

Data / Parameter:	**T**
Data unit:	**°C**
Description:	Temperature of the landfill gas
Measured /Calculated /Default:	Measured
Source of data:	Project participant
Value(s) of monitored parameter:	N/A
Indicate what the data are used for (Baseline/ Project/	Baseline emission calculation

Leakage emission calculations)	
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Manufacturer: ASTA Type: PT - 100 TAG: TTF701 Accuracy class: 0,1998% (error) Serial number: S502989 Calibration frequency: 5 years Date of last calibration: 26/03/2009 Validity: 26/03/2014
Measuring/ Reading/ Recording frequency:	Measured to determine the density of methane. The measurements are undertaken automatically and continuously by a gas flow meter, expressing LFG volumes in normalized cubic meters. The data is archived electronically.
Calculation method (if applicable):	N/A
QA/QC procedures applied:	Temperature transmitter is subject to regular maintenance and testing regime, in accordance to appropriate national standards. The calibration will be undertaken according with the manufacturer's recommendation.

SECTION E. Emission reductions calculation

E.1. Baseline emissions calculation

In BLFGE Project, the Baseline Emissions Calculation is the same value than the Emission Reductions Calculation, because the Project doesn't have emissions calculation and has no leakage, as explained in the next items.

Consequently, to calculate the baseline emissions to BLFGE Project we adopted the same formula than the emission reductions calculation, as presented below:

According with baseline methodology ACM0001 – version 02, Emission Reductions are calculated as follows:

$$ER_y = (MD_{project,\,y} - MD_{reg,\,y}) \times GWP_{CH4} + EG_y \times CEF + ET_y \times CEF_{thermal,\,y} \quad (1)$$

Where:
ER_y = Emission reductions achieved by the project activity during a given year y (tCO_2e);
$MD_{project,\,y}$ = Amount of methane actually destroyed/combusted during the year y (tCH_4);
$MD_{reg,\,y}$ = Amount of methane that would have been destroyed/combusted during the year y in the absence of the project activity (tCH_4);
GWP_{CH4} = Global Warming Potential value for methane (tCO_2e/tCH_4);
EG_y = Net quantity of electricity displaced during the year y (MWh)
$CEF_{electricity,\,y}$ = CO_2 emissions intensity of the electricity displaced (tCO_2e/MWh)
ET_y = Quantity of thermal energy displaced during the year y (TJ)
$CEF_{thermal,\,y}$ = CO_2 emissions intensity of the thermal energy displaced (tCO_2e/TJ).

$MD_{project,\ y}$ is calculated as the sum of methane flow destroyed in the flares, in the power house and in the heat generation, as follows:

$$MD_{project,\ y} = MD_{flared,\ y} + MD_{electricity,\ y} + MD_{thermal,\ y} \quad (2)$$

Where:
$MD_{flared,\ y}$ = quantity of methane destroyed in the flares in year *y* (tCH_4)
$MD_{electricity,\ y}$ = quantity of methane destroyed by the generation of electricity *y* (tCH_4);
$MD_{thermal,\ y}$ = quantity of methane destroyed for the generation of thermal energy in year *y* (tCH_4)

As the BLFGE does not use the methane to generate thermal energy, $MD_{thermal,\ y} = 0$.

$MD_{flared,\ y}$ is calculated as follows:

$$MD_{flared,\ y} = LFG_{flared,\ y} \times w_{CH4} \times D_{CH4} \times FE \quad (3)$$

Where:
$MD_{flared,y}$ = Quantity of methane destroyed by flaring (tCH_4);
$LFG_{flare,y}$ = Quantity of landfill gas flared during the year measured in cubic meters (Nm^3);
$w_{CH4,y}$ = Average methane fraction of the landfill gas as measured during the year and expressed as a fraction (m^3_{CH4}/m^3LFG)
FE = Flare efficiency (%);
D_{CH4} = Methane density expressed in tonnes of methane per cubic meter of methane (tCH_4/m^3_{CH4});

$MD_{electricity,\ y}$ is calculated as follows:

$$MD_{electricity,\ y} = LFG_{electricity,\ y} \times w_{CH4} \times D_{CH4} \quad (4)$$

Where:
$MD_{electricity,y}$ = Quantity of methane destroyed by generation of electricity (tCH_4);
$LFG_{flare,y}$ = quantity of landfill gas fed into electricity generator (Nm^3);
$w_{CH4,y}$ = Average methane fraction of the landfill gas as measured during the year and expressed as a fraction (m^3_{CH4}/m^3LFG)
D_{CH4} = Methane density expressed in tonnes of methane per cubic meter of methane (tCH_4/m^3_{CH4});

Thus, $MD_{project,\ y}$ is equal to:

$$MD_{project,\ y} = \left(LFG_{flared,\ y} \times w_{CH4} \times D_{CH4} \times FE\right) + \left(LFG_{electricity,\ y} \times w_{CH4} \times D_{CH4}\right) \quad (5.1)$$

$$MD_{project,\ y} = w_{CH4} \times D_{CH4} \times \left(LFG_{flared,\ y} \times FE + LFG_{electricity,\ y}\right) \quad (5.2)$$

The amount of methane that would have been destroyed/combusted during the year *y* in the absence of the project activity ($MD_{reg,\ y}$) is calculated adopting an "Adjustment Factor" (AF), as no regulatory or contractual requirements specifying a quantity of methane destruction exists. As will be presented below, the *AF* adopted for the 1st Crediting Period is equal to 20% of total gas collected. Thus, equation (1) is updated to:

$$ER_y = \left(MD_{project,y} - 0{,}2 \times MD_{project,y}\right) \times GWP_{CH4} + EG_y \times CEF \quad (6.1)$$

$$ER_y = \left(0{,}8 \times MD_{project,y}\right) \times GWP_{CH4} + EG_y \times CEF \quad (6.2)$$

A description and consideration of measurement uncertainties and error propagation are detailed step-by-step of the calculation is presented in the end of this item.

Calculation of FE – Flare Efficiency:

To calculate the Flare Efficiency, the following formulae were applied, based on the mass-balance (an Excel spreadsheet was evidenced to the Verification Team):

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

$$Flow_{methane} = Flow_{FIRi} \times \frac{\%_{methane}}{100}$$

Where:

- $Flow_{methane}$ = methane flow sent to the flare Fi (Nm^3/h);
- $Flow_{FIRi}$ = total flow measured by the flow-meter FIRi sent to the flare F_i (Nm^3/h);
- % methane = methane measured by the gas analyzer (%);

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

$$Flow_{remaining} = Flow_{FIRi} - Flow_{methane}$$

Where:

- $Flow_{remaining}$ = flow of residual gases sent to the flare F_i (Nm^3/h);

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

$$Flow_{Total} = Flow_{methane} + \left(Flow_{methane} \times air_{ratio}\right) + Flow_{remaining}$$

Where:

- $Flow_{total}$ = total gas sent to the flare F_i (Nm^3/h);
- air_{ratio} = theoretical air ratio[2];

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

[2] Air_{ratio} is equal to 5, as recommended by Hoffstetter, the flare manufacturer.

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

Where:

- $M_{methane}$ = amount of methane remaining in the exhaust gas (g), calculated using the result of the analysis;
- $CH_{4,eg}$ = methane concentration in the exhaust gas (mg/Nm^3) – data acquired from the analysis form the specialized company;

Calculate the Flare Efficiency (FE):

$$FE = \frac{\left(Flow_{methane} \times 0.7168\right) - \frac{M_{methane}}{1000}}{\left(Flow_{methane} \times 0.7168\right)} \times 100$$

Where:

- FE = Flare Efficiency (%);
- 0.7168 = density of methane, at STP (kg/Nm^3).

CORPLAB made four analyses of the methane content in the exhaust gas of the flares F100 and F200 on 23/10/2009, 22/01/2010, 27/04/2010 and 06/07/2010.

Flare	October/2009 [3]	January/2010[4]	April/2010[5]	July/2010[6]
F100	1.30 mg/Nm^3	0.90 mg/Nm^3	0.90 mg/Nm^3	1.00 mg/Nm^3
F200	1.60 mg/Nm^3	1.10 mg/Nm^3	1.00 mg/Nm^3	0.70 mg/Nm^3

Other parameters used to calculate the flare efficiency were:

Measurement	$Flow_{FIRi}$		Methane %	
	FIR200	FIR700	F100	F200
October/2009	300.00 Nm^3/h	560.00 Nm^3/h	48.2%	48.4%
January/2010	711.43Nm^3/h	812.31 Nm^3/h	47.3%	47.7%
April/2010	424.62 Nm^3/h	650.77 Nm^3/h	45.8%	46.0%
July/2010	595.38 Nm^3/h	849.23 Nm^3/h	47.8%	48.5%

The results were:

[3] The values presented from the analysis of October/2009 correspond to the highest value detected among 13 measurements

[4] The values presented from the analysis of January/2010 correspond to the highest value detected among 13 measurements

[5] The values presented from the analysis of April/2010 correspond to the highest value detected among 13 measurements

[6] The values presented from the analysis of July/2010 correspond to the highest value detected among 13 measurements

Measurement	Flare Efficiency Calculated	
	F100	F200
October/2009	99.99872%	99.99842%
January/2010	99.99911%	99.99891%
April/2010	99.99910%	99.99900%
July/2010	99.99901%	99.99931%

The flare efficiency assumed from 01/01/2010 to 21/01/2010 was 99.99842%, the flare efficiency assumed from 22/01/2010 to 27/04/2010 was 99.99891%, the flare efficiency assumed from 28/04/2010 to 0507/2010 was 99.99900% and the flare efficiency assumed from 06/07/2010 to 31/07/2010 was 99.99901% (the lowest efficiencies calculated).

Monitoring of the operation time of the flares is made continuously by the PLC and every 5 minutes the instantaneous temperature is registered by the supervisory system. In order to guarantee the real destruction of the gas, the flares are equipped with an automatic system which can detect the existence of flame. The following operational procedure is applied:

- a signal of gas being collected is sent to the PLC, which sends a signal to a solenoid valve;
- the valve is opened and a small amount of gas is delivered to an ignition burner;
- the ignition burner ignites the gas;
- an UV-sond (part of the ignition burner) verifies the existence of an stable flame – if not, the flare is stopped;
- if the stable flame detection is successful, the UV-sond sends a signal to the PLC, which then opens the main valve, located in the entrance of the flare;
- the main burner is ignited and gas began to be destroyed;
- after a few seconds, the ignition burner is switched off and UV-sond began to monitor the existence of flame in the flare – if no flame is detected, the flare will be automatically stopped by a signal sent from the UV-sond to the PLC;

According with the manufacturer, if the temperature of the flare is higher than 1,350°C, the flare will be stopped automatically and if the temperature is below 900°C an alarm is indicating the operator that the flare is running out of the specified combustion temperature range.

If the temperature decrease significantly from one registration to another (5 minutes interval), it means that the main valve is closed – the flare is stopped and no gas is being burned. It can be confirmed that no gas is being burned by the instant reading of gas flow from the flow-meter FIR200.

However, in some readings it was detected that the flare accepted gas, but with a combustion chamber temperature below 900°C. It happened because between a 5 minutes interval the flare might have stopped and turned on again (i.e. the flare was stopped at 10:01 and tuned on 10:04, not remaining enough time to register a temperature above 900°C). To discount the values below 900°C, the following procedure was applied:

- an hourly average of flares temperature was calculated, considering the temperature registers when the instant gas-flow was above 0 Nm3/h (flares are accepting gas);
- Gas flow (FIR 200) is considered for the CER calculation only in the case when:
  a) Both flares' temperature is above 900°C

b) One flare´s temperature is above 900°C and the other flare indicates ambient temperature (until 40° C)

Proper Excel sheets applying the above mentioned procedure were presented to the Verification Team.

Moreover, the flares are equipped with an hour-meter, which measures the accumulated operating hours of the flares. Despite of not being registered by BLFGE's computer supervisory system, Van der Wiel, one of Biogás shareholders, makes the registration of these accumulated operating hours of the flares every 00:01 via a CARS, a system which allows Van der Wiel to have total access to the PLC of BLFGE. This evidence was sent to the Verification Team.

For the whole monitoring period, the following table presents all measured data and the calculation of methane destroyed.

	MAIN PIPELINE							SECONDARY PIPELINE			ELECTRICITY GENERATION								
	COLLECTING SYSTEM				FLARE F100			FLARE F200			FIR300		FIR400		FIR500		FIR600		
DATE	LFG measured FIR100 (Nm^3)	Methane (%)	*Methane measured FIR100 (Nm^3)*	Flares Efficiencies (%)	LFG measured FIR200 (Nm^3)	*Methane measured FIR200 (Nm^3)*	*Methne Destroyed in F100 (Nm^3)*	LFG measured FIR700 (Nm^3)	*Methane measured FIR700 (Nm^3)*	*Methne Destroyed F200 (Nm^3)*	LFG measured (Nm^3)	*Methane measured (Nm^3)*	LFG measured (Nm^3)	*Methane measured (Nm^3)*	LFG measured (Nm^3)	*Methane measured (Nm^3)*	LFG measured (Nm^3)	*Methane measured (Nm^3)*	Eletricity Exported (MWh)
	A	B	*C = A . B*	D	E	*F = E . B*	*G = F . D*	H	*I = H . B*	*J = I . D*	K	*L = K . B*	M	*N = M . B*	O	*P = O . B*	Q	*R = Q . B*	S
01/01/2010	162,981	49.1458	*80,098.3162*	99.99842%	0	*0.0000*	*0.0000*	0	*0.0000*	*0.0000*	46,034	*22,623.7775*	35,535	*17,463.9600*	15,166	*7,453.4520*	61,977	*30,459.0924*	238.14
02/01/2010	159,111	49.9229	*79,432.8254*	99.99842%	1,102	*550.1503*	*550.1416*	0	*0.0000*	*0.0000*	45,846	*22,887.6527*	32,482	*16,215.9563*	17,518	*8,745.4936*	57,293	*28,602.3270*	225.12
03/01/2010	159,184	49.8552	*79,361.5015*	99.99842%	429	*213.8788*	*213.8754*	0	*0.0000*	*0.0000*	48,622	*24,240.5953*	33,229	*16,566.3844*	28,911	*14,413.6368*	39,152	*19,519.3079*	220.10
04/01/2010	162,775	48.8256	*79,475.8704*	99.99842%	1,958	*956.0052*	*955.9901*	0	*0.0000*	*0.0000*	40,304	*19,678.6698*	35,583	*17,373.6132*	32,574	*15,904.4509*	46,408	*22,658.9844*	230.88
05/01/2010	163,776	49.2302	*80,627.2523*	99.99842%	1,817	*894.5127*	*894.4985*	0	*0.0000*	*0.0000*	36,645	*18,040.4067*	35,391	*17,423.0600*	39,236	*19,315.9612*	46,215	*22,751.7369*	233.66
06/01/2010	166,357	49.0899	*81,664.4849*	99.99842%	498	*244.4677*	*244.4638*	0	*0.0000*	*0.0000*	54,748	*26,875.7384*	23,391	*11,482.6185*	38,574	*18,935.9380*	44,272	*21,733.0805*	240.45
07/01/2010	165,938	47.8687	*79,432.3634*	99.99842%	695	*332.6874*	*332.6821*	0	*0.0000*	*0.0000*	41,289	*19,764.5075*	23,414	*11,207.9774*	42,747	*20,462.4331*	57,214	*27,387.5980*	236.45
08/01/2010	167,434	47.8447	*80,108.2949*	99.99842%	827	*395.6756*	*395.6693*	0	*0.0000*	*0.0000*	40,948	*19,591.4477*	23,593	*11,288.0000*	43,417	*20,772.7333*	57,709	*27,610.6979*	238.02
09/01/2010	167,386	48.6763	*81,477.3115*	99.99842%	1,726	*840.1529*	*840.1396*	0	*0.0000*	*0.0000*	54,061	*26,314.8945*	16,073	*7,823.7416*	42,099	*20,492.2355*	50,223	*24,446.6981*	237.15
10/01/2010	169,081	48.4493	*81,918.5609*	99.99842%	2,242	*1,086.2333*	*1,086.2161*	0	*0.0000*	*0.0000*	50,119	*24,282.3046*	15,418	*7,469.9130*	49,723	*24,090.4454*	49,937	*24,194.1269*	236.99
11/01/2010	164,495	48.7638	*80,214.0128*	99.99842%	6,864	*3,347.1472*	*3,347.0944*	0	*0.0000*	*0.0000*	34,989	*17,061.9659*	32,176	*15,690.2402*	34,779	*16,959.5620*	42,158	*20,557.8428*	210.62
12/01/2010	168,396	49.0381	*82,578.1988*	99.99842%	3,471	*1,702.1124*	*1,702.0855*	0	*0.0000*	*0.0000*	50,611	*24,818.6727*	20,793	*10,196.4921*	44,686	*21,913.1653*	42,348	*20,766.6545*	228.70
13/01/2010	166,826	48.6861	*81,221.0731*	99.99842%	127	*61.8313*	*61.8303*	0	*0.0000*	*0.0000*	48,894	*23,804.5817*	27,373	*13,326.8461*	43,884	*21,365.4081*	42,607	*20,743.6866*	236.35
14/01/2010	169,103	48.1444	*81,413.6247*	99.99842%	0	*0.0000*	*0.0000*	0	*0.0000*	*0.0000*	49,770	*23,961.4678*	36,800	*17,717.1392*	29,707	*14,302.2569*	47,693	*22,961.5086*	240.51
15/01/2010	167,983	47.4270	*79,669.2974*	99.99842%	870	*412.6149*	*412.6083*	0	*0.0000*	*0.0000*	51,571	*24,458.5781*	23,393	*11,094.5981*	38,452	*18,236.6300*	50,819	*24,101.9271*	235.20
16/01/2010	165,390	46.9947	*77,724.5343*	99.99842%	2,796	*1,313.9718*	*1,313.9510*	0	*0.0000*	*0.0000*	44,815	*21,060.6748*	16,875	*7,930.3556*	48,324	*22,709.7188*	49,719	*23,365.2948*	227.14

	MAIN PIPELINE							SECONDARY PIPELINE			ELECTRICITY GENERATION								
	COLLECTING SYSTEM				FLARE F100			FLARE F200			FIR300		FIR400		FIR500		FIR600		
DATE	LFG measured FIR100 (Nm^3) A	Methane (%) B	*Methane measured FIR100 (Nm^3) C = A . B*	Flares Efficiencies (%) D	LFG measured FIR200 (Nm^3) E	*Methane measured FIR200 (Nm^3) F = E . B*	*Methne Destroyed in F100 (Nm^3) G = F . D*	LFG measured FIR700 (Nm^3) H	*Methane measured FIR700 (Nm^3) I = H . B*	*Methne Destroyed F200 (Nm^3) J = I . D*	LFG measured (Nm^3) K	*Methane measured (Nm^3) L = K . B*	LFG measured (Nm^3) M	*Methane measured (Nm^3) N = M . B*	LFG measured (Nm^3) O	*Methane measured (Nm^3) P = O . B*	LFG measured (Nm^3) Q	*Methane measured (Nm^3) R = Q . B*	Eletricity Exported (MWh) S
17/01/2010	155,720	47.7923	*74,422.1695*	99.99842%	3,146	*1,503.5457*	*1,503.5219*	0	*0.0000*	*0.0000*	40,822	*19,509.7727*	19,712	*9,420.8181*	48,709	*23,279.1514*	38,721	*18,505.6564*	214.88
18/01/2010	161,077	49.5899	*79,877.9232*	99.99842%	3,004	*1,489.6805*	*1,489.6570*	0	*0.0000*	*0.0000*	30,758	*15,252.8614*	29,843	*14,799.1138*	47,120	*23,366.7608*	43,970	*21,804.6790*	228.67
19/01/2010	162,115	48.7107	*78,967.3513*	99.99842%	605	*294.6997*	*294.6950*	0	*0.0000*	*0.0000*	34,112	*16,616.1939*	37,236	*18,137.9162*	44,774	*21,809.7288*	37,682	*18,355.1659*	236.51
20/01/2010	165,919	48.4170	*80,333.0022*	99.99842%	1,745	*844.8766*	*844.8632*	0	*0.0000*	*0.0000*	43,753	*21,183.8900*	30,633	*14,831.5796*	56,021	*27,123.6875*	22,304	*10,798.9276*	235.04
21/01/2010	171,321	47.1819	*80,832.5028*	99.99842%	914	*431.2425*	*431.2356*	0	*0.0000*	*0.0000*	37,738	*17,805.5054*	37,597	*17,738.9789*	42,036	*19,833.3834*	42,136	*19,880.5653*	240.22
22/01/2010	164,324	47.5003	*78,054.3929*	99.99891%	2,294	*1,089.6568*	*1,089.6449*	0	*0.0000*	*0.0000*	36,860	*17,508.6105*	31,607	*15,013.4198*	50,857	*24,157.2275*	38,317	*18,200.6899*	232.22
23/01/2010	161,587	49.0875	*79,319.0186*	99.99891%	628	*308.2695*	*308.2661*	0	*0.0000*	*0.0000*	48,216	*23,668.0290*	29,871	*14,662.9271*	41,819	*20,527.9016*	36,769	*18,048.9828*	232.48
24/01/2010	163,471	49.5319	*80,970.2922*	99.99891%	1,960	*970.8252*	*970.8146*	0	*0.0000*	*0.0000*	44,521	*22,052.0971*	40,273	*19,947.9820*	38,865	*19,250.5729*	30,516	*15,115.1546*	229.63
25/01/2010	161,271	49.2201	*79,377.7474*	99.99891%	1,019	*501.5528*	*501.5473*	0	*0.0000*	*0.0000*	43,336	*21,330.0225*	34,111	*16,789.4683*	45,466	*22,378.4106*	35,827	*17,634.0852*	236.74
26/01/2010	165,021	49.2982	*81,352.3826*	99.99891%	1,551	*764.6150*	*764.6066*	0	*0.0000*	*0.0000*	52,339	*25,802.1848*	23,028	*11,352.3894*	62,998	*31,056.8800*	22,375	*11,030.4722*	229.79
27/01/2010	163,969	48.8750	*80,139.8487*	99.99891%	1,517	*741.4337*	*741.4256*	0	*0.0000*	*0.0000*	40,109	*19,603.2737*	29,214	*14,278.3425*	53,353	*26,076.2787*	33,114	*16,184.4675*	221.57
28/01/2010	164,403	48.5888	*79,881.4448*	99.99891%	315	*153.0547*	*153.0530*	0	*0.0000*	*0.0000*	55,075	*26,760.2816*	32,700	*15,888.5376*	39,656	*19,268.3745*	30,238	*14,692.2813*	236.32
29/01/2010	163,946	48.7670	*79,951.5458*	99.99891%	632	*308.2074*	*308.2040*	0	*0.0000*	*0.0000*	48,686	*23,742.7016*	25,406	*12,389.7440*	46,824	*22,834.6600*	39,370	*19,199.5679*	235.17
30/01/2010	162,103	48.6802	*78,912.0646*	99.99891%	0	*0.0000*	*0.0000*	0	*0.0000*	*0.0000*	39,876	*19,411.7165*	31,573	*15,369.7995*	42,286	*20,584.9093*	44,310	*21,570.1966*	224.64
31/01/2010	160,516	48.8031	*78,336.7839*	99.99891%	1,115	*544.1545*	*544.1485*	0	*0.0000*	*0.0000*	43,318	*21,140.5268*	28,646	*13,980.1360*	38,986	*19,026.3765*	43,698	*21,325.9786*	220.38
01/02/2010	159,366	49.0645	*78,192.1310*	99.99891%	1,511	*741.3645*	*741.3564*	0	*0.0000*	*0.0000*	38,248	*18,766.1899*	33,423	*16,398.8278*	49,311	*24,194.1955*	26,410	*12,957.9344*	214.53
02/02/2010	157,910	49.1430	*77,601.7113*	99.99891%	4,325	*2,125.4347*	*2,125.4115*	0	*0.0000*	*0.0000*	51,201	*25,161.7074*	30,729	*15,101.1524*	40,424	*19,865.5663*	23,143	*11,373.1644*	210.50

	MAIN PIPELINE							SECONDARY PIPELINE			ELECTRICITY GENERATION								
	COLLECTING SYSTEM				FLARE F100			FLARE F200			FIR300		FIR400		FIR500		FIR600		
DATE	LFG measured FIR100 (Nm^3)	Methane (%)	*Methane measured FIR100 (Nm^3)*	Flares Efficiencies (%)	LFG measured FIR200 (Nm^3)	*Methane measured FIR200 (Nm^3)*	*Methne Destroyed in F100 (Nm^3)*	LFG measured FIR700 (Nm^3)	*Methane measured FIR700 (Nm^3)*	*Methne Destroyed F200 (Nm^3)*	LFG measured (Nm^3)	*Methane measured (Nm^3)*	LFG measured (Nm^3)	*Methane measured (Nm^3)*	LFG measured (Nm^3)	*Methane measured (Nm^3)*	LFG measured (Nm^3)	*Methane measured (Nm^3)*	Eletricity Exported (MWh)
	A	B	*C = A . B*	D	E	*F = E . B*	*G = F . D*	H	*I = H . B*	*J = I . D*	K	*L = K . B*	M	*N = M . B*	O	*P = O . B*	Q	*R = Q . B*	S
03/02/2010	159,834	49.1572	*78,569.9190*	99.99891%	3,288	*1,616.2887*	*1,616.2710*	0	*0.0000*	*0.0000*	45,798	*22,513.0144*	28,810	*14,162.1893*	50,131	*24,642.9959*	26,998	*13,271.4608*	227.33
04/02/2010	162,797	48.3659	*78,738.2342*	99.99891%	3,831	*1,852.8976*	*1,852.8774*	0	*0.0000*	*0.0000*	40,372	*19,526.2811*	30,032	*14,525.2470*	44,159	*21,357.8977*	39,662	*19,182.8832*	228.29
05/02/2010	163,519	49.1336	*80,342.7713*	99.99891%	2,305	*1,132.5294*	*1,132.5170*	0	*0.0000*	*0.0000*	43,253	*21,251.7560*	33,458	*16,439.1198*	32,912	*16,170.8504*	44,567	*21,897.3715*	230.78
06/02/2010	159,503	49.0427	*78,224.5777*	99.99891%	1,973	*967.6124*	*967.6018*	0	*0.0000*	*0.0000*	48,603	*23,836.2234*	32,976	*16,172.3207*	32,922	*16,145.8376*	35,735	*17,525.4088*	224.54
07/02/2010	163,678	48.5277	*79,429.1688*	99.99891%	2,993	*1,452.4340*	*1,452.4181*	0	*0.0000*	*0.0000*	49,622	*24,080.4152*	34,192	*16,592.5911*	32,509	*15,775.8699*	37,519	*18,207.1077*	227.78
08/02/2010	162,698	48.1527	*78,343.4798*	99.99891%	7,171	*3,453.0301*	*3,452.9924*	0	*0.0000*	*0.0000*	49,032	*23,610.2318*	28,043	*13,503.4616*	45,046	*21,690.8652*	28,912	*13,921.9086*	220.90
09/02/2010	163,188	48.0840	*78,467.3179*	99.99891%	9,854	*4,738.1973*	*4,738.1456*	0	*0.0000*	*0.0000*	51,572	*24,797.8804*	24,550	*11,804.6220*	39,883	*19,177.3417*	32,475	*15,615.2790*	214.18
10/02/2010	162,031	47.0135	*76,176.4441*	99.99891%	1,329	*624.8094*	*624.8025*	0	*0.0000*	*0.0000*	45,888	*21,573.5548*	32,232	*15,153.3913*	48,910	*22,994.3028*	32,373	*15,219.6803*	224.45
11/02/2010	162,417	47.0826	*76,470.1464*	99.99891%	4,213	*1,983.5899*	*1,983.5682*	0	*0.0000*	*0.0000*	55,493	*26,127.5472*	26,876	*12,653.9195*	46,024	*21,669.2958*	28,371	*13,357.8044*	221.25
12/02/2010	165,040	47.8677	*79,000.6950*	99.99891%	2,594	*1,241.6881*	*1,241.6745*	0	*0.0000*	*0.0000*	50,265	*24,060.6994*	26,713	*12,786.8987*	40,917	*19,586.0268*	44,265	*21,188.6374*	226.53
13/02/2010	169,164	47.5805	*80,489.0918*	99.99891%	4,505	*2,143.5015*	*2,143.4781*	0	*0.0000*	*0.0000*	47,743	*22,716.3581*	20,487	*9,747.8170*	48,951	*23,291.1305*	46,386	*22,070.6907*	224.10
14/02/2010	166,064	47.2944	*78,539.2014*	99.99891%	4,524	*2,139.5986*	*2,139.5752*	0	*0.0000*	*0.0000*	57,662	*27,270.8969*	20,360	*9,629.1398*	39,639	*18,747.0272*	43,153	*20,408.9524*	222.75
15/02/2010	168,128	47.1371	*79,250.6634*	99.99891%	3,264	*1,538.5549*	*1,538.5381*	0	*0.0000*	*0.0000*	40,276	*18,984.9383*	32,600	*15,366.6946*	43,255	*20,389.1526*	44,345	*20,902.9469*	222.85
16/02/2010	163,406	46.8149	*76,498.3554*	99.99891%	1,631	*763.5510*	*763.5426*	0	*0.0000*	*0.0000*	41,496	*19,426.3109*	43,166	*20,208.1197*	41,770	*19,554.5837*	33,224	*15,553.7823*	226.85
17/02/2010	166,151	46.1420	*76,665.3944*	99.99891%	1,054	*486.3366*	*486.3312*	0	*0.0000*	*0.0000*	35,835	*16,534.9857*	46,096	*21,269.6163*	42,675	*19,691.0985*	39,961	*18,438.8046*	230.85
18/02/2010	171,312	46.5298	*79,711.1309*	99.99891%	1,355	*630.4787*	*630.4718*	0	*0.0000*	*0.0000*	53,558	*24,920.4302*	35,781	*16,648.8277*	44,961	*20,920.2633*	32,240	*15,001.2075*	233.92
19/02/2010	166,265	47.2642	*78,583.8221*	99.99891%	573	*270.8238*	*270.8208*	0	*0.0000*	*0.0000*	44,525	*21,044.3850*	36,948	*17,463.1766*	40,965	*19,361.7795*	39,265	*18,558.2881*	229.54

	MAIN PIPELINE							SECONDARY PIPELINE			ELECTRICITY GENERATION								
	COLLECTING SYSTEM				FLARE F100			FLARE F200			FIR300		FIR400		FIR500		FIR600		
DATE	LFG measured FIR100 (Nm^3)	Methane (%)	*Methane measured FIR100 (Nm^3)*	Flares Efficiencies (%)	LFG measured FIR200 (Nm^3)	*Methane measured FIR200 (Nm^3)*	*Methne Destroyed in F100 (Nm^3)*	LFG measured FIR700 (Nm^3)	*Methane measured FIR700 (Nm^3)*	*Methne Destroyed F200 (Nm^3)*	LFG measured (Nm^3)	*Methane measured (Nm^3)*	LFG measured (Nm^3)	*Methane measured (Nm^3)*	LFG measured (Nm^3)	*Methane measured (Nm^3)*	LFG measured (Nm^3)	*Methane measured (Nm^3)*	Eletricity Exported (MWh)
	A	B	*C = A . B*	D	E	*F = E . B*	*G = F . D*	H	*I = H . B*	*J = I . D*	K	*L = K . B*	M	*N = M . B*	O	*P = O . B*	Q	*R = Q . B*	S
20/02/2010	162,759	48.9232	*79,626.9110*	99.99891%	1,296	*634.0446*	*634.0376*	0	*0.0000*	*0.0000*	41,129	*20,121.6229*	32,604	*15,950.9201*	44,143	*21,596.1681*	39,206	*19,180.8297*	235.74
21/02/2010	163,323	48.8510	*79,784.9187*	99.99891%	4,798	*2,343.8709*	*2,343.8453*	0	*0.0000*	*0.0000*	41,232	*20,142.2443*	38,297	*18,708.4674*	39,406	*19,250.2250*	32,985	*16,113.5023*	223.68
22/02/2010	162,624	48.2190	*78,415.6665*	99.99891%	4,083	*1,968.7817*	*1,968.7602*	0	*0.0000*	*0.0000*	41,918	*20,212.4404*	36,447	*17,574.3789*	47,199	*22,758.8858*	30,209	*14,566.4777*	226.05
23/02/2010	168,829	47.4222	*80,062.4260*	99.99891%	3,039	*1,441.1606*	*1,441.1448*	0	*0.0000*	*0.0000*	38,411	*18,215.3412*	36,751	*17,428.1327*	56,108	*26,607.6479*	28,513	*13,521.4918*	227.04
24/02/2010	170,964	46.1194	*78,847.5710*	99.99891%	4,926	*2,271.8416*	*2,271.8168*	0	*0.0000*	*0.0000*	33,518	*15,458.3004*	44,043	*20,312.3673*	56,044	*25,847.1565*	29,511	*13,610.2961*	226.59
25/02/2010	168,153	46.1493	*77,601.4324*	99.99891%	1,022	*471.6458*	*471.6406*	0	*0.0000*	*0.0000*	44,959	*20,748.2637*	29,788	*13,746.9534*	61,621	*28,437.6601*	28,695	*13,242.5416*	226.62
26/02/2010	169,162	46.3187	*78,353.6392*	99.99891%	805	*372.8655*	*372.8614*	0	*0.0000*	*0.0000*	43,531	*20,162.9932*	26,934	*12,475.4786*	64,569	*29,907.5214*	32,426	*15,019.3016*	230.75
27/02/2010	161,651	47.3062	*76,470.9453*	99.99891%	555	*262.5494*	*262.5465*	0	*0.0000*	*0.0000*	52,221	*24,703.7707*	29,398	*13,907.0766*	42,144	*19,936.7249*	32,712	*15,474.8041*	224.90
28/02/2010	166,220	46.8711	*77,909.1424*	99.99891%	875	*410.1221*	*410.1176*	0	*0.0000*	*0.0000*	44,347	*20,785.9267*	21,540	*10,096.0349*	51,731	*24,246.8887*	47,700	*22,357.5147*	228.70
01/03/2010	167,463	47.3833	*79,349.4956*	99.99891%	1,053	*498.9461*	*498.9406*	0	*0.0000*	*0.0000*	47,017	*22,278.2061*	22,088	*10,466.0233*	45,807	*21,704.8682*	48,898	*23,169.4860*	229.06
02/03/2010	165,274	48.3506	*79,910.9706*	99.99891%	434	*209.8416*	*209.8393*	0	*0.0000*	*0.0000*	49,614	*23,988.6666*	20,328	*9,828.7099*	50,722	*24,524.3913*	40,774	*19,714.4736*	220.29
03/03/2010	165,357	48.6840	*80,502.4018*	99.99891%	890	*433.2876*	*433.2828*	0	*0.0000*	*0.0000*	56,065	*27,294.6846*	26,388	*12,846.7339*	36,222	*17,634.3184*	38,286	*18,639.1562*	188.99
04/03/2010	163,132	48.3100	*78,809.0692*	99.99891%	236	*114.0116*	*114.0103*	0	*0.0000*	*0.0000*	47,469	*22,932.2739*	26,469	*12,787.1739*	47,794	*23,089.2814*	39,120	*18,898.8720*	221.82
05/03/2010	174,742	47.1371	*82,368.5175*	99.99891%	703	*331.3738*	*331.3701*	0	*0.0000*	*0.0000*	41,528	*19,575.0948*	22,888	*10,788.7394*	55,038	*25,943.3170*	53,280	*25,114.6468*	230.18
06/03/2010	174,748	46.2968	*80,902.5946*	99.99891%	758	*350.9297*	*350.9258*	0	*0.0000*	*0.0000*	61,336	*28,396.6052*	23,985	*11,104.2874*	39,811	*18,431.2190*	48,632	*22,515.0597*	239.94
07/03/2010	166,024	46.9982	*78,028.2915*	99.99891%	14,463	*6,797.3496*	*6,797.2755*	0	*0.0000*	*0.0000*	47,639	*22,389.4724*	23,152	*10,881.0232*	42,412	*19,932.8765*	36,334	*17,076.3259*	207.20
08/03/2010	166,722	46.9347	*78,250.4705*	99.99891%	2,472	*1,160.2257*	*1,160.2130*	0	*0.0000*	*0.0000*	48,261	*22,651.1555*	24,268	*11,390.1129*	49,772	*23,360.3388*	40,422	*18,971.9444*	225.06

	MAIN PIPELINE							SECONDARY PIPELINE			ELECTRICITY GENERATION								
	COLLECTING SYSTEM				FLARE F100			FLARE F200			FIR300		FIR400		FIR500		FIR600		
DATE	LFG measured FIR100 (Nm^3) A	Methane (%) B	*Methane measured FIR100 (Nm^3) C = A . B*	Flares Efficiencies (%) D	LFG measured FIR200 (Nm^3) E	*Methane measured FIR200 (Nm^3) F = E . B*	*Methne Destroyed in F100 (Nm^3) G = F . D*	LFG measured FIR700 (Nm^3) H	*Methane measured FIR700 (Nm^3) I = H . B*	*Methne Destroyed F200 (Nm^3) J = I . D*	LFG measured (Nm^3) K	*Methane measured (Nm^3) L = K . B*	LFG measured (Nm^3) M	*Methane measured (Nm^3) N = M . B*	LFG measured (Nm^3) O	*Methane measured (Nm^3) P = O . B*	LFG measured (Nm^3) Q	*Methane measured (Nm^3) R = Q . B*	Eletricity Exported (MWh) S
09/03/2010	165,741	47.0451	*77,973.0191*	99.99891%	3,782	*1,779.2456*	*1,779.2262*	0	*0.0000*	*0.0000*	39,742	*18,696.6636*	25,312	*11,908.0557*	57,788	*27,186.4223*	36,002	*16,937.1769*	219.42
10/03/2010	162,666	47.5614	*77,366.2269*	99.99891%	3,537	*1,682.2467*	*1,682.2283*	0	*0.0000*	*0.0000*	40,778	*19,394.5876*	31,442	*14,954.2553*	49,563	*23,572.8566*	33,211	*15,795.6165*	217.95
11/03/2010	158,367	48.3024	*76,495.0618*	99.99891%	4,436	*2,142.6944*	*2,142.6710*	0	*0.0000*	*0.0000*	36,916	*17,831.3139*	25,876	*12,498.7290*	59,183	*28,586.8093*	31,778	*15,349.5366*	215.01
12/03/2010	163,442	48.0302	*78,501.5194*	99.99891%	4,483	*2,153.1938*	*2,153.1703*	0	*0.0000*	*0.0000*	44,894	*21,562.6779*	24,218	*11,631.9538*	62,062	*29,808.5027*	26,236	*12,601.2032*	218.02
13/03/2010	169,223	46.5760	*78,817.4063*	99.99891%	461	*214.7153*	*214.7129*	0	*0.0000*	*0.0000*	45,396	*21,143.6409*	25,419	*11,839.1534*	69,812	*32,515.6371*	27,938	*13,012.4028*	224.29
14/03/2010	164,869	47.4125	*78,168.5146*	99.99891%	3,621	*1,716.8066*	*1,716.7878*	0	*0.0000*	*0.0000*	30,997	*14,696.4526*	26,902	*12,754.9107*	52,767	*25,018.1538*	39,706	*18,825.6072*	194.78
15/03/2010	170,811	47.7958	*81,640.4839*	99.99891%	873	*417.2573*	*417.2527*	0	*0.0000*	*0.0000*	36,593	*17,489.9170*	41,883	*20,018.3149*	57,316	*27,394.6407*	31,630	*15,117.8115*	229.63
16/03/2010	169,587	46.7559	*79,291.9281*	99.99891%	162	*75.7445*	*75.7436*	0	*0.0000*	*0.0000*	25,443	*11,896.1036*	49,740	*23,256.3846*	60,114	*28,106.8417*	33,723	*15,767.4921*	226.82
17/03/2010	166,174	47.4923	*78,919.8546*	99.99891%	712	*338.1451*	*338.1414*	0	*0.0000*	*0.0000*	44,083	*20,936.0306*	33,707	*16,008.2295*	50,980	*24,211.5745*	36,577	*17,371.2585*	222.30
18/03/2010	164,422	48.2052	*79,259.9539*	99.99891%	2,828	*1,363.2430*	*1,363.2281*	0	*0.0000*	*0.0000*	34,131	*16,452.9168*	27,363	*13,190.3888*	60,040	*28,942.4020*	38,581	*18,598.0482*	218.46
19/03/2010	164,402	48.1534	*79,165.1526*	99.99891%	2,166	*1,043.0026*	*1,042.9912*	0	*0.0000*	*0.0000*	30,837	*14,849.0639*	37,725	*18,165.8701*	52,094	*25,085.0321*	39,645	*19,090.4154*	222.82
20/03/2010	167,845	47.5996	*79,893.5486*	99.99891%	942	*448.3882*	*448.3833*	0	*0.0000*	*0.0000*	33,053	*15,733.0957*	44,039	*20,962.3878*	57,854	*27,538.2725*	30,549	*14,541.2018*	229.44
21/03/2010	166,584	46.9972	*78,289.8156*	99.99891%	450	*211.4874*	*211.4850*	0	*0.0000*	*0.0000*	48,886	*22,975.0511*	34,994	*16,446.2001*	59,238	*27,840.2013*	17,936	*8,429.4177*	220.67
22/03/2010	171,082	46.6493	*79,808.4971*	99.99891%	1,721	*802.8344*	*802.8256*	0	*0.0000*	*0.0000*	46,290	*21,593.9609*	28,344	*13,222.2775*	56,953	*26,568.1758*	37,306	*17,402.9878*	221.54
23/03/2010	166,445	46.7638	*77,836.0069*	99.99891%	868	*405.9097*	*405.9052*	0	*0.0000*	*0.0000*	48,576	*22,715.9834*	38,169	*17,849.2748*	38,935	*18,207.4855*	34,659	*16,207.8654*	216.32
24/03/2010	165,760	47.3694	*78,519.5174*	99.99891%	1,482	*702.0145*	*702.0068*	0	*0.0000*	*0.0000*	50,759	*24,044.2337*	31,226	*14,791.5688*	35,926	*17,017.9306*	44,182	*20,928.7483*	217.79
25/03/2010	166,711	46.6579	*77,783.8516*	99.99891%	819	*382.1282*	*382.1240*	0	*0.0000*	*0.0000*	55,757	*26,015.0453*	34,724	*16,201.4891*	35,301	*16,470.7052*	36,884	*17,209.2998*	218.69

	MAIN PIPELINE							SECONDARY PIPELINE			ELECTRICITY GENERATION								
	COLLECTING SYSTEM				FLARE F100			FLARE F200			FIR300		FIR400		FIR500		FIR600		
DATE	LFG measured FIR100 (Nm^3) A	Methane (%) B	*Methane measured FIR100 (Nm^3) C = A . B*	Flares Efficiencies (%) D	LFG measured FIR200 (Nm^3) E	*Methane measured FIR200 (Nm^3) F = E . B*	*Methne Destroyed in F100 (Nm^3) G = F . D*	LFG measured FIR700 (Nm^3) H	*Methane measured FIR700 (Nm^3) I = H . B*	*Methne Destroyed F200 (Nm^3) J = I . D*	LFG measured (Nm^3) K	*Methane measured (Nm^3) L = K . B*	LFG measured (Nm^3) M	*Methane measured (Nm^3) N = M . B*	LFG measured (Nm^3) O	*Methane measured (Nm^3) P = O . B*	LFG measured (Nm^3) Q	*Methane measured (Nm^3) R = Q . B*	Eletricity Exported (MWh) S
26/03/2010	163,899	47.8947	*78,498.9343*	99.99891%	361	*172.8998*	*172.8979*	0	*0.0000*	*0.0000*	55,712	*26,683.0952*	24,281	*11,629.3121*	38,316	*18,351.3332*	42,639	*20,421.8211*	216.74
27/03/2010	161,057	48.8722	*78,712.0991*	99.99891%	192	*93.8346*	*93.8335*	0	*0.0000*	*0.0000*	54,742	*26,753.6197*	24,451	*11,949.7416*	35,120	*17,163.9166*	46,103	*22,531.5503*	217.31
28/03/2010	161,327	48.9968	*79,045.0675*	99.99891%	653	*319.9491*	*319.9456*	0	*0.0000*	*0.0000*	54,939	*26,918.3519*	24,363	*11,937.0903*	43,304	*21,217.5742*	37,722	*18,482.5728*	218.53
29/03/2010	159,338	48.7812	*77,726.9884*	99.99891%	2,098	*1,023.4295*	*1,023.4183*	0	*0.0000*	*0.0000*	50,077	*24,428.1615*	28,207	*13,759.7130*	43,952	*21,440.3130*	33,716	*16,447.0693*	214.69
30/03/2010	156,819	49.2038	*77,160.9071*	99.99891%	398	*195.8311*	*195.8289*	0	*0.0000*	*0.0000*	52,926	*26,041.6031*	22,885	*11,260.2896*	30,068	*14,794.5985*	48,228	*23,730.0086*	217.73
31/03/2010	156,502	48.9277	*76,572.8290*	99.99891%	1,854	*907.1195*	*907.1096*	0	*0.0000*	*0.0000*	50,866	*24,887.5638*	23,534	*11,514.6449*	31,376	*15,351.5551*	48,185	*23,575.8122*	216.64
01/04/2010	161,820	47.8416	*77,417.2771*	99.99891%	221	*105.7299*	*105.7287*	0	*0.0000*	*0.0000*	37,639	*18,007.0998*	24,790	*11,859.9326*	48,237	*23,077.3525*	50,369	*24,097.3355*	218.78
02/04/2010	167,508	47.4777	*79,528.9457*	99.99891%	2,405	*1,141.8386*	*1,141.8261*	0	*0.0000*	*0.0000*	44,603	*21,176.4785*	27,814	*13,205.4474*	38,825	*18,433.2170*	45,933	*21,807.9319*	213.66
03/04/2010	162,843	47.6236	*77,551.6989*	99.99891%	903	*430.0411*	*430.0364*	0	*0.0000*	*0.0000*	37,667	*17,938.3814*	29,157	*13,885.6130*	50,445	*24,023.7250*	43,721	*20,821.5141*	217.34
04/04/2010	163,519	48.2930	*78,968.2306*	99.99891%	1,124	*542.8133*	*542.8073*	0	*0.0000*	*0.0000*	44,064	*21,279.8275*	29,103	*14,054.7117*	47,555	*22,965.7361*	36,036	*17,402.8654*	217.79
05/04/2010	161,651	47.9135	*77,452.6518*	99.99891%	466	*223.2769*	*223.2744*	0	*0.0000*	*0.0000*	47,723	*22,865.7596*	29,150	*13,966.7852*	41,553	*19,909.4966*	40,520	*19,414.5502*	220.10
06/04/2010	165,500	47.4975	*78,608.3625*	99.99891%	0	*0.0000*	*0.0000*	0	*0.0000*	*0.0000*	40,989	*19,468.7502*	29,304	*13,918.6674*	62,012	*29,454.1497*	32,685	*15,524.5578*	226.69
07/04/2010	161,415	47.7972	*77,151.8503*	99.99891%	1,139	*544.4101*	*544.4041*	0	*0.0000*	*0.0000*	43,951	*21,007.3473*	21,036	*10,054.6189*	62,395	*29,823.0629*	32,819	*15,686.5630*	219.30
08/04/2010	165,386	47.4250	*78,434.3105*	99.99891%	378	*179.2665*	*179.2645*	0	*0.0000*	*0.0000*	42,912	*20,351.0160*	24,014	*11,388.6395*	60,272	*28,583.9960*	35,150	*16,669.8875*	221.70
09/04/2010	165,253	46.4788	*76,807.6113*	99.99891%	656	*304.9009*	*304.8975*	0	*0.0000*	*0.0000*	49,792	*23,142.7240*	24,759	*11,507.6860*	50,065	*23,269.6112*	38,061	*17,690.2960*	218.72
10/04/2010	169,054	46.3156	*78,298.3744*	99.99891%	259	*119.9574*	*119.9560*	0	*0.0000*	*0.0000*	35,335	*16,365.6172*	29,495	*13,660.7862*	50,443	*23,362.9781*	50,049	*23,180.4946*	218.78
11/04/2010	158,367	46.1475	*73,082.4113*	99.99891%	4,191	*1,934.0417*	*1,934.0206*	0	*0.0000*	*0.0000*	36,916	*17,035.8111*	25,876	*11,941.1271*	59,183	*27,311.4749*	31,778	*14,664.7525*	218.56

	MAIN PIPELINE							SECONDARY PIPELINE			ELECTRICITY GENERATION								
	COLLECTING SYSTEM				FLARE F100			FLARE F200			FIR300		FIR400		FIR500		FIR600		
DATE	LFG measured FIR100 (Nm^3)	Methane (%)	*Methane measured FIR100 (Nm^3)*	Flares Efficiencies (%)	LFG measured FIR200 (Nm^3)	*Methane measured FIR200 (Nm^3)*	*Methne Destroyed in F100 (Nm^3)*	LFG measured FIR700 (Nm^3)	*Methane measured FIR700 (Nm^3)*	*Methne Destroyed F200 (Nm^3)*	LFG measured (Nm^3)	*Methane measured (Nm^3)*	LFG measured (Nm^3)	*Methane measured (Nm^3)*	LFG measured (Nm^3)	*Methane measured (Nm^3)*	LFG measured (Nm^3)	*Methane measured (Nm^3)*	Eletricity Exported (MWh)
	A	B	*C = A . B*	D	E	*F = E . B*	*G = F . D*	H	*I = H . B*	*J = I . D*	K	*L = K . B*	M	*N = M . B*	O	*P = O . B*	Q	*R = Q . B*	S
12/04/2010	162,503	47.0937	*76,528.6753*	99.99891%	328	*154.4673*	*154.4656*	0	*0.0000*	*0.0000*	40,183	*18,923.6614*	24,228	*11,409.8616*	44,464	*20,939.7427*	48,681	*22,925.6840*	212.80
13/04/2010	157,107	47.8920	*75,241.6844*	99.99891%	261	*124.9981*	*124.9967*	0	*0.0000*	*0.0000*	40,081	*19,195.5925*	21,027	*10,070.2508*	46,460	*22,250.6232*	46,579	*22,307.6146*	211.46
14/04/2010	159,801	47.8090	*76,399.3198*	99.99891%	573	*273.9455*	*273.9425*	0	*0.0000*	*0.0000*	22,724	*10,864.1171*	50,536	*24,160.7562*	45,635	*21,817.6371*	39,706	*18,983.0415*	213.50
15/04/2010	157,515	47.8204	*75,324.3030*	99.99891%	553	*264.4468*	*264.4439*	0	*0.0000*	*0.0000*	38,200	*18,267.3928*	23,560	*11,266.4862*	48,329	*23,111.1211*	45,926	*21,961.9969*	216.51
16/04/2010	160,125	47.9548	*76,787.6235*	99.99891%	350	*167.8418*	*167.8399*	0	*0.0000*	*0.0000*	33,562	*16,094.5899*	38,345	*18,388.2680*	38,667	*18,542.6825*	39,624	*19,001.6099*	213.54
17/04/2010	150,580	48.0677	*72,380.3426*	99.99891%	1,043	*501.3461*	*501.3406*	0	*0.0000*	*0.0000*	27,169	*13,059.5134*	44,332	*21,309.3727*	47,100	*22,639.8867*	28,177	*13,544.0358*	209.73
18/04/2010	153,700	47.9434	*73,689.0058*	99.99891%	1,425	*683.1934*	*683.1859*	0	*0.0000*	*0.0000*	43,320	*20,769.0808*	32,479	*15,571.5368*	39,121	*18,755.9375*	33,649	*16,132.4746*	208.83
19/04/2010	149,481	48.3850	*72,326.3818*	99.99891%	531	*256.9243*	*256.9214*	0	*0.0000*	*0.0000*	38,588	*18,670.8038*	33,642	*16,277.6817*	40,302	*19,500.1227*	33,147	*16,038.1759*	208.80
20/04/2010	152,218	47.9159	*72,936.6246*	99.99891%	454	*217.5381*	*217.5357*	0	*0.0000*	*0.0000*	50,740	*24,312.5276*	29,054	*13,921.4855*	45,168	*21,642.6537*	26,365	*12,633.0270*	215.42
21/04/2010	154,915	46.8093	*72,514.6270*	99.99891%	1,248	*584.1800*	*584.1736*	0	*0.0000*	*0.0000*	44,915	*21,024.3970*	30,628	*14,336.7524*	49,768	*23,296.0524*	27,358	*12,806.0882*	212.83
22/04/2010	150,866	46.6076	*70,315.0218*	99.99891%	2,783	*1,297.0895*	*1,297.0753*	0	*0.0000*	*0.0000*	50,322	*23,453.8764*	24,926	*11,617.4103*	46,708	*21,769.4778*	25,491	*11,880.7433*	206.05
23/04/2010	156,613	46.3739	*72,627.5560*	99.99891%	3,328	*1,543.3233*	*1,543.3064*	0	*0.0000*	*0.0000*	45,991	*21,327.8203*	30,306	*14,054.0741*	33,241	*15,415.1480*	40,073	*18,583.4129*	205.95
24/04/2010	154,009	47.3420	*72,910.9407*	99.99891%	1,738	*822.8039*	*822.7949*	0	*0.0000*	*0.0000*	50,129	*23,732.0711*	34,543	*16,353.3470*	19,954	*9,446.6226*	43,306	*20,501.9265*	208.03
25/04/2010	151,256	47.9677	*72,554.0243*	99.99891%	1,835	*880.2072*	*880.1976*	0	*0.0000*	*0.0000*	43,181	*20,712.9325*	38,411	*18,424.8732*	34,835	*16,709.5482*	31,128	*14,931.3856*	210.11
26/04/2010	159,980	47.8638	*76,572.5072*	99.99891%	2,019	*966.3701*	*966.3595*	0	*0.0000*	*0.0000*	37,807	*18,095.8668*	36,872	*17,648.3403*	42,160	*20,179.3780*	32,760	*15,680.1808*	210.98
27/04/2010	155,459	46.5246	*72,326.6779*	99.99891%	505	*234.9492*	*234.9466*	0	*0.0000*	*0.0000*	44,609	*20,754.1588*	46,120	*21,457.1455*	29,028	*13,505.1608*	34,827	*16,203.1224*	216.58
28/04/2010	159,449	46.1961	*73,659.2194*	99.99890%	322	*148.7514*	*148.7497*	0	*0.0000*	*0.0000*	42,566	*19,663.8319*	42,743	*19,745.5990*	22,418	*10,356.2416*	49,151	*22,705.8451*	215.30

	MAIN PIPELINE							SECONDARY PIPELINE			ELECTRICITY GENERATION								
	COLLECTING SYSTEM				FLARE F100			FLARE F200			FIR300		FIR400		FIR500		FIR600		
DATE	LFG measured FIR100 (Nm^3) A	Methane (%) B	*Methane measured FIR100 (Nm^3) C = A . B*	Flares Efficiencies (%) D	LFG measured FIR200 (Nm^3) E	*Methane measured FIR200 (Nm^3) F = E . B*	*Methne Destroyed in F100 (Nm^3) G = F . D*	LFG measured FIR700 (Nm^3) H	*Methane measured FIR700 (Nm^3) I = H . B*	*Methne Destroyed F200 (Nm^3) J = I . D*	LFG measured (Nm^3) K	*Methane measured (Nm^3) L = K . B*	LFG measured (Nm^3) M	*Methane measured (Nm^3) N = M . B*	LFG measured (Nm^3) O	*Methane measured (Nm^3) P = O . B*	LFG measured (Nm^3) Q	*Methane measured (Nm^3) R = Q . B*	Eletricity Exported (MWh) S
29/04/2010	162,778	46.0378	*74,939.4100*	99.99890%	946	*435.5175*	*435.5127*	0	*0.0000*	*0.0000*	39,168	*18,032.0855*	35,752	*16,459.4342*	34,916	*16,074.5582*	46,197	*21,268.0824*	207.97
30/04/2010	161,664	45.5538	*73,644.0952*	99.99890%	686	*312.4990*	*312.4955*	0	*0.0000*	*0.0000*	32,740	*14,914.3141*	50,626	*23,062.0667*	31,031	*14,135.7996*	42,584	*19,398.6301*	213.92
01/05/2010	157,691	46.3552	*73,097.9784*	99.99890%	1,103	*511.2978*	*511.2921*	0	*0.0000*	*0.0000*	20,773	*9,629.3656*	47,550	*22,041.8976*	25,579	*11,857.1966*	60,957	*28,256.7392*	211.10
02/05/2010	153,865	47.0024	*72,320.2427*	99.99890%	2,490	*1,170.3597*	*1,170.3468*	0	*0.0000*	*0.0000*	16,990	*7,985.7077*	44,144	*20,748.7394*	29,861	*14,035.3866*	58,830	*27,651.5119*	205.92
03/05/2010	154,530	47.0364	*72,685.3489*	99.99890%	2,299	*1,081.3668*	*1,081.3549*	0	*0.0000*	*0.0000*	17,747	*8,347.5499*	45,366	*21,338.5332*	30,560	*14,374.3238*	54,740	*25,747.7253*	205.60
04/05/2010	151,179	46.9472	*70,974.3074*	99.99890%	1,369	*642.7071*	*642.7000*	0	*0.0000*	*0.0000*	19,064	*8,950.0142*	47,062	*22,094.2912*	28,377	*13,322.2069*	53,875	*25,292.8040*	207.10
05/05/2010	151,830	46.6118	*70,770.6959*	99.99890%	111	*51.7390*	*51.7384*	0	*0.0000*	*0.0000*	14,179	*6,609.0871*	48,198	*22,465.9553*	43,209	*20,140.4926*	44,434	*20,711.4872*	207.65
06/05/2010	155,223	47.1336	*73,162.1879*	99.99890%	1,186	*559.0044*	*558.9982*	0	*0.0000*	*0.0000*	27,780	*13,093.7140*	37,884	*17,856.0930*	42,673	*20,113.3211*	45,373	*21,385.9283*	206.18
07/05/2010	166,507	46.2656	*77,035.4625*	99.99890%	484	*223.9255*	*223.9230*	0	*0.0000*	*0.0000*	32,846	*15,196.3989*	40,272	*18,632.0824*	39,667	*18,352.1755*	51,843	*23,985.4750*	212.16
08/05/2010	166,165	45.5659	*75,714.5777*	99.99890%	581	*264.7378*	*264.7348*	0	*0.0000*	*0.0000*	30,071	*13,702.1217*	42,905	*19,550.0493*	35,553	*16,200.0444*	56,426	*25,711.0147*	209.15
09/05/2010	169,323	45.2673	*76,647.9503*	99.99890%	526	*238.1059*	*238.1032*	0	*0.0000*	*0.0000*	29,635	*13,414.9643*	36,686	*16,606.7616*	40,747	*18,445.0667*	60,927	*27,580.0078*	209.60
10/05/2010	163,458	46.1625	*75,456.2992*	99.99890%	191	*88.1703*	*88.1693*	0	*0.0000*	*0.0000*	31,130	*14,370.3862*	38,798	*17,910.1267*	36,256	*16,736.6760*	51,682	*23,857.7032*	206.27
11/05/2010	150,701	47.6246	*71,770.7484*	99.99890%	511	*243.3617*	*243.3590*	0	*0.0000*	*0.0000*	26,631	*12,682.9072*	44,785	*21,328.6771*	40,243	*19,165.5677*	36,822	*17,536.3302*	203.01
12/05/2010	145,190	48.9121	*71,015.4779*	99.99890%	182	*89.0200*	*89.0190*	0	*0.0000*	*0.0000*	43,744	*21,396.1090*	37,374	*18,280.4082*	26,301	*12,864.3714*	31,603	*15,457.6909*	197.95
13/05/2010	143,437	47.9402	*68,763.9846*	99.99890%	1,561	*748.3465*	*748.3382*	0	*0.0000*	*0.0000*	60,322	*28,918.4874*	37,704	*18,075.3730*	0	*0.0000*	40,430	*19,382.2228*	197.57
14/05/2010	147,560	47.3500	*69,869.6600*	99.99890%	551	*260.8985*	*260.8956*	0	*0.0000*	*0.0000*	57,445	*27,200.2075*	42,123	*19,945.2405*	0	*0.0000*	44,227	*20,941.4845*	202.88
15/05/2010	145,252	47.7934	*69,420.8693*	99.99890%	818	*390.9500*	*390.9456*	0	*0.0000*	*0.0000*	59,466	*28,420.8232*	36,833	*17,603.7430*	0	*0.0000*	46,226	*22,092.9770*	200.61

	MAIN PIPELINE							SECONDARY PIPELINE			ELECTRICITY GENERATION								
	COLLECTING SYSTEM				FLARE F100			FLARE F200			FIR300		FIR400		FIR500		FIR600		
DATE	LFG measured FIR100 (Nm^3)	Methane (%)	*Methane measured FIR100 (Nm^3)*	Flares Efficiencies (%)	LFG measured FIR200 (Nm^3)	*Methane measured FIR200 (Nm^3)*	*Methne Destroyed in F100 (Nm^3)*	LFG measured FIR700 (Nm^3)	*Methane measured FIR700 (Nm^3)*	*Methne Destroyed F200 (Nm^3)*	LFG measured (Nm^3)	*Methane measured (Nm^3)*	LFG measured (Nm^3)	*Methane measured (Nm^3)*	LFG measured (Nm^3)	*Methane measured (Nm^3)*	LFG measured (Nm^3)	*Methane measured (Nm^3)*	Eletricity Exported (MWh)
	A	B	*C = A . B*	D	E	*F = E . B*	*G = F . D*	H	*I = H . B*	*J = I . D*	K	*L = K . B*	M	*N = M . B*	O	*P = O . B*	Q	*R = Q . B*	S
16/05/2010	138,915	47.9187	*66,566.2621*	99.99890%	7,399	*3,545.5046*	*3,545.4655*	0	*0.0000*	*0.0000*	56,977	*27,302.6376*	52,716	*25,260.8218*	0	*0.0000*	15,704	*7,525.1526*	188.19
17/05/2010	141,707	47.5923	*67,441.6205*	99.99890%	120	*57.1107*	*57.1100*	0	*0.0000*	*0.0000*	53,918	*25,660.8163*	38,864	*18,496.2714*	0	*0.0000*	48,727	*23,190.3000*	201.66
18/05/2010	146,548	47.5781	*69,724.7539*	99.99890%	814	*387.2857*	*387.2814*	0	*0.0000*	*0.0000*	40,387	*19,215.3672*	39,928	*18,996.9837*	0	*0.0000*	42,405	*20,175.4933*	190.94
19/05/2010	151,537	46.9427	*71,135.5592*	99.99890%	1,952	*916.3215*	*916.3114*	0	*0.0000*	*0.0000*	67,189	*31,540.3307*	34,363	*16,130.9200*	0	*0.0000*	45,404	*21,313.8635*	199.58
20/05/2010	159,633	46.9715	*74,982.0145*	99.99890%	227	*106.6253*	*106.6241*	0	*0.0000*	*0.0000*	72,164	*33,896.5132*	44,504	*20,904.1963*	0	*0.0000*	42,468	*19,947.8566*	207.84
21/05/2010	167,861	46.4208	*77,922.4190*	99.99890%	642	*298.0215*	*298.0182*	0	*0.0000*	*0.0000*	82,379	*38,240.9908*	28,646	*13,297.7023*	0	*0.0000*	53,477	*24,824.4512*	207.84
22/05/2010	156,515	46.8562	*73,336.9814*	99.99890%	2	*0.9371*	*0.9370*	0	*0.0000*	*0.0000*	62,890	*29,467.8641*	35,796	*16,772.6453*	0	*0.0000*	55,015	*25,777.9384*	208.54
23/05/2010	156,015	46.6461	*72,774.9129*	99.99890%	615	*286.8735*	*286.8703*	0	*0.0000*	*0.0000*	55,372	*25,828.8784*	36,482	*17,017.4302*	0	*0.0000*	61,410	*28,645.3700*	205.66
24/05/2010	151,282	47.2798	*71,525.8270*	99.99890%	1,686	*797.1374*	*797.1286*	0	*0.0000*	*0.0000*	49,407	*23,359.5307*	46,658	*22,059.8090*	0	*0.0000*	45,893	*21,698.1186*	198.78
25/05/2010	143,143	47.4475	*67,917.7749*	99.99890%	1,010	*479.2197*	*479.2144*	0	*0.0000*	*0.0000*	54,769	*25,986.5212*	38,066	*18,061.3653*	13,683	*6,492.2414*	32,143	*15,251.0499*	193.76
26/05/2010	153,346	46.1767	*70,810.1223*	99.99890%	1,147	*529.6467*	*529.6408*	0	*0.0000*	*0.0000*	50,066	*23,118.8266*	31,659	*14,619.0814*	32,419	*14,970.0243*	37,843	*17,474.6485*	199.01
27/05/2010	151,880	46.0381	*69,922.6662*	99.99890%	249	*114.6348*	*114.6335*	0	*0.0000*	*0.0000*	40,552	*18,669.3703*	36,068	*16,605.0219*	43,425	*19,992.0449*	30,847	*14,201.3727*	200.19
28/05/2010	151,701	46.8690	*71,100.7416*	99.99890%	2	*0.9373*	*0.9372*	0	*0.0000*	*0.0000*	30,487	*14,288.9520*	29,804	*13,968.8367*	59,465	*27,870.6508*	27,988	*13,117.6957*	198.24
29/05/2010	153,238	46.8944	*71,860.0406*	99.99890%	452	*211.9626*	*211.9602*	0	*0.0000*	*0.0000*	21,950	*10,293.3208*	35,674	*16,729.1082*	59,882	*28,081.3046*	33,560	*15,737.7606*	203.36
30/05/2010	155,949	47.0253	*73,335.4850*	99.99890%	1,415	*665.4079*	*665.4005*	0	*0.0000*	*0.0000*	31,571	*14,846.3574*	38,841	*18,265.0967*	47,873	*22,512.4218*	30,965	*14,561.3841*	201.25
31/05/2010	148,497	46.0645	*68,404.4005*	99.99890%	582	*268.0953*	*268.0923*	0	*0.0000*	*0.0000*	23,060	*10,622.4737*	47,928	*22,077.7935*	50,581	*23,299.8847*	25,036	*11,532.7082*	197.82
01/06/2010	145,741	47.0215	*68,529.6043*	99.99890%	12,186	*5,730.0399*	*5,729.9768*	0	*0.0000*	*0.0000*	4,309	*2,026.1564*	16,630	*7,819.6754*	64,300	*30,234.8245*	46,294	*21,768.1332*	162.72

	MAIN PIPELINE							SECONDARY PIPELINE			ELECTRICITY GENERATION								
	COLLECTING SYSTEM				FLARE F100			FLARE F200			FIR300		FIR400		FIR500		FIR600		
DATE	LFG measured FIR100 (Nm^3)	Methane (%)	*Methane measured FIR100 (Nm^3)*	Flares Efficiencies (%)	LFG measured FIR200 (Nm^3)	*Methane measured FIR200 (Nm^3)*	*Methne Destroyed in F100 (Nm^3)*	LFG measured FIR700 (Nm^3)	*Methane measured FIR700 (Nm^3)*	*Methne Destroyed F200 (Nm^3)*	LFG measured (Nm^3)	*Methane measured (Nm^3)*	LFG measured (Nm^3)	*Methane measured (Nm^3)*	LFG measured (Nm^3)	*Methane measured (Nm^3)*	LFG measured (Nm^3)	*Methane measured (Nm^3)*	Eletricity Exported (MWh)
	A	B	*C = A . B*	D	E	*F = E . B*	*G = F . D*	H	*I = H . B*	*J = I . D*	K	*L = K . B*	M	*N = M . B*	O	*P = O . B*	Q	*R = Q . B*	S
02/06/2010	146,703	47.8027	*70,127.9949*	99.99890%	301	*143.8861*	*143.8845*	0	*0.0000*	*0.0000*	12,033	*5,752.0988*	26,863	*12,841.2393*	65,490	*31,305.9882*	39,923	*19,084.2719*	192.51
03/06/2010	140,482	47.6732	*66,972.2648*	99.99890%	720	*343.2470*	*343.2432*	0	*0.0000*	*0.0000*	10,584	*5,045.7314*	42,154	*20,096.1607*	53,578	*25,542.3470*	32,321	*15,408.4549*	192.13
04/06/2010	146,236	47.9114	*70,063.7149*	99.99890%	2,157	*1,033.4488*	*1,033.4374*	0	*0.0000*	*0.0000*	30,628	*14,674.3035*	27,106	*12,986.8640*	49,226	*23,584.8657*	32,610	*15,623.9075*	191.33
05/06/2010	153,107	46.8961	*71,801.2118*	99.99890%	414	*194.1498*	*194.1476*	0	*0.0000*	*0.0000*	35,314	*16,560.8887*	28,517	*13,373.3608*	55,837	*26,185.3753*	32,955	*15,454.6097*	204.70
06/06/2010	152,086	46.0288	*70,003.3607*	99.99890%	137	*63.0594*	*63.0587*	0	*0.0000*	*0.0000*	14,041	*6,462.9038*	36,939	*17,002.5784*	50,810	*23,387.2332*	49,174	*22,634.2021*	200.16
07/06/2010	147,388	46.7371	*68,884.8769*	99.99890%	698	*326.2249*	*326.2213*	0	*0.0000*	*0.0000*	17,765	*8,302.8458*	34,432	*16,092.5182*	47,891	*22,382.8645*	43,056	*20,123.1257*	191.94
08/06/2010	141,320	46.9899	*66,406.1266*	99.99890%	0	*0.0000*	*0.0000*	0	*0.0000*	*0.0000*	27,476	*12,910.9449*	35,282	*16,578.9765*	41,583	*19,539.8101*	36,656	*17,224.6177*	195.33
09/06/2010	145,869	46.6305	*68,019.4440*	99.99890%	287	*133.8295*	*133.8280*	0	*0.0000*	*0.0000*	24,283	*11,323.2843*	29,159	*13,596.9874*	46,027	*21,462.6202*	43,017	*20,059.0421*	191.90
10/06/2010	143,459	46.4597	*66,650.6210*	99.99890%	847	*393.5136*	*393.5092*	0	*0.0000*	*0.0000*	20,596	*9,568.8398*	33,185	*15,417.6514*	43,627	*20,268.9733*	44,776	*20,802.7952*	191.14
11/06/2010	146,198	46.2250	*67,580.0255*	99.99890%	26	*12.0185*	*12.0183*	0	*0.0000*	*0.0000*	28,261	*13,063.6472*	33,570	*15,517.7325*	31,847	*14,721.2757*	48,573	*22,452.8692*	192.48
12/06/2010	146,185	45.8670	*67,050.6739*	99.99890%	248	*113.7501*	*113.7488*	0	*0.0000*	*0.0000*	41,429	*19,002.2394*	18,540	*8,503.7418*	51,635	*23,683.4254*	33,449	*15,342.0528*	192.29
13/06/2010	143,441	46.4538	*66,633.7952*	99.99890%	535	*248.5278*	*248.5250*	0	*0.0000*	*0.0000*	25,891	*12,027.3533*	28,907	*13,428.3999*	54,065	*25,115.2469*	31,450	*14,609.7201*	191.17
14/06/2010	140,680	46.5010	*65,417.6068*	99.99890%	2	*0.9300*	*0.9299*	0	*0.0000*	*0.0000*	28,401	*13,206.7490*	35,752	*16,625.0375*	49,558	*23,044.9655*	26,649	*12,392.0514*	193.47
15/06/2010	140,625	46.1684	*64,924.3125*	99.99890%	138	*63.7123*	*63.7115*	0	*0.0000*	*0.0000*	27,058	*12,492.2456*	35,607	*16,439.1821*	46,839	*21,624.8168*	30,513	*14,087.3638*	191.74
16/06/2010	137,023	46.2715	*63,402.5974*	99.99890%	958	*443.2809*	*443.2760*	0	*0.0000*	*0.0000*	34,257	*15,851.2277*	34,540	*15,982.1761*	41,998	*19,433.1045*	24,242	*11,217.1370*	188.86
17/06/2010	141,395	45.7534	*64,693.0199*	99.99890%	151	*69.0876*	*69.0868*	0	*0.0000*	*0.0000*	34,022	*15,566.2217*	32,200	*14,732.5948*	47,654	*21,803.3252*	27,292	*12,487.0179*	192.42
18/06/2010	141,854	45.6899	*64,812.9507*	99.99890%	1,233	*563.3564*	*563.3502*	0	*0.0000*	*0.0000*	19,893	*9,089.0918*	32,597	*14,893.5367*	58,189	*26,586.4959*	29,839	*13,633.4092*	188.61

	MAIN PIPELINE							SECONDARY PIPELINE			ELECTRICITY GENERATION								
	COLLECTING SYSTEM				FLARE F100			FLARE F200			FIR300		FIR400		FIR500		FIR600		
DATE	LFG measured FIR100 (Nm^3)	Methane (%)	*Methane measured FIR100 (Nm^3)*	Flares Efficiencies (%)	LFG measured FIR200 (Nm^3)	*Methane measured FIR200 (Nm^3)*	*Methne Destroyed in F100 (Nm^3)*	LFG measured FIR700 (Nm^3)	*Methane measured FIR700 (Nm^3)*	*Methne Destroyed F200 (Nm^3)*	LFG measured (Nm^3)	*Methane measured (Nm^3)*	LFG measured (Nm^3)	*Methane measured (Nm^3)*	LFG measured (Nm^3)	*Methane measured (Nm^3)*	LFG measured (Nm^3)	*Methane measured (Nm^3)*	Eletricity Exported (MWh)
	A	B	*C = A . B*	D	E	*F = E . B*	*G = F . D*	H	*I = H . B*	*J = I . D*	K	*L = K . B*	M	*N = M . B*	O	*P = O . B*	Q	*R = Q . B*	S
19/06/2010	136,850	45.9371	*62,864.9213*	99.99890%	2,951	*1,355.6038*	*1,355.5888*	0	*0.0000*	*0.0000*	33,727	*15,493.2057*	29,959	*13,762.2957*	39,289	*18,048.2272*	30,701	*14,103.1490*	184.70
20/06/2010	135,278	46.6145	*63,059.1633*	99.99890%	547	*254.9813*	*254.9784*	0	*0.0000*	*0.0000*	33,473	*15,603.2715*	34,834	*16,237.6949*	41,704	*19,440.1110*	21,569	*10,054.2815*	182.78
21/06/2010	139,983	45.9774	*64,360.5438*	99.99890%	1,458	*670.3504*	*670.3430*	0	*0.0000*	*0.0000*	33,176	*15,253.4622*	32,021	*14,722.4232*	37,338	*17,167.0416*	31,706	*14,577.5944*	182.98
22/06/2010	133,273	45.9333	*61,216.6869*	99.99890%	597	*274.2218*	*274.2187*	0	*0.0000*	*0.0000*	43,358	*19,915.7602*	34,972	*16,063.7936*	42,672	*19,600.6577*	10,852	*4,984.6817*	182.24
23/06/2010	130,050	47.9024	*62,297.0712*	99.99890%	161	*77.1228*	*77.1219*	0	*0.0000*	*0.0000*	40,930	*19,606.4523*	35,020	*16,775.4204*	51,127	*24,491.0600*	239	*114.4867*	181.28
24/06/2010	125,812	48.7409	*61,321.9011*	99.99890%	602	*293.4202*	*293.4169*	0	*0.0000*	*0.0000*	23,376	*11,393.6727*	35,496	*17,301.0698*	45,736	*22,292.1380*	19,664	*9,584.4105*	176.64
25/06/2010	133,186	48.6513	*64,796.7204*	99.99890%	508	*247.1486*	*247.1458*	0	*0.0000*	*0.0000*	19,256	*9,368.2943*	32,749	*15,932.8142*	37,518	*18,252.9947*	39,361	*19,149.6381*	179.46
26/06/2010	131,486	48.6489	*63,966.4926*	99.99890%	274	*133.2979*	*133.2964*	0	*0.0000*	*0.0000*	13,956	*6,789.4404*	34,826	*16,942.4659*	42,399	*20,626.6471*	38,276	*18,620.8529*	182.05
27/06/2010	129,030	48.0868	*62,046.3980*	99.99890%	1,160	*557.8068*	*557.8006*	0	*0.0000*	*0.0000*	25,224	*12,129.4144*	34,845	*16,755.8454*	20,698	*9,953.0058*	46,652	*22,433.4539*	178.85
28/06/2010	126,679	47.9343	*60,722.6918*	99.99890%	1,330	*637.5261*	*637.5190*	0	*0.0000*	*0.0000*	29,892	*14,328.5209*	30,646	*14,689.9455*	23,190	*11,115.9641*	40,442	*19,385.5896*	173.09
29/06/2010	127,290	48.3423	*61,534.9136*	99.99890%	1,189	*574.7899*	*574.7835*	0	*0.0000*	*0.0000*	41,186	*19,910.2596*	22,373	*10,815.6227*	23,007	*11,122.1129*	39,472	*19,081.6726*	177.44
30/06/2010	133,283	47.1541	*62,848.3991*	99.99890%	1,458	*687.5067*	*687.4991*	0	*0.0000*	*0.0000*	36,444	*17,184.8402*	27,675	*13,049.8971*	36,980	*17,437.5861*	30,718	*14,484.7964*	179.78
01/07/2010	132,720	46.8795	*62,218.4724*	99.99890%	964	*451.9183*	*451.9133*	0	*0.0000*	*0.0000*	34,143	*16,006.0676*	32,220	*15,104.5749*	39,022	*18,293.3184*	26,151	*12,259.4580*	183.68
02/07/2010	129,094	47.5034	*61,324.0391*	99.99890%	3,568	*1,694.9213*	*1,694.9026*	0	*0.0000*	*0.0000*	37,666	*17,892.6306*	21,169	*10,055.9947*	30,263	*14,375.9539*	33,313	*15,824.8076*	168.64
03/07/2010	137,992	47.1552	*65,070.4035*	99.99890%	1,467	*691.7667*	*691.7590*	0	*0.0000*	*0.0000*	38,388	*18,101.9381*	21,768	*10,264.7439*	35,850	*16,905.1392*	35,631	*16,801.8693*	183.94
04/07/2010	130,772	47.1833	*61,702.5450*	99.99890%	1,112	*524.6782*	*524.6724*	0	*0.0000*	*0.0000*	22,999	*10,851.6871*	27,280	*12,871.6042*	37,532	*17,708.8361*	41,343	*19,506.9917*	180.19
05/07/2010	128,829	48.0250	*61,870.1272*	99.99890%	2,124	*1,020.0510*	*1,020.0397*	0	*0.0000*	*0.0000*	25,122	*12,064.8405*	33,816	*16,240.1340*	38,962	*18,711.5005*	26,958	*12,946.5795*	181.41

	MAIN PIPELINE							SECONDARY PIPELINE			ELECTRICITY GENERATION								
	COLLECTING SYSTEM				FLARE F100			FLARE F200			FIR300		FIR400		FIR500		FIR600		
DATE	LFG measured FIR100 (Nm^3)	Methane (%)	*Methane measured FIR100 (Nm^3)*	Flares Efficiencies (%)	LFG measured FIR200 (Nm^3)	*Methane measured FIR200 (Nm^3)*	*Methne Destroyed in F100 (Nm^3)*	LFG measured FIR700 (Nm^3)	*Methane measured FIR700 (Nm^3)*	*Methne Destroyed F200 (Nm^3)*	LFG measured (Nm^3)	*Methane measured (Nm^3)*	LFG measured (Nm^3)	*Methane measured (Nm^3)*	LFG measured (Nm^3)	*Methane measured (Nm^3)*	LFG measured (Nm^3)	*Methane measured (Nm^3)*	Eletricity Exported (MWh)
	A	B	*C = A . B*	D	E	*F = E . B*	*G = F . D*	H	*I = H . B*	*J = I . D*	K	*L = K . B*	M	*N = M . B*	O	*P = O . B*	Q	*R = Q . B*	S
06/07/2010	133,254	47.6621	*63,511.6547*	99.99901%	2,160	*1,029.5013*	*1,029.4911*	0	*0.0000*	*0.0000*	24,803	*11,821.6306*	31,028	*14,788.5963*	22,339	*10,647.2365*	48,987	*23,348.2329*	179.55
07/07/2010	133,176	46.9628	*62,543.1785*	99.99901%	564	*264.8701*	*264.8674*	0	*0.0000*	*0.0000*	41,805	*19,632.7985*	23,505	*11,038.6061*	26,194	*12,301.4358*	40,911	*19,212.9511*	184.77
08/07/2010	133,316	46.6750	*62,225.2430*	99.99901%	348	*162.4290*	*162.4273*	0	*0.0000*	*0.0000*	40,927	*19,102.6772*	19,693	*9,191.7077*	25,568	*11,933.8640*	45,908	*21,427.5590*	182.85
09/07/2010	129,385	46.6284	*60,330.1553*	99.99901%	1,306	*608.9669*	*608.9608*	0	*0.0000*	*0.0000*	34,950	*16,296.6258*	25,743	*12,003.5490*	26,017	*12,131.3108*	37,292	*17,388.6629*	175.81
10/07/2010	126,679	46.1333	*58,441.2031*	99.99901%	2	*0.9226*	*0.9225*	0	*0.0000*	*0.0000*	13,648	*6,296.2727*	46,184	*21,306.2032*	34,353	*15,848.1725*	32,228	*14,867.8399*	182.82
11/07/2010	129,875	46.6031	*60,525.7761*	99.99901%	257	*0.0000*	*0.0000*	0	*0.0000*	*0.0000*	30,935	*14,416.6689*	29,139	*13,579.6773*	34,186	*15,931.7357*	35,069	*16,343.2411*	182.18
12/07/2010	130,857	47.0881	*61,618.0750*	99.99901%	2,334	*1,099.0362*	*1,099.0253*	0	*0.0000*	*0.0000*	35,602	*16,764.3053*	27,445	*12,923.3290*	27,221	*12,817.8517*	37,868	*17,831.3217*	180.03
13/07/2010	135,967	46.4694	*63,183.0490*	99.99901%	380	*176.5837*	*176.5819*	0	*0.0000*	*0.0000*	29,849	*13,870.6512*	29,042	*13,495.6431*	28,100	*13,057.9014*	48,340	*22,463.3079*	184.13
14/07/2010	137,638	46.1062	*63,459.6515*	99.99901%	554	*255.4283*	*255.4257*	0	*0.0000*	*0.0000*	25,252	*11,642.7376*	32,730	*15,090.5592*	28,697	*13,231.0962*	49,072	*22,625.2344*	185.82
15/07/2010	140,324	46.9260	*65,848.4402*	99.99901%	276	*129.5157*	*129.5144*	0	*0.0000*	*0.0000*	32,788	*15,386.0968*	23,997	*11,260.8322*	30,993	*14,543.7751*	51,789	*24,302.5061*	190.46
16/07/2010	143,259	46.2701	*66,286.0825*	99.99901%	227	*105.0331*	*105.0320*	0	*0.0000*	*0.0000*	31,490	*14,570.4544*	24,201	*11,197.8269*	31,313	*14,488.5564*	55,694	*25,769.6694*	188.80
17/07/2010	140,709	46.3857	*65,268.8546*	99.99901%	2,097	*972.7081*	*972.6984*	0	*0.0000*	*0.0000*	24,963	*11,579.2622*	30,984	*14,372.1452*	31,858	*14,777.5563*	49,148	*22,797.6438*	186.21
18/07/2010	137,467	46.9184	*64,497.3169*	99.99901%	407	*190.9578*	*190.9559*	0	*0.0000*	*0.0000*	32,677	*15,331.5255*	30,142	*14,142.1441*	25,671	*12,044.4224*	44,797	*21,018.0356*	187.94
19/07/2010	132,462	47.2270	*62,557.8287*	99.99901%	927	*437.7942*	*437.7898*	0	*0.0000*	*0.0000*	26,118	*12,334.7478*	38,428	*18,148.3915*	29,343	*13,857.8186*	36,566	*17,269.0248*	187.84
20/07/2010	134,119	46.3642	*62,183.2013*	99.99901%	911	*422.3778*	*422.3736*	0	*0.0000*	*0.0000*	35,698	*16,551.0921*	40,231	*18,652.7813*	16,488	*7,644.5292*	38,292	*17,753.7794*	188.45
21/07/2010	133,300	46.7277	*62,288.0241*	99.99901%	1,323	*618.2074*	*618.2012*	0	*0.0000*	*0.0000*	32,660	*15,261.2668*	36,534	*17,071.4979*	16,387	*7,657.2681*	38,355	*17,922.4093*	179.17
22/07/2010	133,216	47.8020	*63,679.9123*	99.99901%	1,633	*780.6066*	*780.5988*	0	*0.0000*	*0.0000*	34,225	*16,360.2345*	38,247	*18,282.8309*	15,510	*7,414.0902*	43,277	*20,687.2715*	186.98

	MAIN PIPELINE							SECONDARY PIPELINE			ELECTRICITY GENERATION								
	COLLECTING SYSTEM				FLARE F100			FLARE F200			FIR300		FIR400		FIR500		FIR600		
DATE	LFG measured FIR100 (Nm^3)	Methane (%)	*Methane measured FIR100 (Nm^3)*	Flares Efficiencies (%)	LFG measured FIR200 (Nm^3)	*Methane measured FIR200 (Nm^3)*	*Methne Destroyed in F100 (Nm^3)*	LFG measured FIR700 (Nm^3)	*Methane measured FIR700 (Nm^3)*	*Methne Destroyed F200 (Nm^3)*	LFG measured (Nm^3)	*Methane measured (Nm^3)*	LFG measured (Nm^3)	*Methane measured (Nm^3)*	LFG measured (Nm^3)	*Methane measured (Nm^3)*	LFG measured (Nm^3)	*Methane measured (Nm^3)*	Eletricity Exported (MWh)
	A	B	*C = A . B*	D	E	*F = E . B*	*G = F . D*	H	*I = H . B*	*J = I . D*	K	*L = K . B*	M	*N = M . B*	O	*P = O . B*	Q	*R = Q . B*	S
23/07/2010	134,844	47.6753	*64,287.2815*	99.99901%	708	*337.5411*	*337.5377*	0	*0.0000*	*0.0000*	33,339	*15,894.4682*	36,716	*17,504.4631*	17,104	*8,154.3833*	42,925	*20,464.6225*	185.12
24/07/2010	131,755	48.1125	*63,390.6243*	99.99901%	1,325	*637.4906*	*637.4842*	0	*0.0000*	*0.0000*	29,691	*14,285.0823*	32,529	*15,650.5151*	27,715	*13,334.3793*	39,275	*18,896.1843*	182.43
25/07/2010	132,711	48.1430	*63,891.0567*	99.99901%	644	*310.0409*	*310.0378*	0	*0.0000*	*0.0000*	24,648	*11,866.2866*	35,862	*17,265.0426*	36,272	*17,462.4289*	33,476	*16,116.3506*	187.33
26/07/2010	130,861	47.9500	*62,747.8495*	99.99901%	852	*408.5340*	*408.5299*	0	*0.0000*	*0.0000*	32,706	*15,682.5270*	35,649	*17,093.6955*	36,623	*17,560.7285*	24,512	*11,753.5040*	185.92
27/07/2010	137,573	46.7371	*64,297.6305*	99.99901%	2	*0.9347*	*0.9346*	0	*0.0000*	*0.0000*	51,322	*23,986.4144*	24,106	*11,266.4453*	27,843	*13,013.0107*	32,586	*15,229.7514*	188.86
28/07/2010	135,605	46.8468	*63,526.6031*	99.99901%	1,461	*684.4317*	*684.4249*	0	*0.0000*	*0.0000*	45,614	*21,368.6993*	27,923	*13,081.0319*	20,025	*9,381.0717*	37,465	*17,551.1536*	185.15
29/07/2010	130,408	47.4107	*61,827.3456*	99.99901%	1,573	*745.7703*	*745.7629*	0	*0.0000*	*0.0000*	39,400	*18,679.8158*	33,848	*16,047.5737*	13,385	*6,345.9221*	41,935	*19,881.6770*	186.62
30/07/2010	133,231	47.2197	*62,911.2785*	99.99901%	2,507	*1,183.7978*	*1,183.7860*	0	*0.0000*	*0.0000*	37,735	*17,818.3537*	36,171	*17,079.8376*	14,735	*6,957.8227*	39,838	*18,811.3840*	187.17
31/07/2010	135,951	46.6552	*63,428.2109*	99.99901%	995	*464.2192*	*464.2146*	0	*0.0000*	*0.0000*	33,242	*15,509.1215*	38,656	*18,035.0341*	28,320	*13,212.7526*	33,077	*15,432.1405*	191.07

Obs: the calculation of *methane measured* and *methane destroyed* was conservatively made, using Excel tool “ROUND DOWN” with four decimal rounds.

As mentioned above, if during a certain hour the average flare temperature (F100 or F200) is between 40° and 900°C and the instant gas-flow measured by FIR200 (the flow-meter FIR700 is disconnected of the collecting system) is higher than zero, this gas-flow is excluded from ERs calculation.

The table below presents the electricity exported and registered by Sotreq and the value registered by Eletropaulo, the local electricity utility:

MONTH	ELECTRICITY REGISTERED BY BLFGE (MWh)	ELECTRICITY REGISTERED BY ELETROPAULO (MWh)	DIFFERENCE (%)
January/2010	7,169.76	7,307.19	1.88%
February/2010	6,311.97	6,394.51	1.29%
March/2010	6,798.11	6,929.00	1.89%
April/2010	6,429.73	6,493.32	0.98%
May/2010	6,285.44	6,347.57	0.98%
June/2010	5,606.18	5,660.43	0.96%
July/2010	5,711.33	5,767.05	0.97%

Thus, as per presented in the revised Monitoring Plan, the lowest values by Sotreq were adopted for the ERs calculation (the one from BLFGE) adopting a conservative approach.

	Total
Total Methane Destroyed in Flare F100 (Nm^3)	**153,540.4430**
Total Methane Destroyed in Flare F200 (Nm^3)	**0,0000**
Total Methane Measured by FIR300 (Nm^3)	**3,990,747.9949**
Total Methane Measured by FIR400 (Nm^3)	**3,226,346.5564**
Total Methane Measured by FIR500 (Nm^3)	**3,937,803.8977**
Total Methane Measured by FIR600 (Nm^3)	**3,904,921.0418**
Total Electricity Exported (MWh)	**44,312.5120**

As mentioned above, follows the description and consideration of measurement uncertainties and error propagation of the equipments. The readings from all equipments are subjected to internal errors from a standard value. These errors are measured and described in the Calibration Certificates, in terms of ± % from the standard adopted.

All calibrations usually have an expiration date, however the manufacturers of the flow-meters, pressure transmitter and temperature transmitters are Europeans and there are no rules in Europe specifying the calibration periodicity. Biogás decided to adopt a 5 years calibration frequency for every equipment. Regarding electricity meter, the manufacturer does not mention a specific calibration frequency of the meter. Besides, there does not exist any standard or norm in Brazil indicating a specific calibration frequency.

The errors and the date of the calibration for each equipment were presented in the tables in item D.2[7] below.

[7] All data referring to the equipments of the FIR700 were excluded because this Flare Auxiliary line was disconnected.

Adopting a conservative approach on Emission Reduction calculation, the equivalent error calculated was discounted from the amount of methane calculated for each flow-meter, according with the equations below:

$$\varepsilon_{FIR200} = \sqrt{\left(\varepsilon_{Gas\ Flow_{FIR200}}\right)^2 + \left(\varepsilon_{Temperature_{FIR200}}\right)^2 + \left(\varepsilon_{Pressure_{FIR200}}\right)^2 + \left(\varepsilon_{Methane\ Analysis}\right)^2}$$

$$\varepsilon_{FIR700} = \sqrt{\left(\varepsilon_{Gas\ Flow_{FIR700}}\right)^2 + \left(\varepsilon_{Temperature_{FIR700}}\right)^2 + \left(\varepsilon_{Pressure_{FIR700}}\right)^2 + \left(\varepsilon_{Methane\ Analysis}\right)^2}$$

$$\varepsilon_{FIR300} = \sqrt{\left(\varepsilon_{Gas\ Flow_{FIR300}}\right)^2 + \left(\varepsilon_{Temperatur\ e_{FIR300}}\right)^2 + \left(\varepsilon_{Pressure_{FIR300}}\right)^2 + \left(\varepsilon_{Methane\ Analysis}\right)^2}$$

$$\varepsilon_{FIR400} = \sqrt{\left(\varepsilon_{Gas\ Flow_{FIR400}}\right)^2 + \left(\varepsilon_{Temperatur\ e_{FIR400}}\right)^2 + \left(\varepsilon_{Pressure_{FIR400}}\right)^2 + \left(\varepsilon_{Methane\ Analysis}\right)^2}$$

$$\varepsilon_{FIR500} = \sqrt{\left(\varepsilon_{Gas\ Flow_{FIR500}}\right)^2 + \left(\varepsilon_{Temperatur\ e_{FIR500}}\right)^2 + \left(\varepsilon_{Pressure_{FIR500}}\right)^2 + \left(\varepsilon_{Methane\ Analysis}\right)^2}$$

$$\varepsilon_{FIR600} = \sqrt{\left(\varepsilon_{Gas\ Flow_{FIR600}}\right)^2 + \left(\varepsilon_{Temperature_{FIR600}}\right)^2 + \left(\varepsilon_{Pressure_{FIR600}}\right)^2 + \left(\varepsilon_{Methane\ Analysis}\right)^2}$$

Calculation of $LFG_{flared, y}$

The calculation of $LFG_{flared, y}$ is the sum of all measurements from FIR200 and FIR700 made during the monitoring period, minus the uncertainties of the flow-meters, as follows:

$$\varepsilon_{FIR200} = \sqrt{0.8900^{\ 2} + 0.6471^{\ 2} + 0.0851^{\ 2} + 1.000^{\ 2}} = 1.4894\%$$

$$\varepsilon_{FIR700} = \text{N/A}$$

Calculation of $LFG_{electricity, y}$

The calculation of $LFG_{electricity, y}$ is the sum of all measurements from FIR300, FIR400, FIR500 and FIR600 made during the monitoring period, minus the uncertainties of the flow-meters, as follows:

$$LFG_{electricity, y, corrected} = \sum FIR_{300} \times \left(1 - \frac{\varepsilon_{FIR300}}{100}\right) + \sum FIR_{400} \times \left(1 - \frac{\varepsilon_{FIR400}}{100}\right) + \sum FIR_{500} \times \left(1 - \frac{\varepsilon_{FIR500}}{100}\right) + \sum FIR_{600} \times \left(1 - \frac{\varepsilon_{FIR600}}{100}\right)$$

Applying the errors from the table below in the equations previously presented:

$$\varepsilon_{FIR300} = \sqrt{0.7720^2 + 0.5993^2 + 0.0567^2 + 1.0000^2} = 1.3995\%$$

$$\varepsilon_{FIR400} = \sqrt{0.5960^2 + 0.1775^2 + 0.0317^2 + 1.0000^2} = 1.1781\%$$

$$\varepsilon_{FIR500} = \sqrt{0.6320^{\ 2} + 0.8717^{\ 2} + 0.0417^{\ 2} + 1.0000^{\ 2}} = 1.4701\ \%$$

$$\varepsilon_{FIR600} = \sqrt{0.8110^2 + 0.1998^2 + 0.0417^2 + 1.0000^2} = 1.3037\%$$

Calculation of EGy

The calculation of EG_y is the sum of all measurements from the electricity-meter made during the monitoring period, minus the uncertainties of the electricity-meter, as follows:

$$EG_{y,\text{corrected}} = \sum EG_y \times \left(1 - \frac{\varepsilon_{EG}}{100}\right)$$

Table providing the formulas used

	Variable	Description
Flare F100	A_{F100} (see last table from item 4.1)	Total methane destroyed in flare F100 (Nm^3)
	B_{F100}	Total error from measuring equipment (%) – see item 4.4
	$C_{F100} = A_{F100} . (1-B_{F100})$	**Total methane corrected destroyed at the flare F100 (Nm^3)**
Flare F200	A_{F200} (see last table from item 4.1)	Total methane destroyed in flare F200 (Nm^3)
	B_{F200}	Total error from measuring equipment (%) – see item 4.4
	$C_{F200} = A_{F200} . (1-B_{F200})$	**Total methane corrected destroyed at the flare F200 (Nm^3)**
Power House	A_{FIRi}[8] (see last table from item 4.1)	Methane flow to the power house measured by FIRi (Nm^3)
	B_{FIRi}	Total measuring error from FIRi (%) – see item 4.5
	$C_{FIRi} = A_{FIRi} . (1 - B_{FIRi})$	**Total methane corrected measured by FIRi (Nm^3)**
	$D_{power\ house} = C_{FIR300} + C_{FIR400} + C_{FIR500} + C_{FIR600}$	**Total methane corrected destroyed at the electricity (Nm^3)**
CO_2e Methane	$A = C_{F100} + C_{F200} + D_{power\ house}$	Total methane destroyed in the period (Nm^3)
	$B = 0.0007168$	Density of Methane at the STPC (tCH_4/Nm^3)
	$C = A . B$	Total weight of methane destroyed (tCH_4)
	$D = 21$	CO_2 equivalency (tCO_2e/tCH_4)
	$E = C . D$	Total equivalent carbon (tCO_2e)
	$F = 20\%$	Adjustment Factor (%)
	$G = E . (1-F)$	**Total Liquid Carbon (tCO_2e)**
CO_2e Electricity	H (see last table from item 4.1)	Total electricity exported (MWh)
	I	Electricity-meter error (%)
	$J = H . (1 – I)$	Total electricity corrected (MWh)
	$K = 0.2677$	Emission Factor (tCO_2e/MWh)
	$L = J . K$	**Total CO_2e from the energy exported (tCO_2e)**
TOTAL	**M = G + L**	**TOTAL CREDITS DURING THE PERIOD (tCO_2e)**

Cells in red means that the calculation was made using the Excel tool "DOWN.ROUND" with zero decimal rounds, in order to assure conservativeness.

E.2. Project emissions calculation

BLFGE generates no emissions since it uses project-generated electricity to operate the landfill gas project, including the pumping equipment for the collection system and energy required to transport heat.

[8] Obs: calculation made individually for each Flow-Meter (FIR_{300}, FIR_{400}, FIR_{500} and FIR_{600})

E.3. Leakage calculation

No leakages under **ACM0001 – version 02**.

E.4. Emission reductions calculation / table

In accordance with the ACM0001 (version 2) and the registered PDD, emission reductions (ERy, expressed in tCO2) are calculated according to the following formula:

$ER_y = BE_y - PE_y - L_y$

Where:
ER_y = Emission reductions in year $_y$
BE_y = Baseline emissions in year $_y$
PE_y = Project emissions in year $_y$
L_y = Leakage in year $_y$

In BLFGE Project, there are no Project Emissions and leakage. For this reason we considered that:

$ER_y = BE_y$

According to the above calculation of baseline emissions and project emissions, the project emission reductions are calculated as shown in the table below. The project totally generated 192,477 tCO2e during this monitoring period.

Period	Baseline Emissions	Project Emissions	Leakage	Emission Reductions
	tCO_2e	tCO_2e	tCO_2e	tCO_2e
01/01/2010 to 31/07/2010	192,477	-	-	192,477

E.5. Comparison of actual emission reductions with estimates in the CDM-PDD

The actual emission reductions during the monitoring period are: 192,477 tCO_2.

According to the registered PDD, the estimated value of emission reduction is averagely 921,782 tCO_2e/year, that is 76,815 tCO_2e per month on average, while the project activity actually generates totally 192,477 tCO2e emission reductions during this monitoring period – from 01/01/2010 to 31/07/2010 – with 212 days when the plants are in operation. That is about 27,496 tCO2e per month, which is less than the estimated average value per month.

Furthermore, the estimated value of emission reduction is 921,782 tCO2e in year 2010 in the registered PDD (76,815 tCO_2e per month on average), which is obviously higher than the actual value.

Therefore, the emission reductions in this monitoring period are not higher than the estimation in the PDD even when bearing in mind the monitoring period does not cover a full calendar year.

Item	Values applied in ex-ante calculation of the registered CDM-PDD	Actual values reached during the monitoring period
Emission reductions (tCO_2e)	**921,782 (value in year 2010)**	**192,477**

E.6. Remarks on difference from estimated value in the PDD

Not applicable.