VCS Monitoring Report

- Version: 04
- Dated: 20.10.2010
- First Monitoring Period: 27/05/2007 to 31/12/2009
- Total Emission Reductions : 1,03,324 VCUs

Biomass Based Cogeneration Project at Nectar Life Sciences Ltd.

By

M/s Nectar Lifesciences Limited

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1. Introduction

The purpose of this document is to report the emission reductions generated by Biomass based Cogeneration Project at Nectar Life Sciences Ltd. during the following period (including the start and end days):

27/05/2007 – 31/12/2009

The VCS PD for this project was registered on 18/11/2009. The VCS Project Description can be seen at:

https://vcsprojectdatabase1.apx.com/mymodule/ProjectDoc/EditProjectDoc.asp?id1=251.

The project ID is 251 and is a validated project.

The emission reductions generated during this period will be claimed as Voluntary Carbon Units (VCUs). This monitoring report has been prepared in accordance with UNFCCC guidelines. This Monitoring plan will serve as the basis for verification, certification and issuance of the emission reductions during the monitoring period indicated above.

2. General Description of the Project:

2.1 Title of the project activity:

Biomass Based Cogeneration Project at Nectar Life Sciences Ltd.

2.2 Description of the project activity:

Nectar Lifesciences Ltd (NecLife) is a 200 million US$ integrated pharmaceutical organization, offering comprehensive range of Cephalosporin Active Pharmaceutical Ingredients and Finished Dosage Forms. NecLife is engaged in the development and manufacture of quality intermediates, bulk actives and are one of the largest manufacturers of cephalosporin range of products and delivering innovative and affordable products to domestic as well as international markets. NecLife has tactically positioned itself in the global pharmaceutical industry. It has developed sustainable production systems to manufacture highest quality pharmaceutical products meeting diverse requirements of its customer base in over 45 countries worldwide.

The project activity at NecLife involves installation of a new biomass based cogeneration system at the pharmaceutical unit of Nectar Lifesciences Limited (NecLife). The cogeneration system includes a Triveni make 6 MW single extraction cum condensing turbine generator and a Thermax make 40 TPH capacity AFBC boiler with a pressure rating of 67 kg/cm2 and temperature 490 °C. However the extraction from the turbine is 20 TPH at 256°C and 6 Kgf/cm2 and after extraction of the steam from the turbine the steam being supplied to Unit - 2 and Unit - 10 via Desuperheating Station (DSH) due to which there is an increase in the quantity of the steam i.e. up to 24 TPH and decrease in temperature but for more for extraction like 25 TPH the electricity generation capacity would decrease accordingly. The aim of the project activity is the installation of a biomass fired cogeneration plant to meet the present and future demand of power in Units (1 & 2) and process steam for the manufacturing process of Unit 2 of the pharmaceutical plant. The project activity was proposed considering the Thermal and Electrical energy required for the proposed new Menthol Plant, Menthol Crystal Plant, Menthol Distillation Plant, sterile plant and the expansion of solvent recovery plant. The project activity caters to existing electricity requirement of unit one and steam and electricity requirement of unit two (existing and expansion).

The aim of the project activity was the installation of a biomass fired cogeneration plant to meet the present and future demand of power in Units (1 & 2) and process steam for the manufacturing process of Unit 2 complex of the pharmaceutical plant. The project activity was proposed considering the thermal and electrical energy required for the proposed new menthol plant, menthol crystal plant, menthol distillation plant, sterile plant and the expansion of solvent recovery plant. The project

activity caters to existing electricity requirement of unit 1 complex and steam and electricity requirement of unit 2 complex(existing and expansion).

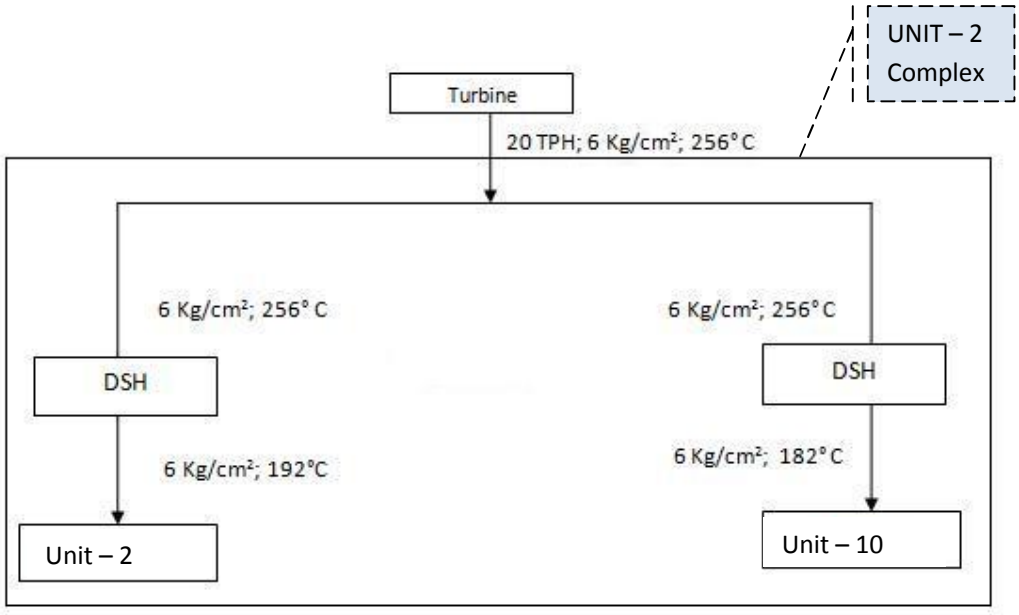
Current Status of the Project Activity

The project activity is in operation since 27/05/2007. The project is operating in successful manner.

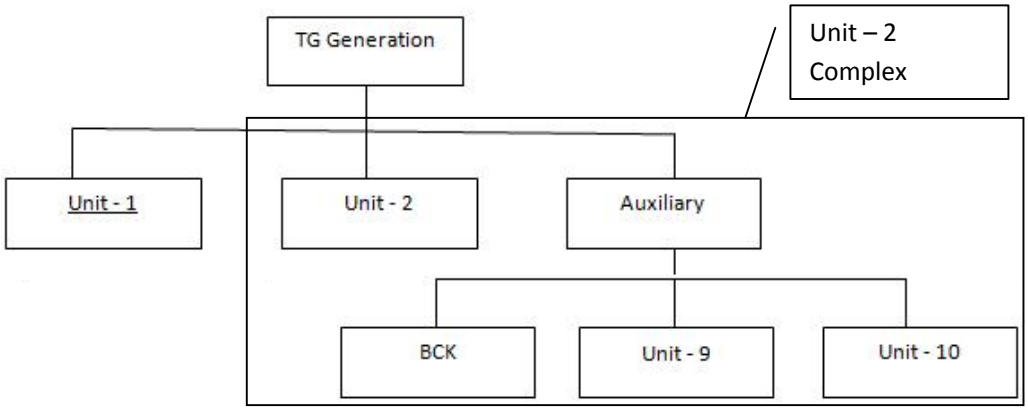
As project activity is cogeneration activity it includes both steam generation and electricity generation.

Extracted steam from turbine is supplied to Unit -2 complex which consists of several different processes/plants like SRP Plant, API Plant, hereafter will termed as Unit- 2 and unit -10 (Menthol Distillation Unit), hereafter will be termed as Unit – 10 via Desuperheating Station (DSH).

DSH reduces the temperature of steam and increases the quantity of the steam therefore extracted steam goes higher up to 24 TPH for process heat. There are two DSH, one is between turbine and Unit- 2 and another is between turbine and Unit – 10. The pressure of the steam supplied to Unit- 2 and Unit – 10 is same, however temperature is slightly different. Following flow diagram of the extracted steam makes it clearer:



The metering system for electricity is explained by following flowchart:



As shown in the flowchart, unit – 1 meter, unit – 2 meter and auxiliary meter are connected to total generation meter and further BCK meter, unit – 9 meter and unit -10 meter are connected to auxiliary meter. The electricity from auxiliary meter is being dispatched to BCK unit, unit 9, unit 10 and for meeting the auxiliary requirement of co-generation plant. Net auxiliary consumption of co-generation plant can be calculated by subtracting the electric units consumed by BCK unit, unit 9 and unit 10 from the units of auxiliary meter. For the period 27/05/2007 to 04/04/2008 the auxiliary meter was connected to the load for unit 9 and BCK, for period 04/04/2008 to 19/05/2008 the load was connected to the auxiliary meter was for unit 9, unit 10 and BCK and for the period starting from 19/05/2008 to till the end of monitoring period, auxiliary meter is connected to load for unit 10 and BCK.

2.3 Purpose of the project activity:

The purpose of the project activity is to reduce the GHG emissions using renewable fuels and also increase efficiency due to cogeneration.

2.4 Salient Features of the Project:

The proposed project activity involved installation of a Thermax make 40 TPH capacity boiler with 67 kg/cm^2 pressure and 490°C temperature rating and a Triveni make 6 MW extraction cum condensing steam turbine generator. The steam requirement of the process plant is met from the extraction steam. Initially, prior to the commissioning of the project, steam demand of 7 TPH was being met from the FO fired boilers of 12.3 TPH aggregate capacity and power demand from the utility and DG sets.

2.5 Project location

Nectar Lifesciences Ltd.

Village: Saidpura

Tehsil: Derabassi

District: Mohali

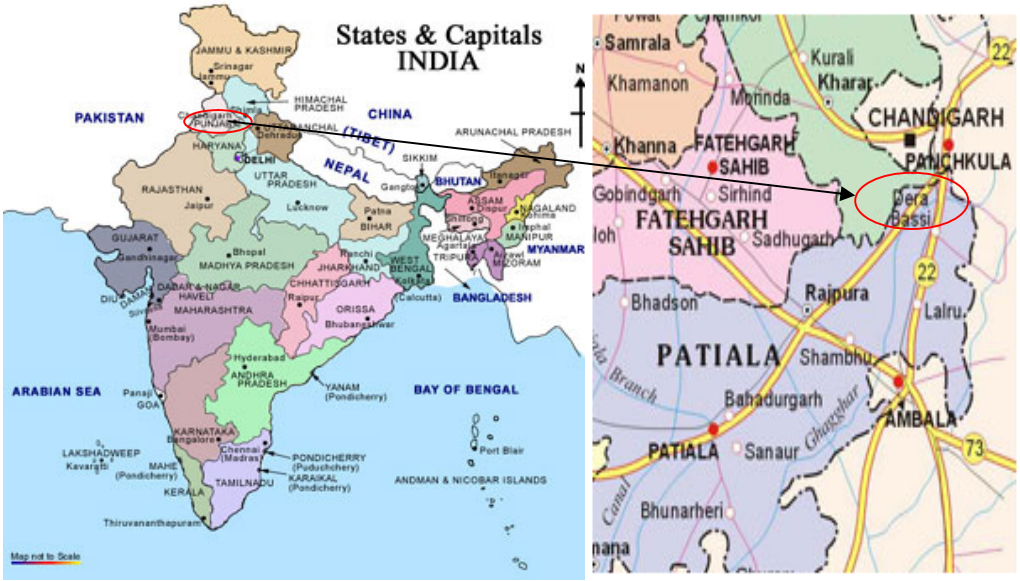
The Project activity is located near NH-21 (Ambala- Mandi Highway) in Eastern Punjab. The major town near the project activity is Chandigarh which is only 25 km away from the site.

The following table gives an idea about geographical location of project activity.

Table 1: Longitude and Latitude (Unit II)

Longitude	76.8780 (east)
Latitude	30.5852 (north)

The following figure shows the location of the project activity:



Map showing the project site

The following are the ways of accessing to the project site:

Road : National Highway 21 (Ambala- Mandi Highway)

Rail : Chandigarh Railway Station

Airport : Chandigarh Airport

2.6 Current Status

The project activity was in operation from May 2007. As per the registered PD only following biomass were used as a fuel:

	2007	2008	2009	Complete Monitoring Period
Rice husk	92.80%	74.81%	56.64%	69.65%
Mustard stick	0.00%	0.00%	0.00%	0.00%
Mutsard husk	1.89%	7.56%	9.59%	7.52%
Cotton husk desi	0.00%	3.85%	2.09%	2.41%
Bajra stalk	0.00%	5.09%	1.87%	2.79%
Sunflower stalk	0.00%	2.31%	0.00%	0.88%
Moong straw	0.00%	0.06%	0.00%	0.02%
Arhar husk	0.00%	0.05%	0.33%	0.17%
Saw dust	5.31%	6.05%	29.12%	16.30%
Sarkanda	0.00%	0.22%	0.37%	0.25%
Total	**100%**	**100%**	**100%**	**100%**

Various types of biomass were used during the crediting period because biomass is a seasonal product but it does not affect the additionality as the NCV is more or less same and the price is inversely proportional to the NCV. Detailed information is shown in the excel sheet.

2.7 Monitoring Period

The monitoring was carried from 27th May 2007 to 31st December 2009 (including start and end days).

According to Form V of Indian Boiler Regulation i.e. "PROVISIONAL ORDER UNDER SECTION 9 OF THE INDIAN BOILERS ACT OF 1923" which is being issued to M/s Nectar Lifesciences Ltd., shows that starting date of commissioning of boiler was 27-02-2007. However, the turbine was commissioned on 23rd May 2007 and after the approvals from higher authorities of M/s Nectar Lifesciences Ltd. it was fully operational from 27th May 2007. Hence, the starting date for the crediting period is consider as a 27th May 2007.

3. Monitoring Methodology and Plan

3.1 Monitoring Methodology

The monitoring of VCUs generated by the project follows the same principals that have been adopted for the monitoring of emission reductions under the Clean Development Mechanism. (hereafter referred to as AMS-IC):

Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories

Type I: Renewable Energy Projects

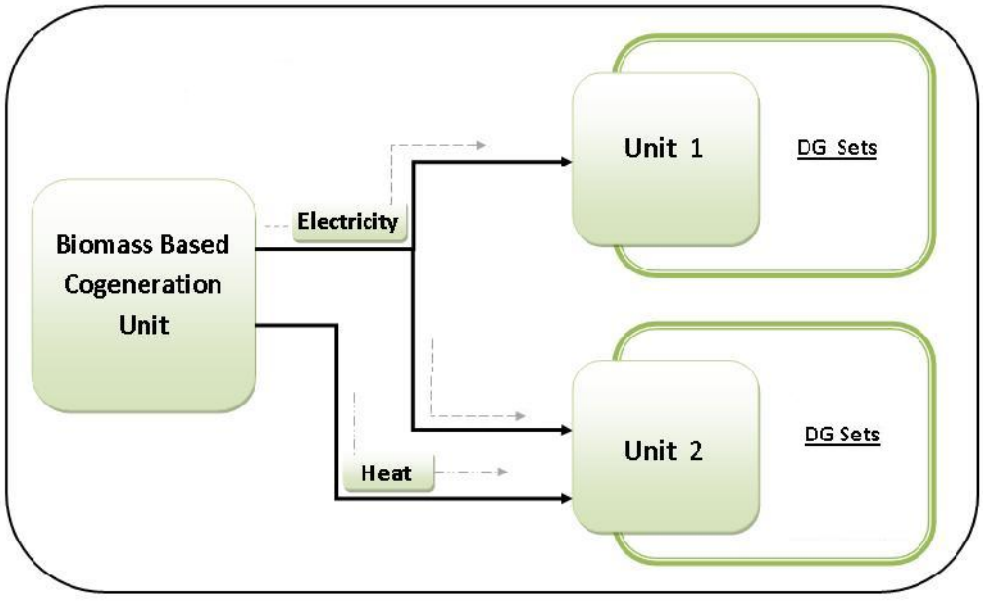
Sub Category C: Thermal energy production with or without electricity.

AMS I C, Version – 15 in effect from 31 July 2009

For more information regarding the baseline methodology and monitoring methodology, please refer to AMS IC, Version-15.

3.2 Monitoring plan

The monitoring plan is prepared in accordance with the AMS-IC. The following figure describes the boundary of the project.



The monitoring plan requires the monitoring of following parameters :

Data Parameter:	**EG_y**
Data unit:	KWh
Description:	Gross electricity generated from cogeneration plant
Source of data	Electricity Log Book and electronic database
Value of data applied for the purpose of calculating expected emission reduction	Year 2007 = 1,53,88,700 Year 2008 = 3,38,24,200 Year 2009 = 3,59,94,400
Description of measurement methods and procedures applied:	Monitoring: Data is monitored by main energy gross meter Sr. No.: 06744912 Make: L&T Accuracy: +/- 0.5% Data type: Measured Frequency: Daily Archiving policy: Paper & Electronic Responsibility: Manager (Power Plant) Calibration: Calibrated annually
QA/QC procedures applied	The meter is calibrated annually by the accredited NABL approved independent third party. The consistency of metered net electricity generation can be crosschecked with factory records.
Any Comment	NA

Data Parameter:	**$EG_{Net\ Aux}$**
Data unit:	KWh
Description:	Net auxiliary electricity consumed by

	cogeneration plant.
Source of data used	Calculated on actual basis as per the method described in "description of measurement method and procedures to be applied".
Value of data applied for the purpose of calculating expected emission reduction	Year 2007 = 34,70,926 Year 2008 = 58,76,991 Year 2009 = 67,42,610
Description of measurement methods and procedures applied:	Monitoring: Calculated on actual basis with the help of energy meters. Net auxiliary electricity is calculated by: $EC_{Aux.} - (EC_{BCK} + EC_{Unit\ 9} + EC_{Unit\ 10})$ Data type: Calculated Archiving policy: Paper & Electronic Responsibility: Manager (Power Plant) Calibration: Related energy meters calibrated annually
QA/QC procedures applied	QA/QC is as per best industrial practices
Any Comment	NA

Data Parameter:	**$EC_{Aux.}$**
Data unit:	KWh
Description:	It is the load of electricity consumed by BCK, Unit 9, Unit 10 and Net auxiliary meter.
Source of data used	Electricity Log Book and electronic database
Value of data applied for the purpose of calculating expected emission reduction	Year 2007 = 46,23,200 Year 2008 = 1,22,25,800 Year 2009 = 1,22,11,800
Description of measurement methods and procedures applied:	Data is monitored by energy meter Sr. No.: UPB09919 Make: Secure

	Accuracy: +/- 0.5% Data type: Measured Frequency: Daily Archiving policy: Paper & Electronic Responsibility: Manager (Power Plant) Calibration: Calibrated annually
QA/QC procedures applied	The meter is calibrated annually by the accredited NABL approved independent third party. The consistency of metered net electricity generation can be crosschecked with factory records.
Any Comment	NA

Data Parameter:	**EC_{BCK}**
Data unit:	KWh
Description:	Electricity consumed at BCK unit
Source of data used	Electricity Log Book and electronic database
Value of data applied for the purpose of calculating expected emission reduction	Year 2007 = 11,14,729 Year 2008 = 21,26,411 Year 2009 = 18,22,330
Description of measurement methods and procedures applied:	Data is monitored by energy meter Sr. No.: 07882301 Make: L&T Accuracy: +/- 1% Data type: Measured Frequency: Daily Archiving policy: Paper & Electronic Responsibility: Manager (Power Plant)

	Calibration: Calibrated annually
QA/QC procedures applied	The meter is calibrated annually by the accredited NABL approved independent third party. The consistency of metered net electricity generation can be crosschecked with factory records.
Any Comment	NA

Data Parameter:	**$EC_{Unit\ 9}$**
Data unit:	KWh
Description:	Electricity consumed at unit 9
Source of data used	Electricity Log Book and electronic database
Value of data applied for the purpose of calculating expected emission reduction	Year 2007 = 37,545 Year 2008 = 9,25,688 Year 2009 = 0
Description of measurement methods and procedures applied:	Data is monitored by energy meter Sr. No.: 87481/853/4-0306 Make: Conzerve Accuracy: +/- 1% Data type: Measured Frequency: Daily Archiving policy: Paper & Electronic Responsibility: Manager (Power Plant) Calibration: Calibrated annually
QA/QC procedures applied	The meter is calibrated annually by the accredited NABL approved independent third party. The consistency of metered net electricity generation can be crosschecked with factory records.
Any Comment	NA

Data Parameter:	**$EC_{Unit\ 10}$**
Data unit:	KWh
Description:	Electricity consumed at unit 10
Source of data used	Electricity Log Book and electronic database
Value of data applied for the purpose of calculating expected emission reduction	Year 2007 = 0 Year 2008 = 3296738 Year 2009 = 3646860
Description of measurement methods and procedures applied:	Data is monitored by energy meter Sr. No.: 07884932 Make: L&T Accuracy: +/- 1% Data type: Measured Frequency: Daily Archiving policy: Paper & Electronic Responsibility: Manager (Power Plant) Calibration: Calibrated annually
QA/QC procedures applied	The meter is calibrated annually by the accredited NABL approved independent third party. The consistency of metered net electricity generation can be crosschecked with factory records.
Any Comment	NA

Data Parameter:	**EG_{Net}**
Data unit:	KWh
Description:	Net electricity generated from cogeneration plant
Source of data used	Calculated from EG_y and $EG_{Aux.}$
Value of data applied for the purpose of calculating expected emission	Year 2007 = 11917774

reduction	Year 2008 = 27947209 Year 2009 = 29251790
Description of measurement methods and procedures applied:	$EG_{Net} = EG_y - EG_{Aux}$
QA/QC procedures applied	The meter for measuring EG_y and EG_{Aux} is calibrated annually by the accredited NABL approved independent third party. The consistency of metered net electricity generation should be crosschecked with factory receipts / records
Any Comment	NA

Data Parameter:	Ƞ
Data unit:	No Unit
Description:	Efficiency of the plant using fossil fuel that would have been used in the absence of the project activity.
Source of data used	fixed value has been taken as per paragraph 18 (C) of the methodology
Value of data applied for the purpose of calculating expected emission reduction	Being conservative taken 100%
Description of measurement methods and procedures applied:	NA
QA/QC procedures applied	NA
Any Comment	NA

Data Parameter:	$EG_{PJ,thermal,y}$
Data unit:	TJ
Description:	Thermal energy (from Steam) supply to process
Source of data used	Data has been calculated on the bases of procedures given in below defined

	description.
Value of data applied for the purpose of calculating expected emission reduction	Year 2007 = 85.24 Year 2008 = 327.86 Year 2009 = 437.76
Description of measurement methods and procedures applied:	Monitoring: Heat from steam is calculated with the help of parameters viz. quantity of steam, temperature of steam and pressure of steam. Steam flow is measured from steam flow meter of unit 2 and unit 10 separately. Flow of steam in tonnes/hr is converted to TJ by calculation.
QA/QC procedures applied	QA/QC is as per best industrial practices
Any Comment	NA

Data Parameter:	**$Q_{Unit\ 2}$**
Data unit:	Tonnes
Description:	Quantity of extracted steam
Source of data used	Log Book being maintained at Nectar Lifesciences Limited.
Value of data applied for the purpose of calculating expected emission reduction	Year: Unit – 2 2007: 35693 2008: 86755 2009: 122424
Description of measurement methods and procedures applied:	Monitoring: Extracted steam measured by steam flow meter. Serial No.: 91G216756 Make: Yokogawa Data type: Measured Frequency: Daily

<table>
<tr><td></td><td>Archiving policy: Paper & Electronic

Responsibility: Manager (Power Plant)

Calibration: Calibrated annually</td></tr>
<tr><td>QA/QC procedures applied</td><td>The meter is calibrated annually by the accredited NABL approved independent third party. The consistency of metered net electricity generation can be crosschecked with factory records.</td></tr>
<tr><td>Any Comment</td><td>NA</td></tr>
<tr><td></td><td></td></tr>
<tr><td>Data Parameter:</td><td>$Q_{Unit\ 10}$</td></tr>
<tr><td>Data unit:</td><td>Tonnes</td></tr>
<tr><td>Description:</td><td>Quantity of extracted steam</td></tr>
<tr><td>Source of data used</td><td>Log Book being maintained at Nectar Lifesciences Limited.</td></tr>
<tr><td>Value of data applied for the purpose of calculating expected emission reduction</td><td><table><tr><td>Year</td><td>Unit – 10</td></tr><tr><td>2007</td><td>0</td></tr><tr><td>2008</td><td>50990</td></tr><tr><td>2009</td><td>61396</td></tr></table></td></tr>
<tr><td>Description of measurement methods and procedures applied:</td><td>Monitoring: Extracted steam measured by steam flow meter.

Serial No.: 0700043

Make: ABB

Data type: Measured

Frequency: Daily

Archiving policy: Paper & Electronic

Responsibility: Manager (Power Plant)

Calibration: Calibrated annually</td></tr>
<tr><td>QA/QC procedures applied</td><td>The meter is calibrated annually by the accredited NABL approved independent</td></tr>
</table>

	third party. The consistency of metered net electricity generation can be crosschecked with factory records.
Any Comment	NA

Data Parameter:	$\mathbf{T_{Unit\ 2}}$
Data unit:	°C
Description:	Temperature of the process steam
Source of data used	Log Book being maintained at Nectar Lifesciences Limited.
Value of data applied for the purpose of calculating expected emission reduction	Year: Unit – 2 2007: 192.64 2008: 192.86 2009: 192.40
Description of measurement methods and procedures applied:	Monitoring: Temperature of extracted steam measured by steam temperature sensor. Serial No.: DSR 3219 Make: Actuasys Data type: Measured Frequency: Daily Archiving policy: Paper & Electronic Responsibility: Manager (Power Plant) Calibration: Calibrated annually
QA/QC procedures applied	The meter is calibrated annually by the accredited NABL approved independent third party. The consistency of metered net electricity generation can be crosschecked with factory records.
Any Comment	NA

Data Parameter:	**$T_{Unit\ 10}$**
Data unit:	°C
Description:	Temperature of the process steam
Source of data used	Log Book being maintained at Nectar Lifesciences Limited.
Value of data applied for the purpose of calculating expected emission reduction	Year: Unit – 10 2007: 0 2008: 182.89 2009: 181.63
Description of measurement methods and procedures applied:	Monitoring: Temperature of extracted steam measured by steam temperature sensor. Serial No.: TE 1100 Make; Actuasys Data type: Measured Frequency: Daily Archiving policy: Paper & Electronic Responsibility: Manager (Power Plant) Calibration: Calibrated annually
QA/QC procedures applied	The meter is calibrated annually by the accredited NABL approved independent third party. The consistency of metered net electricity generation can be crosschecked with factory records.
Any Comment	NA

Data Parameter:	**P**
Data unit:	Kg/cm^2
Description:	Pressure of the process steam
Source of data used	Log Book being maintained at Nectar Lifesciences Limited.

Value of data applied for the purpose of calculating expected emission reduction	Year 2007 = 6.05 Year 2008 = 6.06 Year 2009 = 5.83
Description of measurement methods and procedures applied:	Monitoring: Pressure of process steam being supplied to Unit 2 and Unit 10 measured by pressure transmitter Serial No.: 91F935651 Make: Yokogawa Data type: Measured Frequency: Daily Archiving policy: Paper & Electronic Responsibility: Manager (Power Plant) Calibration: Calibrated annually
QA/QC procedures applied	The meter is calibrated annually by the accredited NABL approved independent third party. The consistency of metered net electricity generation can be crosschecked with factory records.
Any Comment	NA

Data Parameter:	**EF_{coal}**
Data unit:	tCO2e/TJ
Description:	Emission Factor of coal
Source of data used	IPCC default value
Value of data applied for the purpose of calculating expected emission reduction	96.1
Description of measurement methods and procedures applied:	Monitoring: Third party data Data type: Estimated Frequency: Once in a year and as when is published

	Archiving policy: Paper & Electronic Responsibility: Manager (Power Plant) Calibration: Not required as data is from authentic source.
QA/QC procedures applied	NA
Any Comment	NA

Data Parameter:	**Q_y**
Data unit:	Tonnes
Description:	Quantity of Rice Husk used
Source of data used	This value has been referred from daily report book being maintained at site for all fuel type used.
Value of data applied for the purpose of calculating expected emission reduction	Year: Tonnes 2007: 24556 2008: 45189 2009: 40206
Description of measurement methods and procedures applied:	Monitoring: Monitored based on the data recorded. Data type: Measured Frequency: Monthly Archiving policy: Electronic Responsibility: Manager (Power Plant)
QA/QC procedures applied	Quantity of rice husk used in the boiler was calculated by spring balance system which is in place for all the 3 conveyer belts. The values shown here can be cross checked from factory records. These spring balances are calibrated annually.
Any Comment	NA

Data Parameter:	**Q_y**
Data unit:	Tonnes
Description:	Quantity of Mustard Stick used
Source of data used	This value has been referred from daily report book being maintained at site for all fuel type used.
Value of data applied for the purpose of calculating expected emission reduction	Year: Tonnes 2007: 0 2008: 0 2009: 0
Description of measurement methods and procedures applied:	Monitoring: Monitored based on the data recorded. Data type: Measured Frequency: Monthly Archiving policy: Electronic Responsibility: Manager (Power Plant)
QA/QC procedures applied	Quantity of rice husk used in the boiler was calculated by spring balance system which is in place for all the 3 conveyer belts. The values shown here can be cross checked from factory records. These spring balances are calibrated annually.
Any Comment	NA

Data Parameter:	**Q_y**
Data unit:	Tonnes
Description:	Quantity of Mustard Husk used
Source of data used	This value has been referred from daily report book being maintained at site for all fuel type used.
Value of data applied for the purpose of calculating expected emission reduction	Year: Tonnes

	2007: 500 2008: 4569 2009: 6804
Description of measurement methods and procedures applied:	Monitoring: Monitored based on the data recorded. Data type: Measured Frequency: Monthly Archiving policy: Electronic Responsibility: Manager (Power Plant)
QA/QC procedures applied	Quantity of rice husk used in the boiler was calculated by spring balance system which is in place for all the 3 conveyer belts. The values shown here can be cross checked from factory records. These spring balances are calibrated annually.
Any Comment	NA

Data Parameter:	**Q_y**
Data unit:	Tonnes
Description:	Quantity of Cotton Stick Desi used
Source of data used	This value has been referred from daily report book being maintained at site for all fuel type used.
Value of data applied for the purpose of calculating expected emission reduction	Year: Tonnes 2007: 0 2008: 2327 2009: 1480
Description of measurement methods and procedures applied:	Monitoring: Monitored based on the data recorded. Data type: Measured Frequency: Monthly

	Archiving policy: Electronic Responsibility: Manager (Power Plant)
QA/QC procedures applied	Quantity of rice husk used in the boiler was calculated by spring balance system which is in place for all the 3 conveyer belts. The values shown here can be cross checked from factory records. These spring balances are calibrated annually.
Any Comment	NA

Data Parameter:	**Q_y**
Data unit:	Tonnes
Description:	Quantity of Bajra Stalk used
Source of data used	This value has been referred from daily report book being maintained at site for all fuel type used.
Value of data applied for the purpose of calculating expected emission reduction	Year: Tonnes 2007: 0 2008: 3077 2009: 1329
Description of measurement methods and procedures applied:	Monitoring: Monitored based on the data recorded. Data type: Measured Frequency: Monthly Archiving policy: Electronic Responsibility: Manager (Power Plant)
QA/QC procedures applied	Quantity of rice husk used in the boiler was calculated by spring balance system which is in place for all the 3 conveyer belts. The values shown here can be cross checked from factory records. These spring balances are calibrated annually.
Any Comment	NA

Data Parameter:	**Q_y**
Data unit:	Tonnes
Description:	Quantity of Sunflower Stalk used
Source of data used	This value has been referred from daily report book being maintained at site for all fuel type used.
Value of data applied for the purpose of calculating expected emission reduction	Year: Tonnes 2007: 0 2008: 1395 2009: 0
Description of measurement methods and procedures applied:	Monitoring: Monitored based on the data recorded. Data type: Measured Frequency: Monthly Archiving policy: Electronic Responsibility: Manager (Power Plant)
QA/QC procedures applied	Quantity of rice husk used in the boiler was calculated by spring balance system which is in place for all the 3 conveyer belts. The values shown here can be cross checked from factory records. These spring balances are calibrated annually.
Any Comment	NA

Data Parameter:	**Q_y**
Data unit:	Tonnes
Description:	Quantity of Moong Straw used
Source of data used	This value has been referred from daily report book being maintained at site for all fuel type used.

Value of data applied for the purpose of calculating expected emission reduction	Year: Tonnes 2007: 0 2008: 35 2009: 0
Description of measurement methods and procedures applied:	Monitoring: Monitored based on the data recorded. Data type: Measured Frequency: Monthly Archiving policy: Electronic Responsibility: Manager (Power Plant)
QA/QC procedures applied	Quantity of rice husk used in the boiler was calculated by spring balance system which is in place for all the 3 conveyer belts. The values shown here can be cross checked from factory records. These spring balances are calibrated annually.
Any Comment	NA

Data Parameter:	**Q_y**
Data unit:	Tonnes
Description:	Quantity of Arhar Husk used
Source of data used	This value has been referred from daily report book being maintained at site for all fuel type used.
Value of data applied for the purpose of calculating expected emission reduction	Year: Tonnes 2007: 0 2008: 30 2009: 232
Description of measurement methods and procedures applied:	Monitoring: Monitored based on the data recorded. Data type: Measured

	Frequency: Monthly Archiving policy: Electronic Responsibility: Manager (Power Plant)
QA/QC procedures applied	Quantity of rice husk used in the boiler was calculated by spring balance system which is in place for all the 3 conveyer belts. The values shown here can be cross checked from factory records. These spring balances are calibrated annually.
Any Comment	NA

Data Parameter:	**Q_y**
Data unit:	Tonnes
Description:	Quantity of Saw dust used
Source of data used	This value has been referred from daily report book being maintained at site for all fuel type used.
Value of data applied for the purpose of calculating expected emission reduction	Year: Tonnes 2007: 1406 2008: 3654 2009: 20668
Description of measurement methods and procedures applied:	Monitoring: Monitored based on the data recorded. Data type: Measured Frequency: Monthly Archiving policy: Electronic Responsibility: Manager (Power Plant)
QA/QC procedures applied	Quantity of rice husk used in the boiler was calculated by spring balance system which is in place for all the 3 conveyer belts. The values shown here can be cross checked from factory records. These spring balances are calibrated annually.

Any Comment	NA

Data Parameter:	**Q_y**
Data unit:	Tonnes
Description:	Quantity of bushes(sarkanda) used
Source of data used	This value has been referred from daily report book being maintained at site for all fuel type used.
Value of data applied for the purpose of calculating expected emission reduction	Year: Tonnes 2007: 0 2008: 132 2009: 262
Description of measurement methods and procedures applied:	Monitoring: Monitored based on the data recorded. Data type: Measured Frequency: Monthly Archiving policy: Electronic Responsibility: Manager (Power Plant)
QA/QC procedures applied	Quantity of rice husk used in the boiler was calculated by spring balance system which is in place for all the 3 conveyer belts. The values shown here can be cross checked from factory records. These spring balances are calibrated annually.
Any Comment	NA

Data Parameter:	**NCV**
Data unit:	Kcal/KG
Description:	Net Calorific Value of the fuels
Source of data used	Nectar Lifesciences Limited factory records.
Value of data applied for the purpose	This value has been calculated from the

of calculating expected emission reduction	records maintained at Nectar Lifesciences Limited factory for all fuel type used. However only three fuels used at a time and for all those fuels there is different conveyer belt.
Description of measurement methods and procedures applied:	Monitoring: NCV of the fuels is calculated by Bomb Calorimeter and IR instrument present in the Lab at the project site. Data type: Measured Frequency: Daily Archiving policy: Electronic Responsibility: Manager (Power Plant)
QA/QC procedures applied	The Bomb Calorimeter is calibrated annually by the accredited NABL approved independent third party. The values used for the calculation can be can be crosschecked with factory records.
Any Comment	NA

Data Parameter:	**EF_D**
Data unit:	tCO2e/TJ
Description:	Emission factor of Diesel
Source of data used	IPCC default value
Value of data applied for the purpose of calculating expected emission reduction	74.1
Description of measurement methods and procedures applied:	Monitoring: Third party data Data type: Estimated Frequency: Once in a year and as when is published Archiving policy: Paper & Electronic Responsibility: Manager (Power Plant) Calibration: Not required as data is from

	authentic source.
QA/QC procedures applied	The value used here is IPCC default values.
Any Comment	NA

Data Parameter:	**NCV_{Diesel}**
Data unit:	TJ/Tonne
Description:	Net Calorific Value of Diesel
Source of data used	IPCC default value
Value of data applied for the purpose of calculating expected emission reduction	0.043
Description of measurement methods and procedures applied:	Monitoring: Third party data Data type: Estimated Frequency: Once in a year and as when is published Archiving policy: Paper & Electronic Responsibility: Manager (Power Plant) Calibration: Not required as data is from authentic source.
QA/QC procedures applied	The value used here is IPCC default values.
Any Comment	NA

Data Parameter:	**TL**
Data unit:	Tonnes
Description:	Load of biomass on each truck
Source of data used	Nectar Lifesciences Limited factory records. The data is being maintained at Factory electronically by Store department.

Value of data applied for the purpose of calculating expected emission reduction	This value has been calculated from the records maintained at Nectar Lifesciences Limited factory for all fuel type used.
Description of measurement methods and procedures applied:	Monitoring: Monitored based on the data recorded. Data type: Measured Frequency: Daily Archiving policy: Electronic Responsibility: Manager (Power Plant)
QA/QC procedures applied	QA/QC is as per best industrial practices
Any Comment	NA

Data Parameter:	**D_T**
Data unit:	Km
Description:	Distance travelled by each truck
Source of data used	Nectar Lifesciences Limited factory log book in which records of the suppliers detail and declaration from the supplier stating the distance between initial point and dumping station are being maintained.
Value of data applied for the purpose of calculating expected emission reduction	150
Description of measurement methods and procedures applied:	The maximum round trip distance is 120 km. Being conservative fixed value of 150 is used.
QA/QC procedures applied	Declaration from all the husk providers is being submitted for this purpose.
Any Comment	NA

Data Parameter:	**M**

Data unit:	Km/Lit
Description:	Avearage mileage of each truck
Source of data used	A normalised and conservative fixed value is being used
Value of data applied for the purpose of calculating expected emission reduction	4
Description of measurement methods and procedures applied:	A normalised and conservative fixed value is being used
QA/QC procedures applied	NA
Any Comment	NA

Data Parameter:	**D**
Data unit:	Kg/Lit.
Description:	Density of Diesel
Source of data used	http://www.freepatentsonline.com/4028152.html
Value of data applied for the purpose of calculating expected emission reduction	0.87
Description of measurement methods and procedures applied:	A normalised and conservative fixed value is being used
QA/QC procedures applied	NA
Any Comment	NA

Data Parameter:	**Q_D**
Data unit:	Lit/day.
Description:	Quantity of diesel consumed in tractors used for levelizing the piles/heaps of biomass
Source of data used	This value has been referred from the diesel purchase log book at Nectar Lifesciences Limited factory.

Value of data applied for the purpose of calculating expected emission reduction	Value of data is tabulated in the table under section 5.3.
Description of measurement methods and procedures applied:	Monitoring: Monitored based on the data recorded. Data type: Measured Frequency: Monthly Archiving policy: Electronic Responsibility: Manager (Power Plant)
QA/QC procedures applied	NA
Any Comment	NA

3.3 Relevant Meters

An overview of the specifications of the metering instruments is provided below:

Electricity

Meter	Serial No.	Make	Accuracy
Gross TG	6744912	L&T	+/- 0.5 %
Unit - 1	UPB09917	Secure	+/- 0.5 %
Unit - 2	UPB09918	Secure	+/- 0.5 %
Auxiliary	UPB09919	Secure	+/- 0.5 %
BCK	07882301	L&T	+/- 1 %
Unit - 9	87481/853/4-0306	Conzerve	+/- 1 %
Unit – 10	07884932	L&T	+/- 1 %

Steam

	Meter	**Serial No.**	**Make**
Unit – 2	Steam Flow	91G216756	Yokogawa
	Steam Totalizer	2K9031383	Nivam
	Steam Temp. Controller	00305255	Forbes Marshall
	Steam Temp. Sensor (RTD)	I.D. No. – DSR 3219	Actuasys
Unit – 10	Steam Flow	0700043	ABB
	Steam Flow Totalizer	2K7070612	Nivam
	Steam Temp. Controller	00825747	Forbes Marshall
	Steam Temp. Sensor (RTD)	I.D. NO. – TE 1100	Actuasys
Extraction Steam	Pressure Transmitter	91F935651	Yokogawa
	Temperature	251106106	Actuasys

3.4 Quality Assurance (QA) and Quality Control (QC):

Quality assurance/quality control plan was made as per best practise. Monitoring was done with necessary equipments on intervals mentioned in the methodology adopted for the project activity. The calibration of monitoring equipment is being maintained as per the requirement and the same is being done regularly. All monitoring parameters being recorded and the same being verified by the responsible authorities mentioned in procedure.

3.4.1 Cross Check Methods

The values used here for calculation are taken from plant log books/ daily report books and some values are from IPCC default values as per the registered PD.

The readings are taken hourly and recorded in the log book by the Operator. These readings are checked by the Engineer at the end of every shift and compiled at the end of the day by the Engineer. The readings are checked by the Dep. Manager at the end of the day. The monthly values are aggregated in the log book and the gross generation in the month is calculated by Dep. Manager

and the same values are reported to the Sr. V.P. (Technical) who is the overall in-charge. The values can be cross checked by plant log books and daily report books. The same values are being used for the other internal purposes of Nectar Lifesciences Ltd. also.

4. Report of project Operations

4.1 Project performance

The project activity involves the operation of biomass based co-generation system. The project is performing to the desired level from the date of commissioning.

4.2 Emergencies

During the monitoring period there have been no occurrences of emergencies[1].

4.3 Special events / operations report

During the monitoring period the project has operated normally and no serious events have taken place that would have affected the safe operation of the Plant.

[1] Emergencies are defined here as "conditions under which the project entity has not been able to monitor due to unexpected accidents".

5. GHG Emission Reduction

5.1 Emission reductions calculation equation

In accordance with the AMS-I.C (version 14) simplified baseline and monitoring methodology, emission reductions (ER_y, expressed in tCO2/MWh) are calculated according to the following formula:

$ER\ y = BEy - PEy - Ly$

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*

However, the emissions in the registered PD has been claimed for the total of 365 days after the starting of the project activity (i.e. for year 2007-2008, 2008 – 2009....up to 2016-2017), but as the prices of VCUs vary according to vintages hereafter, the emissions reduction calculated as vintage wise (i.e. for 2007,2008 & 2009). The same has been ratified in the registered PD. Crediting Period in the registered PD has been changed as per the following table:

Crediting Period in the Registered PD Ver- 04 Dated 18.11.2009	Crediting Period in the Revised PD – Ver 05 Dated 20.10.2010
2007-2008	2007(Starting from 27 May)
2008-2009	2008
2009-2010	2009
2010-2011	2010
2011-2012	2011
2012-2013	2012
2013-2014	2013
2014-2015	2014
2015-2016	2015

2016-2017	2016
	2017 (till 26 May)

5.2 Baseline Emissions

Baseline Emission Calculation

The actual annual emission reductions are calculated considering 6 MW with 80% PLF of electricity and 24 TPH of steam extraction.

For electricity and thermal energy (steam/heat) produced in a cogeneration unit, using fossil fuel, the following equation shall be used:

$$BE_{cogen,CO2,y} = [(EG_{PJ,thermal,y} + EG_{PJ,electrical,y} * 3.6)/\eta_{BL,cogen}] * EF_{FF,CO2}$$

Where:

$BE_{cogen,CO2,y}$	The baseline emissions from electricity displaced by the project activity during the year y; tCO_2
$EG_{PJ,thermal,y}$	The net quantity of thermal energy supplied by the project activity during the year y; tCO2
$EG_{PJ,electrical,y}$	The amount of electricity supplied by the project activity during the year y; tCO2
3.6	Conversion factor; TJ/GWh
$\eta_{BL,cogen}$	The total efficiency (including both thermal and electrical) of the cogeneration plant using fossil fuel that would have been used in the absence of the project activity. Efficiency should be calculated as the total energy produced (electricity and steam/heat extracted) divided by thermal energy of the fuel used
$EF_{FF,CO2}$	The CO2 emission factor of the fossil fuel that would have been used in the baseline cogeneration plant; tCO2 / TJ obtained from reliable local or national data if available, otherwise IPCC default emission factors are used

Summary of data related to electricity generation and steam generation (Unit – 2 & Unit - 10separately) is provided in Annex – 1 attached at the end of this report. All the supporting related to data has been provided for cross verification.

Accordingly, for the month of June, 2007,

$$BE_{cogen,CO2,y} = [(8.34 + 1.06 * 3.6))/100\%] * 96.1\ tCO_2e$$

$$= 1168\ tCO_2e$$

Being conservative, 100% efficiency of the cogeneration plant ($\eta_{BL,cogen}$) has been considered.

Similarly the baseline emissions from the project activity have been calculated for subsequent months.

Baseline Emission Table

Month	EG_{Net}(GWh)	Equivalent Thermal Energy	Baseline Emission due to Electricity	Thermal Energy from Steam	Baseline Emissions due to Steam	BEy (tCO2e)
2007						
May-07	0.30	1	104	0	0	**104**
Jun-07	1.06	4	367	8	801	**1168**
Jul-07	1.64	6	569	9	883	**1452**
Aug-07	1.90	7	657	10	983	**1640**
Sep-07	1.75	6	606	11	1027	**1632**
Oct-07	1.81	7	627	15	1426	**2052**
Nov-07	1.89	7	653	16	1564	**2217**
Dec-07	1.57	6	542	16	1507	**2049**
Total	11.92	42.90	4123.07	85.24	8191.62	**12315**
2008						
Jan-08	1.63	6	565	17	1586	**2151**
Feb-08	1.46	5	505	15	1399	**1904**
Mar-08	2.01	7	695	17	1675	**2371**
Apr-08	2.17	8	750	19	1800	**2549**
May-08	2.53	9	874	22	2145	**3019**
Jun-08	2.83	10	978	26	2454	**3432**
Jul-08	2.42	9	837	28	2714	**3551**
Aug-08	2.84	10	981	39	3785	**4766**
Sep-08	2.77	10	957	37	3508	**4465**
Oct-08	3.03	11	1048	40	3867	**4915**
Nov-08	2.05	7	710	32	3112	**3822**
Dec-08	2.22	8	768	36	3464	**4232**
Total	27.95	100.61	9668.62	327.86	31507.44	**41176**
2008						
Jan-09	2.16	8	748	38	3629	**4377**
Feb-09	1.87	7	648	28	2711	**3359**

Mar-09	1.89	7	654	33	3214	**3868**
Apr-09	2.61	9	901	36	3461	**4362**
May-09	2.57	9	891	35	3370	**4261**
Jun-09	2.61	9	903	35	3349	**4252**
Jul-09	2.78	10	963	36	3497	**4459**
Aug-09	2.78	10	961	43	4140	**5102**
Sep-09	2.84	10	983	43	4103	**5086**
Oct-09	2.98	11	1031	43	4165	**5196**
Nov-09	2.60	9	900	40	3878	**4778**
Dec-09	1.55	6	536	27	2551	**3087**
Total	29.25	105.31	10119.95	437.76	42068.94	**52189**

Baseline emissions for project activity calculated ex ante in registered PD was 47704 but in the year 2009 emissions were monitored to be 52189 units which are higher than what was projected in the PD. This happened because in the registered PD ex ante calculation was done for 20 TPH steam extracted from turbine with 180^0C temperature and 6 kgf/cm^2 whereas the actual extraction temperature is 256^0C with same pressure. After extraction the steam is being supplied to Unit - 2 and Unit - 10 via Desuperheating Station (DSH) due to which there is an increase in the quantity of the steam i.e. up to 24 TPH and decrease in temperature and in the registered PD, the calculations were done on the basis of quantity of extracted steam before DSH i.e. 20 TPH and temperature and pressure after the DSH i.e. of final process steam (useful steam). The same is now being rectified in the monitoring report as well as in the registered PD as it does not affect the additionality of the project.

Following table shows the comparison between ex-ante baseline emission in the registered PD, revised PD and actual baseline emissions.

Year	Ex-Ante baseline emission in the registered PD – Version 4 dated 18.11.2009	Ex-Ante baseline emission in the revised PD – Version 5 dated 20.10.2010	Actual Baseline Emission	Percentage Difference
(1)	(2)	(3)	(4)	(5) = 1 - (4)/(3)
2007	47,704	32,750	12315	-62.4%
2008	47,704	54,878	41,176	-24.96%
2009	47,704	54,878	52,189	-4.89%

For the above defined reason VCUs increased from what was claimed in the registered PD – Ver 04 dated 18.11.2009. However there is no impact on the additionality of the project and also VCUs are well under the limit of 10%.

5.3 Project emissions

The project emission in the project activity is accounted from the quantity of diesel used in the tractors for levelizing the piles/heaps of biomass. Data for diesel consumption is taken from the plant records.

As described in section 4.3 of the PD, the algorithm used in the calculation of project emission is explained below and the complete calculation is being submitted to the DOE.

Algorithm for the calculation of Project Emission:

$P.E. = (Q_D * D / 1000) * NCV_{Diesel} * EF_D$

Where:

P.E.	Project emission from the project activity; tCO_2e
Q_D	Quantity of diesel consumed in tractors used for levelizing the piles/heaps of biomass; Litres
D	Density of diesel; Kg/Litre
NCV_{Diesel}	Net Calorific Value of diesel; TJ/Tonnes
EF_D	Emission factor of diesel; tCO_2e/TJ

Values of the above variables are taken from the monitoring plan described in section 3.2.

For the month of June, 2007, project emissions from the project activity were:

$P.E. = (1936 * 0.87/1000)*0.04303*74.1$

$= 5.37\ tCO_2e$

The project emissions on the account of tractor used for levelizing the piles of biomass for subsequent months is tabulated below:

	Q_D (Litres)	**PE (tCO_2e)**

Month		
May-07	1550	4.30
Jun-07	1936	5.37
Jul-07	1137	3.15
Aug-07	1110	3.08
Sep-07	1120	3.11
Oct-07	1150	3.19
Nov-07	1150	3.19
Dec-07	985	2.73
Jan-08	1220	3.38
Feb-08	970	2.69
Mar-08	1100	3.05
Apr-08	1060	2.94
May-08	940	2.61
Jun-08	940	2.61
Jul-08	1380	3.83
Aug-08	1230	3.41
Sep-08	1390	3.86
Oct-08	1410	3.91
Nov-08	1420	3.94
Dec-08	1350	3.74
Jan-09	1850	5.13
Feb-09	2320	6.44
Mar-09	2370	6.57
Apr-09	2634	7.31
May-09	2775	7.70
Jun-09	2569	7.13
Jul-09	2570	7.13

Aug-09	1860	5.16
Sep-09	2000	5.55
Oct-09	2200	6.10
Nov-09	2610	7.24
Dec-09	2631	7.30

5.4 Leakage

The leakages on the account of transportation of biomass for the month of April, 2008 can be seen below.

The biomass consumption for April'08 was:

Fuel	Kg	Tons
Bazra Fodder	115235	115.235
Arhar Husk		0
Moongi Husk		0
Musterd Husk		0
Cotton Stick		0
Sarkanda		0
Sawdust	58590	58.59
Sunflower		0
Rice Husk	2763623	2763.623
Total	**2937448**	2937.448

Leakage Estimation		
Total Biomass Requirements	2937.448	Tonnes per month
Truck capacity	8	Tonnes
Max. return distance between project site and collection centres	150	Km
Total Number of trips	2937.448/8 = 368	
Consumption of diesel per trip (to and fro)(@4km/lit)	150/4 = 37.5	Lit
Total Diesel consumption	368*37.5 = 13800	Lit
Density of diesel	0.87	kg/lit
Mass of diesel used	13800*0.87/1000 = 12.006	Tonnes
Calorific value of diesel	0.04303	TJ/Tonnes
Emission factor for diesel	74.1	tCO2e/TJ
Emissions due to transportation of biomass	12.006*0.04303*74.1 = 38.28	t CO2 /month

Similarly the leakage emissions calculated for all other months have been tabulated below.

Leakage Estimation on Account of Transportation of Biomass				
	Ly (tCO2e)	Ly (tCO2e)	Ly (tCO2e)	
	2007	**2008**	**2009**	
January	0.00	55.76	91.97	t CO2 /month
February	0.00	49.10	63.77	t CO2 /month
March	0.00	53.58	108.51	t CO2 /month
April	15.50	38.28	52.43	t CO2 /month
May	6.76	65.23	103.51	t CO2 /month
June	35.89	78.13	89.99	t CO2 /month
July	44.01	95.71	77.40	t CO2 /month
August	57.01	112.36	86.97	t CO2 /month
September	43.28	81.67	88	t CO2 /month
October	61.90	74.70	85.72	t CO2 /month
November	52.22	79.06	82.29	t CO2 /month
December	48.38	69.81	59.30	t CO2 /month
Total	**365**	**854**	**990**	**t CO2 /month**

5.5 Calculation of emission reductions

The calculation of emission reductions for June, 2007:

ERy (tCO2e) = BEy (tCO_2e) - PEy (tCO_2e) - Ly (tCO_2e)

= 1168 – 5 – 36 tCO_2e

= 1127 tCO_2e

Similarly, the emission reduction calculation has been tabulated below:

2007				
	BEy (tCO_2e)	PEy (tCO_2e)	Ly (tCO_2e)	ERy (tCO_2e)
April	0	0	16	-16
May	104	4	7	93
June	1168	5	36	1127
July	1452	3	44	1405
August	1640	3	57	1580
September	1632	3	43	1586
October	2052	3	62	1987
November	2217	3	52	2162
December	2049	3	48	1998
Total	**12315**	**28**	**365**	**11922**

2008				
	BEy (tCO2e)	PEy (tCO2e)	Ly (tCO2e)	ERy (tCO2e)
January	2151	3	56	2092
February	1904	3	49	1852
March	2371	3	54	2332
April	2549	3	38	2508

May	3019	3	65	2951
June	3432	3	78	3351
July	3551	4	96	3451
August	4766	3	112	4650
September	4465	4	82	4379
October	4915	4	75	4837
November	3822	4	79	3739
December	4232	4	70	4159
Total	**41176**	**40**	**854**	**40282**

2009				
	BEy (tCO2e)	PEy (tCO2e)	Ly (tCO2e)	ERy (tCO2e)
January	4377	5	92	4280
February	3359	6	64	3289
March	3868	7	109	3753
April	4362	7	52	4302
May	4261	8	104	4150
June	4252	7	90	4155
July	4459	7	77	4375
August	5102	5	87	5009
September	5086	6	88	5022
October	5196	6	86	5104
November	4778	7	82	4689
December	3087	7	59	3021
Total	**52189**	**79**	**990**	**51120**

Vintage Breakdown of Emission Reduction:

Year	Emission Reductions
2007	11,922
2008	40,282
2009	51,120
Total	**1,03,324**

Total emission reductions during the period 27th May-2007 – 31st December-2009, are calculated as, **1,03,324 tCO_2e**.

6. Calibration and corrective actions

6.1 Calibration

Calibration of all the relevant meters has been done annually and they were found working properly.

Main Energy Gross Meter	
Make	L&T
Serial No.	06744912
Supply System	3 Phase 4 Wire
ID No.	EM – 07
Accuracy	+/- 0.5 %
Date of calibration	01/04/2008
Date of calibration	01/04/2009
Date of latest calibration	21/04/2010
Next Calibration due on	20/04/2011
Unit – 1 Energy Meter	
Make	Secure
Serial No.	UPB09917
Supply System	3 Phase 4 Wire
ID No.	EM – 04
Accuracy	+/- 0.5 %
Date of calibration	01/04/2008
Date of calibration	01/04/2009
Date of latest calibration	21/04/2010
Next Calibration due on	20/04/2011
Unit – 2 Energy Meter	
Make	Secure

Serial No.	UPB09918
Supply System	3 Phase 4 Wire
ID No.	EM – 03
Accuracy	+/- 0.5 %
Date of calibration	01/04/2008
Date of calibration	01/04/2009
Date of latest calibration	21/04/2010
Next Calibration due on	20/04/2011
Auxiliary Energy Meter	
Make	Secure
Serial No.	UPB09919
Supply System	3 Phase 4 Wire
ID No.	EM – 06
Accuracy	+/- 0.5 %
Date of calibration	01/04/2008
Date of calibration	01/04/2009
Date of latest calibration	21/04/2010
Next Calibration due on	20/04/2011
BCK Energy Meter	
Make	L&T
Serial No.	07882301
Supply System	3 Phase 4 Wire
ID No.	EM – 01
Accuracy	+/- 0.5 %
Date of calibration	01/04/2008
Date of calibration	01/04/2009

Date of latest calibration	21/04/2010
Next Calibration due on	20/04/2011
Unit - 9 Energy Meter	
Make	Conzerv
Serial No.	87481/853/4-0306
Supply System	3 Phase 4 Wire
ID No.	EM – 02
Accuracy	+ / - 0.5 %
Date of calibration	01/04/2008
Unit - 10 Energy Meter	
Make	L&T
Serial No.	07884932
Supply System	3 Phase 4 Wire
ID No.	EM – 05
Accuracy	+/- 1 %
Date of calibration	01/04/2008
Date of calibration	01/04/2009
Date of latest calibration	21/04/2010
Next Calibration due on	20/04/2011
Extraction Steam Pressure Transmitter	
Make	Yokogawa
Serial No.	91F935651
ID No.	PT – 1102
Range / Size	0-10 Kg / Cm^2
Span	10 Kg / Cm^2
Location	Turbine Gauge Pane

Test Certificate	16/05/2006
Date of Calibration	01/02/2008
Date of Calibration	01/02/2009
Date of calibration	01/02/2010
Date of latest calibration	21/04/2010
Next Calibration due on	20/04/2011
Extraction Steam Temperature Transmitter Thermocouple	
Make	Actuasys
Serial No.	251106106
ID No.	TS -04
Range / Size	0 – 1200 ℃
Span	1200 ℃
Date of latest calibration	21/04/2010
Next Calibration due on	20/04/2011
Unit – 2 Steam Flow Transmitter	
Make	Yokogawa
Serial No.	91G216756
ID No.	FT – 101
Range / Size	0 – 2500 mmWc
Span	2500 mmWc
Test Certificate	21/05/2007
Date of Calibration	30/03/2008
Date of Calibration	31/03/2009
Date of latest calibration	21/04/2010
Next Calibration due on	20/04/2011
Unit – 2 Steam Flow Totalizer	

Make	Nivam
Serial No.	2K9031383
ID No.	Unit – 2
Range / Size	0-32 ton/Hr / 0-999999.99 Ton/Hr
Span	32 ton/Hr
Test Certificate	23/05/2007
Date of latest calibration	21/04/2010
Next Calibration due on	20/04/2011
Unit – 2 Temperature Controller	
Make	Forbes Marshall
Serial No.	00305255
ID No.	Unit – 2 (C)
Range / Size	0 – 300 °C
Span	300 °C
Test Certificate	15/03/2007
Date of latest calibration	21/04/2010
Next Calibration due on	20/04/2011
Unit – 2 Steam Temperature RTD Sensor	
Make	Actuasys
ID No.	DSR – 3219
Range / Size	0 – 300 °C
Span	300 °C
Test Certificate	17/02/2007
Date of latest calibration	21/04/2010
Next Calibration due on	20/04/2011
Unit - 10 Steam Flow Transmitter	

Make	ABB
Serial No.	0700043
ID No.	FT – 04
Range / Size	0 – 2500 mmWc
Span	2500 mmWc
Test Certificate	16/02/2008
Date Calibration	25/07/2009
Date of latest calibration	21/04/2010
Next Calibration due on	20/04/2011
Unit – 10 Steam Flow Totalizer	
Make	Nivam
Serial No.	2K7070612
ID No.	Unit – 10
Range / Size	0-15 ton/Hr / 0-999999.99 Ton/Hr
Span	15 ton/Hr
Test Certificate	10/02/2008
Date of latest calibration	21/04/2010
Next Calibration due on	20/04/2011
Unit - 10 Temperature Controller	
Make	Forbes Marshall
Serial No.	00825747
ID No.	Unit - 10(C)
Range / Size	0 – 300 °C
Span	300 °C
Test Certificate	13/02/2008
Date of latest calibration	21/04/2010

Next Calibration due on	20/04/2011
Unit – 10 Steam Temperature RTD Sensor	
Make	Actuasys
ID No.	TE – 1100
Range / Size	0 – 300 °C
Span	300 °C
Test Certificate	13/01/2008
Date of latest calibration	21/04/2010
Next Calibration due on	20/04/2011

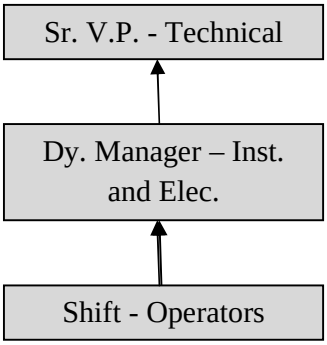
6.2 Corrective actions

During the operation of the project activity during the monitoring period there have been no events that required corrective actions**.**

7. Submission and Authorization

This monitoring report has been prepared and submitted by the Nectar Lifesciences Limited. The below officers declare that the contents of the report provide an accurate representation of the monitoring results.

Management and operational system for the project activity is shown below:



Sr. V.P. – Technical: is responsible for overall VCS project activity.

Dr. Manager – Inst. and Elec. : is responsible for maintenance all records pertaining to net electricity generation and net steam used for the process.

Shift - Operators: is responsible for monitoring of readings on daily basis.

Annex – 1

Data of Power

Power				
Month	Gross Electricity Generation (KWh)	Net Aux. Consumption (KWh)	Net Electricity generation (KWh)	Net Electricity generation (GWh)
May-07	424000	124100	299900	0.30
Jun-07	1294400	234200	1060200	1.06
Jul-07	2297800	653487	1644313	1.64
Aug-07	2323600	425895	1897705	1.90
Sep-07	2367100	616098	1751002	1.75
Oct-07	2254900	443747	1811153	1.81
Nov-07	2295300	407824	1887476	1.89
Dec-07	2131600	565575	1566025	1.57
Jan-08	1952200	319861	1632339	1.63
Feb-08	1756400	295675	1460725	1.46
Mar-08	2411300	401727	2009573	2.01
Apr-08	2631700	464466	2167234	2.17
May-08	3022700	495956	2526744	2.53
Jun-08	3397900	572199	2825701	2.83
Jul-08	2931300	510976	2420324	2.42
Aug-08	3444300	609072	2835228	2.84
Sep-08	3301200	534470	2766730	2.77
Oct-08	3634200	604597	3029603	3.03
Nov-08	2554000	501969	2052031	2.05
Dec-08	2787000	566023	2220977	2.22
Jan-09	2734700	571413	2163287	2.16
Feb-09	2304300	431199	1873101	1.87
Mar-09	2379300	488823	1890477	1.89
Apr-09	3085300	479625	2605675	2.61
May-09	3233400	658402	2574998	2.57
Jun-09	3259000	649826	2609174	2.61
Jul-09	3457400	675064	2782336	2.78
Aug-09	3426700	647749	2778951	2.78
Sep-09	3435600	592942	2842658	2.84
Oct-09	3586200	606747	2979453	2.98
Nov-09	3170000	567580	2602420	2.60
Dec-09	1922500	373240	1549260	1.55

Data of Steam – Unit - 2

Unit - 2						
Month	Steam flow (Tonnes)	Pressure (Kg/cm²)	Temp. °C	Enthalpy (kJ/kg)	Enthalpy (kCal/kg)	Heat Generation (TJ)
May-07	0	6.02	192.74	2828.51	675.58	0.00
Jun-07	3487	6.05	193.83	2830.80	676.12	8.34
Jul-07	3847	5.87	192.65	2829.16	675.73	9.19
Aug-07	4285	5.96	192.22	2827.68	675.38	10.23
Sep-07	4473	6.07	192.53	2827.75	675.40	10.68
Oct-07	6216	6.07	191.99	2826.53	675.11	14.84
Nov-07	6818	6.20	192.49	2826.91	675.20	16.28
Dec-07	6567	6.16	192.65	2827.50	675.34	15.68
Jan-08	6917	6.19	191.93	2825.70	674.91	16.50
Feb-08	6091	6.19	193.48	2829.21	675.75	14.56
Mar-08	7301	6.19	192.67	2827.38	675.31	17.43
Apr-08	7865	6.20	189.68	2820.52	673.67	18.73
May-08	6646	6.11	195.61	2834.47	677.00	15.92
Jun-08	5650	6.05	194.54	2832.39	676.50	13.52
Jul-08	6118	6.01	192.40	2827.80	675.41	14.61
Aug-08	8523	5.88	189.26	2821.46	673.89	20.30
Sep-08	7914	6.00	193.81	2831.03	676.18	18.93
Oct-08	8839	6.00	193.13	2829.50	675.81	21.12
Nov-08	7125	5.94	194.04	2831.89	676.39	17.04
Dec-08	7766	5.95	193.79	2831.27	676.24	18.57
Jan-09	8016	5.98	193.56	2830.58	676.07	19.17
Feb-09	6032	5.99	193.20	2829.72	675.87	14.42
Mar-09	7495	5.96	193.31	2830.13	675.96	17.92
Apr-09	9827	5.86	193.14	2830.32	676.01	23.49
May-09	10849	5.88	193.74	2831.55	676.30	25.95
Jun-09	11491	5.90	193.14	2830.09	675.96	27.47
Jul-09	11236	5.69	192.98	2830.93	676.16	26.87
Aug-09	12992	5.68	192.61	2830.15	675.97	31.06
Sep-09	12453	5.68	193.52	2832.18	676.45	29.79
Oct-09	12668	5.77	193.59	2831.84	676.37	30.30
Nov-09	11492	5.80	191.86	2827.78	675.40	27.44
Dec-09	7873	5.81	184.16	2810.30	671.23	18.66

Data of Steam – Unit - 10

Unit - 10						
Month	Steam flow	Pressure (Kg/cm²)	Temp.	Enthalpy (kJ/kg)	Enthalpy (kCal/kg)	Heat Generation (TJ)
May-07	-	-	-	-	-	0.00
Jun-07	-	-	-	-	-	0.00
Jul-07	-	-	-	-	-	0.00
Aug-07	-	-	-	-	-	0.00
Sep-07	-	-	-	-	-	0.00
Oct-07	-	-	-	-	-	0.00
Nov-07	-	-	-	-	-	0.00
Dec-07	-	-	-	-	-	0.00
Jan-08	-	-	-	-	-	0.00
Feb-08	-	-	-	-	-	0.00
Mar-08	-	-	-	-	-	0.00
Apr-08	-	-	-	-	-	0.00
May-08	2700	6.11	184.83	2810.10	671.18	6.40
Jun-08	5076	6.05	183.30	2806.84	670.40	12.02
Jul-08	5764	6.01	181.89	2803.84	669.69	13.63
Aug-08	8080	5.88	182.17	2801.55	669.14	19.08
Sep-08	7430	6.00	182.43	2805.15	670.00	17.58
Oct-08	8082	6.00	182.37	2805.01	669.97	19.12
Nov-08	6479	5.94	182.97	2806.77	670.39	15.34
Dec-08	7379	5.95	183.11	2807.03	670.45	17.47
Jan-09	7857	5.98	182.80	2806.13	670.23	18.59
Feb-09	5830	5.99	182.91	2806.25	670.26	13.80
Mar-09	6564	5.96	182.48	2805.52	670.09	15.53
Apr-09	5287	5.86	182.84	2806.97	670.43	12.52
May-09	3854	5.88	182.19	2806.55	670.33	9.12
Jun-09	3121	5.90	182.39	2805.69	670.13	7.38
Jul-09	4022	5.69	182.05	2806.24	670.26	9.52
Aug-09	5082	5.68	181.77	2805.66	670.12	12.02
Sep-09	5451	5.68	182.65	2805.39	670.06	12.90
Oct-09	5506	5.77	182.86	2807.58	670.58	13.04
Nov-09	5461	5.80	181.10	2803.37	669.57	12.91
Dec-09	3361	5.81	173.50	2785.72	665.36	7.89