



Voluntary Carbon Standard Version 2007.1
Verification Report

19 November 2007

Verification Report: No: INDIA-VCS-Ver/90.49/2010

Name of Verification company:	Date of the issue:
Bureau Veritas Certification SAS	21/10/2010 – Ver-02
Report Title:	Approved by:
VCS Verification report for Nectar Life sciences Ltd.	Mr. H.B. Muralidhar
Client:	Project Title:
Nectar Life science Ltd.	Biomass Based Cogeneration Project at Nectar Life Sciences Ltd.
Summary:	

Bureau Veritas Certification has made the verification of the Biomass Based Cogeneration Project at Nectar Life Sciences Ltd. located near NH-21 (Ambala- Mandi Highway) in Eastern Punjab. by M/s Nectar Life Sciences Ltd. The site located at Village Saidpur , in the Dera Bassi Taluk in the district of Mohali, in the Indian state of Punjab on the basis of Voluntary Carbon Standard-2007.1, as well as criteria given to provide for consistent project operations, monitoring and reporting, as well as the host country criteria.

The verification scope is defined as an independent and objective review of the project description document monitoring report and other relevant documents, and consisted of the following three phases: i) desk review of the project description and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final verification report and opinion. The overall verification, from Contract Review to Verification Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

The first output of the verification process is a list of Clarification and Corrective Actions Requests (CL and CAR), presented in Appendix A. Taking into account this output, the project proponent revised its project description document and the VCS monitoring report.

In summary, Bureau Veritas Certification confirms that the project is implemented as planned and described in validation report and registered VCS-PD project design document. Installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately. The monitoring system is in place and the project is generating GHG emission reductions. The GHG emission reduction is calculated without material misstatements.

Our opinion relates to the project's GHG emissions and resulting GHG emission reductions reported and related to the valid and registered project baseline and monitoring, and its associated documents.

Reporting period: From 27/05/2007 to 31/12/2009

Verified emission in the above reporting period:

Project emissions	147	t CO2 equivalents
Baseline emissions	105680	t CO2 equivalents
Leakage emission	2208	t CO2 equivalents
Emission reductions	103324	t CO2 equivalents

Work carried out by:	Number of pages:
Mr. S. Ajesh Kumar Mrs. Pooja Verma	28

Table of Contents

Sl no	Description	Page no
1	<i>Introduction</i>	4
	1.1 <i>Objective</i>	4
	1.2 <i>Scope and criteria</i>	4
	1.3 <i>V C S Project description</i>	4
	1.4 <i>Level of assurance</i>	5
2	<i>Methodology</i>	6
	2.1 <i>Review of document</i>	6
	2.2 <i>Follow-up interviews</i>	6
	2.3 <i>Resolution of any material discrepancy</i>	7
3	<i>Verification findings</i>	8
	3.1 <i>Remaining issues, including any material discrepancy, from previous validation</i>	8
	3.2 <i>Project Implementation</i>	9
	3.3 <i>Completeness of Monitoring</i>	9
	3.4 <i>Accuracy of Emission Reduction Calculations</i>	10
	3.5 <i>Quality of Evidence to Determine Emission Reductions</i>	10
	3.6 <i>Management and Operational System</i>	11
4	<i>Verification conclusion</i>	11
	<i>Appendix A - Verification protocol</i>	14
	<i>Appendix B - Abbreviations</i>	25
	<i>Appendix C - References</i>	27
	<i>Appendix D - Curricula vitae of the DOE's verification team members</i>	28

1 Introduction

Nectar Life sciences Ltd has commissioned Bureau Veritas Certification to validate its VCS project "Biomass Based Cogeneration Project at Nectar Life Sciences Ltd" (Project activity) located at the site near NH-21 (Ambala- Mandi Highway) in Eastern Punjab. by M/s Nectar Life Sciences Ltd. The site located at Village Saidpur, in the Dera Bassi Taluk in the district of Mohali, in the Indian state of Punjab on the basis of Voluntary Carbon Standard-2007.1, This report summarizes the findings of the verification of the project, performed on the basis of Voluntary Carbon Standard-2007.1, as well as criteria given to provide for consistent project operations, monitoring and reporting

1.1 Objective

The verification serves as project description verification and is a requirement of all VCS projects. The verification is an independent third party assessment of the project design. In particular, the project's baseline, the monitoring plan (MP), and the project's compliance with relevant VCS 2007.1 and host country criteria are validated in order to confirm that the project description, as documented, is sound and reasonable, and meet the stated requirements and identified criteria. Verification is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of voluntary carbon units (VCUs).

1.1 Scope and Criteria

The verification scope is defined as an independent and objective review of the project design document/project description document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against VCS 2007.1 requirements and associated interpretations.

The verification is not meant to provide any consulting towards the Client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project monitoring towards reductions in the GHG emissions.

1.3 VCS project Description

Nectar life sciences Ltd. is an Indian public listed company has implemented the project with the installation of biomass based cogeneration system which 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. The designed controlled extraction from the turbine is 20 TPH (For more extraction like 25 TPH the electricity generation capacity would decrease accordingly).The purpose of the project activity is to install a biomass fired cogeneration plant to meet the present and future demand of power in Units 1 & Unit2 complex and process steam for the manufacturing process of Unit 2 complex of the pharmaceutical plant.

The location of the 6 MW cogeneration system installed at unit -2 complex as per registered VCS -PD is

Lat: 30⁰ 35' 10" (N) (30.5852)
Long: 76⁰ 52' 51"(E) (76.8780)

The project activity involves the development and operation of Bio mass based electricity and Heat generation for the Production facilities. The objective of the project activity is to provide renewable electricity to the Unit 1 complex and both heat and Power to unit 2 complex thus reducing the greenhouse gas emissions caused by reliance on fossil fuels. The project will lead to reduced greenhouse gas emissions as it will displace electricity from fossil fuel based electricity generating systems and displace coal for process heat requirement for manufacturing of bulk Pharma Ingredient. The project proponent and the project owner for this project activity is the one and the same and it is M/s Nectar life sciences Limited (NecLife)

1.4Level of assurance

Verification is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of emission reductions. Based on the process and procedure conducted, it can be concluded that the GHG assertion is materially correct and is not a fair representation of GHG data and information has been prepared in accordance with the VCS 2007.1 Standard The verification team consider the assurance level as 'limited' since some of the data used (E.g. Emission factor)are from the publically available databases such as the IPCC database for emission factor , for which detailed testing of GHG assertion is beyond the domain of project proponent ,stake holder and the verification team .

2 Methodology

The overall verification, beginning from the Contract Review to Verification report, certification statement & opinion, was conducted using Bureau Veritas Certification internal procedures. The project is already validated and registered as a VCS project with the registry (Project ID 251).The verification is done based on the Monitoring Report Version 01 dated 04/03/2010, submitted by the project proponent. The verification Team had visited the project site from 5/04/2010 to 07/04/2010 for field visit which also include desk review, interview and discussion with the Project owner , consultant and stake holders

2.1 Review of Document

The verification team has assessed the accuracy of the project description through a combination of steps consisting of review of contract related to the project activity, Scrutiny of technical specification, commissioning certificates for the boiler and turbine , site visit and interview of the project proponent and their representatives.

2.2 Follow-up Interviews

On 05/04/2010 and 07/04/2010 Bureau Veritas Certification performed site visit and conducted interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of M/s Nectar life sciences Ltd were interviewed (see References). The main topics of the interviews are summarized in Table below.

Interviewed organization	Interview topics
M/s.Nectar Life sciences Ltd	<ul style="list-style-type: none"> ➤ Project description ➤ Contribution of Project towards Sustainable Development ➤ Operational aspects ➤ Monitoring plans and Procedures. ➤ QA/ QC Procedures ➤ Internal review / verification mechanism ➤ Monitoring plans
M/s.Gensol consultants	<ul style="list-style-type: none"> ➤ Baseline and monitoring methodology

2.3 Resolution of any material discrepancy

The validation team could not see any material discrepancy during the verification, as the project is already registered under VCS (Project ID 251).

The objective of this phase of the verification is to raise the requests for corrective actions and clarification and any other outstanding issues that needed to be clarified for Bureau Veritas Certification positive conclusion on the GHG emission reduction calculation.

Findings established during the initial verification could either be seen as a non-fulfilment of criteria ensuring the proper implementation of a project or where a risk to deliver high quality emission reductions is identified.

Corrective Action Requests (CAR) is issued, where:

(a) Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;

(b) Mistakes have been made in applying assumptions, data or calculations of emission reductions, which will impair the estimate of emission reductions;

(c) Issues identified in a FAR during validation to be verified during verification have not been resolved by the project participants.

Forward Action Requests (FAR) are issued, for actions if the monitoring and reporting require attention and/or adjustment for the next verification period.

The verification team may also use the term Clarification Request (CL), if information is insufficient or not clear enough to determine whether the applicable VCS 2007.1 requirements have been met.

The verification team as explained above reviewed the project description document (VCS _PD) available at the registry

<https://vcsprojectdatabase1.apx.com/mymodule/ProjectDoc/EditProjectDoc.asp?id1=251> as required under VCS, monitoring report and the emission reduction calculations. For the verification of the information provided in these documents, necessary interviews and supporting documentation were accessed and verified by the team. These included internal plant log record for monitored data/ parameter, Calibration record for the measuring devices used for Monitoring ect, .

To guarantee the transparency of the verification process, the concerns raised are documented in more detail in the verification protocol in Appendix A.

3 Verification Findings

3.1 Remaining issues, including any material discrepancy, from previous validation

The project activity is already registered as a VCS project on 18th November 2008 with the registry under the project title 'Biomass Based Cogeneration Project at Nectar Life Sciences Ltd' The veification team confirms that there are no remaining issues or any material discrepancy in the project activity excepting that there is an errata in specification of steam qty used for the estimation of the baseline emission reduction. The baseline emission reduction estimated as per the validated VCS PD is 47704 However in actual revised baseline ER estimation stands as 54878 which was incorporated in the revised PD dt,20/10/2010 This is due to wrong estimation of steam Qty Post de-super heater (DSH) at the turbine extraction point

The quantity of extracted Steam from the steam turbine as noted in the registered VCS -PD indicate an qty of 20 TPH. However the extracted steam passes through the De super heater where the temperature of the extracted steam is brought down to the process temperature requirement of 180⁰C from 256⁰C, Due to de superheating

of extracted steam the qty of extracted steam post de-superheating increases from 20 TPH to 24 TPH. This increase in volume is missed out during Validation due to over sight. Verification team verified the actual configuration of the project at the time of instalation and cross verified with the instalation available at the time of Verification , The team confirm that there is no change in the project activity and the estimation done with 20 TPH was due to over sight. The registered VCS-PD has been corrected to incorporate the change in steam volume. More over the VCS-PD Sec 4.2 estimation table is corrected to represent the single year for 12 month (say 2007,2008,2009) instead of the multiple year for 12 month representation (i.e. 2007-2008,2008-2009) , This correction is necessitated by the fact the market vintage prices are determined year wise . The above mentioned correction are incorporated in the revised VCS -PD date 20/10/2010

The verification team confirms that the increase in steam volume post DSH and the change in estimation time line to represent 12 month does not have any bearing on the project design, additionality or the Ex- post emission reduction determination.

3.2 Project Implementation

The Project activity involves installation of Co-generation system which include 6MW turbines and an 40 TPH AFBC Boiler operated under 67Bar pressure The main purpose of the project activity is to reduce the GHG gas emissions by generating clean electricity and process Heat. During site visit it is noticed by the verification team that the entire System configuration as explained in the VCS-PD was commissioned and in operation. The team also confirmed the start date of project through verification of the commissioning certificates (Form V) issued by the Punjab state licensing authority for Boilers. .Commissioning Date of the boiler is taken as the project start date from which the emission reduction have been accounted for this assessment period as presented herewith .

3.3 Completeness of Monitoring

The project activity has applied the CDM approved methodology AMS 1C, Version 15 and the monitoring plan is in accordance with this approved methodology. As required under the methodology the monitoring included the net electricity supplied to the Unit 1 and 2 complex

through the internal network and the Net heat (TJ) supplied to the various process load in Unit -2 Complex. The reporting procedures reflect the content of the monitoring plan. The monitoring mechanism is effective and reliable as the readings are monitored By the highly reliable DCS based system for the heat flow and gross electricity measured by the tri vector meter of Class 0.5 Accuracy . Net electricity is calculated by deducting the auxiliary consumption from the recorded gross electricity reading. The Verifiers hereby confirm that monitoring plan of the project activity is in accordance with the relevant approved methodology and as per the VC-PD registered with APX registry. The procedure for calculation of emission reductions has been explained in the VCS PD dt: 18/11/2009 and the monitoring report Ver. -04 dated 20/10/2010 .Emission reduction is arrived by the following algorithm

$$\mathbf{ERY= BEy-PEy-Ly}$$

The discrepancies and gaps noticed in the initial monitoring report submitted by the project proponent are stated as CARs and CLs in the Table 2 of the verification protocol in Appendix A and the same are corrected/ responded by the project proponent in the latest version of the monitoring report.

3.4 Accuracy of Emission Reduction Calculations

The calculation of emission reductions is found to be accurate and fairly stated. The spreadsheet formulae are correctly applied, conversions are correct and there is no manual transposition errors noticed between datasets. The emission factor for the Coal and Diesel is already fixed ex ante taken from IPCC (say 96.1 tCO₂/TJ and 74.1 tCO₂/TJ respectively) and the same is correctly applied in the calculation of emission reductions. There is no evidence of major loss of generation data within the said monitoring period.

The monitoring period considered for this VCS verification is from 27th May 2007 to 31st Dec 2009 (both days inclusive).

3.5 Quality of Evidence to Determine Emission Reductions

The critical parameter used for the determination of the Emission Reductions is the net electricity supplied to the plant and the net steam supplied to the Unit 2 complex. The Gross Electricity generated by the co-generation system is recorded by the tri vector Energy

meter of +/- 0.5 accuracy (Make L&T) and the Net energy supplied (steam heat content) to unit 2 complex is recorded by highly reliable DCS system which is fail safe and has redundancy features. Moreover, Pressure, temperature and flow are measured by Yokagawa and ABB transducers which act as an input to the DCS system. All the transmitter and temp transducers are calibrated and the results indicate all are within the accuracy range specified by the respective manufacturer. The data pertaining to the above parameters are maintained in the identified Plant records. All the data are in compliance with the figures stated in the revised monitoring report.

This is also cross-verified through Biomass consumed by the project activity for the monitoring period stated herewith. The verification team checked the commissioning test report on energy metering and the calibration certificates of the meters engaged to monitor and record the generation and found them calibrated and up to date. There were no instances of any meter change or failure noticed within this monitoring period and hence there is no uncertainty involved. The team also verified the emission factor applied for the calculations and is correct as per the registered VCS -PD dt.18/11/2009.

3.6 Management and Operational System

The Management System for the project and the organisation structures with the responsibilities has been properly identified and are in place as per the pre-defined manual. The operation and maintenance of the Co-Generation system and Power plant is vested with the operator, say M/s Nectar Life Sciences Ltd. The daily electricity generation and net heat supplied are monitored by competent personnel and reported to the head-operations for further review. The readings are recorded manually as well as electronically as stated in the monitoring plan. Periodic review being a regular practice ensures the quality assurance of the data. The data uncertainty level of the data is very low as the entire monitoring is based on DCS system and the system is error free as per the maintenance record provided to the Verification team.

4 Verification conclusion

Bureau Veritas Certification has performed a verification of the 'Biomass Based Cogeneration Project at Nectar Life Sciences Ltd'. The verification was performed on the basis of VCS criteria and host country criteria and also on the criteria given to provide for consistent project operations, monitoring and reporting.

The verification consisted of the following three phases: i) desk review of the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final verification report and opinion.

The management of Nectar Life sciences Ltd (Neclife) is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions of the project on the basis set out within the project Monitoring and Verification Plan indicated in the VCS PD dated 18/11/2009. The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of GHG emission reductions from the project, is the responsibility of the management of the project.

Bureau Veritas Certification verified the contents of the Project Monitoring Report (Version 03) for the reporting period as indicated below. Bureau Veritas Certification confirms that the project is implemented and described in validated and registered project design documents. The Co-generation system and associated equipment such the control systems, switchgear and protection equipment, Pressure transmitters, temperature transducers and the energy meters which are essential for reliable generation of electricity, are being operated and maintained in accordance with standard practices and procedures. The meters and transmitters deployed for the measurement of generations are calibrated appropriately. The monitoring system is in place and the project is ready to generate and generating GHG emission reductions.

Bureau Veritas Certification can confirm that the GHG emission reduction is calculated without material misstatements. Our opinion relates to the project's GHG emissions and resulting GHG emissions reductions reported and related to the valid and registered project baseline and monitoring, and its associated documents. Based on the information we have seen and evaluated, we confirm the following statement:

Reporting period: From 27/05/2007 to 31/12/2009

Verified emission in the above reporting period:

Project emissions	147	t CO2 equivalents
Leakage emission	2,208	t CO2 equivalents
Baseline emissions	105,680	t CO2 equivalents
Emission reductions	103,324	t CO2 equivalents

4.1 Vintage Break down as indicated below

Period (Both day Inclusive)	Baseline Emission	Project emission	Leakage	Emission Reduction
27/05/2007 to 31/12/2007	12315	28	365	11922
01/01/2008 to 31/12/2008	41176	40	854	40282
01/01/2009 to 31/12/2009	52186	79	990	51120
Total for the reported monitoring period	105680	147	2208	103324

Appendix –A Verification Protocol

TABLE 1 VERIFICATION REQUIREMENTS BASED ON THE VALIDATION AND VERIFICATION MANUAL (EB44 ANNEX 3)

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
1 Project implementation in accordance with the registered project design document					
a Have VCS project activities been implemented and operated as per the registered PD?	VVM	187	As per registered PD, the project activity is a biomass based cogeneration project comprising of a 40 TPH boiler with steam parameters, 67 Kg/cm ² pressure & 490°C temperature, and a 6 MW extraction cum condensing turbine. Biomass fired in the boiler, as per the registered PD, ranges from rice husk (which is the primary fuel) to Paddy straw, Mustard Stick, Mustard Husk, Barley, Sugarcane trash, Cotton Stick, Bajra Stalk, Sunflower Stalk, Moong Straw, Arhar Stick, Arhar Husk, Rice Husk, Saw Chips, Saw dust and bushes (sarkanda). It is verified that the project activity is functioning as described in the registered PD.	OK	OK
b Are all physical features of the proposed VCS project activity, proposed in the registered PD, in place?	VVM	188	All the physical features as described in the VCS PD has been verified and found to be in line with the registered PD.	OK	OK
c Have the project participants operated the proposed VCS project activity as per the registered PD?	VVM	188	The system is not synchronized with grid. The commissioning date of boiler is 27/02/2007 which has been verified from form V- provisional order under section 9 of the Indian Boilers Act of 1923 and turbine commissioning date is 27/05/2007 which is mentioned in VCS PD section 1.6 hence the first monitoring date has been taken from 27/05/2007.	OK	OK
d Is the proposed VCS project implemented against the description in the PD?	VVM	188	Yes	OK	OK
e Was an on-site visit conducted?	VVM	188	Yes onsite visit was conducted from 05/04/2010 to	OK	OK

f	If not, justify the rationale of the decision.	VVM	188	07/04/2010 Not applicable	OK	OK
2 Compliance of the monitoring plan with the monitoring methodology						
a	Is the monitoring plan of the proposed VCS project activity in accordance with the applied methodology?	VVM	190	<p>As per the applied methodology –AMS IC, version 15, the following is required to be monitored for the project activity:</p> <p>a) Metering the thermal and/or electrical energy produced. In the case of steam energy, direct measurement of flow, temperature, and pressure is required to determine enthalpy of the steam.</p> <p>b) For projects where only biomass or biomass and fossil fuel are used the amount of biomass and fossil fuel input shall be monitored.</p> <p>c) If more than one type of biomass fuel is consumed, each shall be monitored separately.</p> <p>The monitoring plan implemented is as per the methodology AMS IC version 15 and above mentioned parameters a, b, c is being monitored. Same has been confirmed during site visit.</p>	OK	OK
b	Is the validated monitoring plan in accordance with the approved methodology applied by the proposed VCS project activity?	VVM	191	Yes the validated monitoring plan is in accordance with the applied Methodology	OK	OK
c	If no, was a request for revision of the monitoring plan was done? (The DOE may request for revision of the monitoring plan covering the monitoring period under verification, for approval by the Board)	VVM	192	Not applicable	OK	OK

3 Compliance of monitoring with the monitoring plan						
a. Was Monitoring of reductions in GHG emissions to result from the proposed VCS project activity implemented in accordance with the monitoring plan contained in the registered PD or the accepted revised monitoring plan?	VVM	195	Monitoring of GHG reduction by the project activity is in compliance with the monitoring plan contained in the registered PD.	OK	OK	
b. Have the monitoring plan and the applied methodology been properly implemented and followed by the project participants?	VVM	196	Yes	OK	OK	
c. Have all parameters stated in the monitoring plan, the applied methodology and relevant CDM Executive Board decisions been sufficiently monitored and updated as applicable, including:	VVM	196				
i Project emission parameters?	VVM	196	The project emission spread sheet submitted to DOE for verification uses data taken from section 4.3 of the registered PD for calculation of project emission. However the monitoring report dated 04/03/2010 is not transparent about algorithms used and the relevant data source with respect to the parameter Q _D (Quantity of diesel used in the tractors for leveling the piles/heaps of biomass)	CAR 1	OK	
ii Baseline emission parameters?	VVM	196	From the site visit it is found that the parameters being monitored on a continuous basis are- 1. gross electricity using trivector meter 2. net electricity which is calculated by subtracting auxiliary consumption from gross generation. It was found during verification that from the period 27/05/2007 to 04/04/2008 the	CAR 2	OK	

	<p>auxiliary meter was also connected to the load for unit 9 and BCK, for period 04/04/2008 to 19/05/2008 the load connected to the auxiliary meter was for unit 9, unit 10 and BCK and for the period 19/05/2008 to end of monitoring period auxiliary meter is connected to load for unit 10 and BCK. This has not been mentioned transparently in the monitoring report as well as the emission reduction excel sheet submitted.</p> <p>3. Process steam which is going to two lines at same pressure and at different temperature and flow. During site visit it was found that the temperature and pressure are being monitored hourly whereas the flow is integrated. This corresponds to the monitoring plan in registered PD. However as per the monitoring report and the VER calculation enthalpy of process steam supplied to unit 02 and 10 has been calculated using same temperature for both the streams whereas in actual it was found to be different for both the streams In PD section 4.2, baseline has been calculated for maximum of 6 MW and 20 TPH steam extraction from turbine. However spread sheet indicates steam extraction upto 24.43 TPH for process heat. Monitoring report is not transparent how the increase is possible. Also baseline emission for project activity calculated ex ante in registered PD was 47704 VCUs with emission factor of 96.1 tons CO₂/TJ. However the monitoring report indicates emission reduction of 51298 for the year 2009 which is</p>	<p>CAR 3</p> <p>CAR 4</p>	<p>OK</p> <p>OK</p>
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			approximately 7.5% increase from the estimated data. Explanation for this increase has not been provided in the monitoring report.		
iii Leakage parameters?	VVM	196	Assumptions related to distance for calculation of leakage emission have not been transparently presented in the monitoring report. Also the documentation for total to and fro distance of 150 km considered in the monitoring report dated 04/03/2010 was found to be inadequate during site visit.	CAR 5	OK
iv Management and operational system: the responsibilities and authorities for monitoring and reporting are in accordance with the responsibilities and authorities stated in the monitoring plan?	VVM	196	Management and operational system has not been provided in the monitoring report.	CL 1	OK
d. Is the accuracy of equipment used for monitoring is in accordance with the relevant guidance provided by the CDM Executive Board and is controlled and calibrated in accordance with the monitoring plan?	VVM	196	<p>The accuracy level of equipments used for monitoring has not been specified in the monitoring report. Calibration details of meters used for measuring</p> <ul style="list-style-type: none"> • Gross Electricity generated • Auxiliary consumption • Steam flow to unit 02 and unit 10 • Steam totalizer for unit 02 and 10 • Temperature for unit 02 and 10 • Pressure for unit 02 and 10 <p>Have not been provided transparently in the monitoring report. Calibration certificates from the start date of project activity until end of first monitoring period has not been provided.</p>	CAR 6	OK
i. Are monitoring results consistently recorded as per approved frequency?	VVM	196	Yes recording of data is consistent with that mentioned in the registered PD and was verified during site visit.	OK	OK

ii. Have quality assurance and quality control procedures been applied in accordance with the monitoring plan monitoring plan?	VVM	196	Yes QA/QC procedures have been applied as per the monitoring plan of registered PD.	OK	OK
4 Assessment of data and calculation of greenhouse gas emission reductions					
a. Are GHG emission reductions achieved by/resulting from the proposed VCS project activity calculated applying the selected methodology?	VVM	198	Yes.	OK	OK
b. Is a complete set of data for the specified monitoring period is available? (If no, i.e., only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, the DOE shall opt to either make the most conservative assumption theoretically possible in finalizing the verification report, or raise a request for deviation if appropriate).	VVM	199	<p>The first monitoring period for the project activity is from 27/05/2007 to 31/12/2009 (both days included). Excel sheet of the complete set of data has been provided, however source data documents need to be submitted.</p> <p>The project commissioning date has been wrongly mentioned as 23/05/2007 in the monitoring report dated 04/03/2010.</p> <p>Daily Steam generation and electricity generation data has not been provided in the emission reduction spread sheet.</p> <p>Leakage Emission spreadsheet does not provide daily details of biomass transported, no of trips made by the transporting truck, and to and fro distance travelled. Back up data needs to be provided.</p>	CL 2	OK
c. Has information provided in the monitoring report been cross-checked with other sources such as plant log books, inventories, purchase records, laboratory analysis?	VVM	199	<p>Yes the monitoring report has been cross -verified at the site with logbooks, laboratory analysis and purchase records.</p> <p>However please refer to CAR 5 above</p>		
d. Have calculations of baseline emissions, proposed VCS project activity emissions and leakage, as appropriate, been carried out in	VVM	199	Yes the calculations are in accordance with the formulae and methods described in monitoring plan and applied methodology.	OK	OK

accordance with the formulae and methods described in the monitoring plan and the applied methodology document?					
e. Have any assumptions used in emission calculations been justified?	VVM	199	Yes assumptions have been justified in the registered PD. Same values have been used in the monitoring report dated 04/03/2010	OK	OK
f. Have appropriate emission factors, IPCC default values and other reference values been correctly applied?	VVM	199	Yes	OK	OK

Table 2: Resolution of Corrective Action / Forward Action / Clarification Requests. CAR & CL

Draft report clarifications and corrective action requests by verification team	Reference to checklist question in Periodic Verification Checklist	Summary of project owner response	Verification team conclusion
<p>CAR-01</p> <p>The project emission spread sheet submitted to DOE for verification uses data taken from section 4.3 of the registred PD for calculation of project emission.</p> <p>However the monitoring report dated 04/03/2010 is not transparent about algorithms used and the relevant data source with respect to the parameter QD (Quantity of diesel used in the tractors for levelizing the piles/heaps of biomass)</p>	(3.c.i)	<p>As per the requirement, algorithm used for the project emission is:</p> $P.E. = (Q_D * D / 1000) * NCV_D * EF_D$ <p>Data for diesel consumption is taken from plant records and the same has been evidenced at the time of verification site visit, to the DOE.</p> <p>The same has been incorporated in the monitoring report.</p>	Monitoring report Ver -03 dated 05/10/2010 clearly demonstrate the various algorithm used for the emission reduction calculation, Project emission, Leakage and various assumption and data source and the same is transparent , hence the CAR is closed
<p>CAR -02</p> <p>It was found during verification that from the period 27/05/2007 to 04/04/2008 the auxiliary</p>	(3.c.ii)		MR – ver -03 clearly explains the representative schematic for the

Draft report clarifications and corrective action requests by verification team	Reference to checklist question in Periodic Verification Checklist	Summary of project owner response	Verification team conclusion
meter was connected to the load for unit 9 and BCK, for period 04/04/2008 to 19/05/2008 the load connected to the auxiliary meter was for unit 9, unit 10 and BCK and for the period 19/05/2008 to end of monitoring period auxiliary meter is connected to load for unit 10 and BCK. This has not been mentioned transparently in the monitoring report as well as the emission reduction excel sheet submitted(Aux meter also account the electricity consumed for the load in unit 9,10 and BCK,)			monitoring of the net electricity generated from the project activity , Also the revised ER spread sheet calculation provided to the verification team clearly demonstrate the net electricity generated by the different regime with in the monitoring period .All auxiliary consumption point have been accounted for the ER calculation , hence the CAR is closed .
CAR -03 During site visit it was found that the temperature and pressure are being monitored seperately for the different stream hourly whereas the flow is integrated. This corresponds to the monitoring plan in registered PD. However as per the MR, enthalpy of process steam supplied to unit 02 and 10 has been calculated using same temperature for both the streams whereas in actual it was found to be different for both the sreams	(3.c.ii)	The calculations have been corrected accordingly and are incorporated in the MR also.	Now as per revised ER sheet the Emission Reduction have been calculated for different stream (Unit - 2 and Unit 10 within the unit -2 complex seperately for Heat (TJ) calculation of the energy supplied to the process units.Hence the CAR closed .
CAR -04 In PD section 4.2, baseline has been calculated for maximum of 6 MW and 20 TPH steam extraction from turbine. However spread sheet indicates steam extraction upto 24.43	(3.c.ii)	The extractable quantity of steam from turbine is 20 TPH only but extracted steam from the turbine is being supplied to Unit -2 and	Verification team verified the actual configuration of the project at the time of instalation and cross verified with the instalation available at the time of

Draft report clarifications and corrective action requests by verification team	Reference to checklist question in Periodic Verification Checklist	Summary of project owner response	Verification team conclusion
<p>TPH for process heat. Monitoring report is not transparent how this increase is possible. Also baseline emission for project activity calculated ex ante in registered PD was 47704 VCUs with emission factor of 96.1 tons CO₂/TJ. However the monitoring report indicates emission reduction of 51298 for the year 2009 which is approximately 7.5% higher than the estimated data. Explanation for this increase has not been provided in the monitoring report.</p>		<p>unit -10 via Desuperheating Station (DSH) due to which there is an increase in the quantity of the steam therefore extracted steam goes higher upto 24 TPH for process heat. In the PD the 20 TPH extraction was mentioned which actually corresponds to extracted steam from the Turbine and the temperature and pressure was corresponding to the final process steam. Now the calculations has been done on the basis of quantity, temperature and pressure of final process steam (useful steam). Flow meters are there between DSH and Unit – 2 and Unit – 10. The pressure of the steam supplied to the unit – 2 and unit – 10 is same however temperature is slightly different. The same has been also amended in the MR and the amendment does not temper with the additionality of the project.</p> <p>For the above defined reason VCUs increased from what was claimed in the PD. However there is no impact on the additionality of</p>	<p>Verification , the team confirm that there is no change in the project activity and the estimation done with 20 TPH was due to over sight , Hence the team accept the explanation provided by the PP .</p> <p>The VCS -PD also explain that the measurement point is post extraction and the same is being monitored during the Monitoring period for which the emission reduction is claimed , Hence there is no over estimation of VCU . Moreover team have verified the Impact of same with the additionality claimed by the PP and there is no change in the unit cost due to volume increase of steam post de-superheating (DSH) since the additionality is calculated based on the net out put of steam from the AFBC boiler.</p> <p>CAR is closed.</p>

Draft report clarifications and corrective action requests by verification team	Reference to checklist question in Periodic Verification Checklist	Summary of project owner response	Verification team conclusion
		the project and also VCU's are well under the limit of 10%.	
<p>CAR -05</p> <p>Assumptions related to distance for calculation of leakage emission have not been transparently presented in the monitoring report. Also the data source used for total to and fro distance of 150 km considered in the monitoring report dated 04/03/2010 was found to be inadequate during site visit.</p>	(3.c.iii)	<p>The maximum distance from where the biomass is collected is 60 km which comes to be 120 km for round trip. To verify this "Declarations from Suppliers" are being provided. Kindly refer to annex – 13 to annex – 28.</p>	<p>150 KM considered is conservative and is higher than the declared ex – ante estimation figure of 100KM. Moreover the verification team verified the truck data and confirm the biomass are transported within short range of 50 ~ 60 KM (One way), Hence the CAR is closed.</p>
<p>CAR -06</p> <p>The accuracy level of equipments used for monitoring has not been specified in the monitoring report. Calibration details of meters used for measuring</p> <ul style="list-style-type: none"> • Gross Electricity generated • Auxiliary consumption • Steam flow to unit 02 and unit 10 • Steam totalizer for unit 02 and 10 • Temperature for unit 02 and 10 • Pressure for unit 02 and 10 <p>has not been provided transparently in the monitoring report.</p> <p>Calibration certificates from the start date of project activity until end of first monitoring period has not been provided.</p>	(3.d)	<p>Necessary corrections has been done.</p> <p>Calibration details of meters used for measuring has been provided in the monitoring report in section 3.</p> <p>Calibrations certificates are being submitted along with this report. Kindly refer to Annex- 4, Annex – 5 and Annex – 6 for calibration certificates.</p>	<p>Accuracy class provided in the MR ver -03 , All the calibration certificate pertains to the monitoring devices used for Power and Heat quantification on account of the project activity are been submitted to DOE , DOE verified the same and confirm that all the monitoring devices are well within the accuracy level specified by the manufacturer, Hence the CAR is closed.</p>

Draft report clarifications and corrective action requests by verification team	Reference to checklist question in Periodic Verification Checklist	Summary of project owner response	Verification team conclusion
CL -01 Management and operational system has not been provided in the monitoring report.	(3.c.iv)	Management and operational system has been incorporated in section 7 of the monitoring report.	Provided in the MR – Ver-03 CL closed.
CL -02 The first monitoring period for the project activity is from 27/05/2007 to 31/12/2009 (both days included). Excel sheet of the complete set of data has been provided, however source data documents need to be submitted. The project commissioning date not in agreement (23/05/2007)with the monitoring period in the monitoring report dated 04/03/2010. Daily Steam generation and electricity generation data has not been provided in the emission reduction spread sheet. Leakage Emission spreadsheet does not provide daily details of biomass transported, No. of trips made by the transporting truck, and to and fro distance traveled. Back up data needs to be provided.	(4.b)	Source Data has been submitted along with this report. Necessary correction has been made in the monitoring report. Daily Steam and electricity generation are being submitted along with this report. Kindly refer to Annex – 7, Annex – 8, Annex – 9. Back up data regarding biomass transported is being submitted with this report. Kindly refer to Annex – 10. Annex – 11 and Annex – 12.	Source data provided and verified by the team and found OK, Team also verified the data with the plant Log sheet to cross check and that the Datas are in agreement with each other. Project Commissioning and ER accounting now taken from 27 /05/2007 which is the official commissioning date for boiler provided by the local governing authority (Inspectorate of boiler and factory , State of Punjab) All data pertains to daily steam generation and biomass transport data provided by the PP to the Verification team . Team confirms the same is correct and accurate .The CL is closed .

Ref: 1. VCS PD, dated 18/11/2009. and 20/10/2010
2. VCS monitoring report , dated 04/03/2010
3. VCS Monitoring report Ver -03 dated 05/10/2010 & Ver -04 dt: 20/10/2010

Appendix B

Abbreviations

<i>ACM</i>	<i>Approved Consolidated Methodology</i>
<i>NecLife</i>	<i>Nectar Lifesciences limited</i>
<i>CAR</i>	<i>Corrective Action Request</i>
<i>CL</i>	<i>Clarification Request</i>
<i>CO2</i>	<i>Carbon Dioxide</i>
<i>DOE</i>	<i>Designated Operational Entity</i>
<i>FAR</i>	<i>Forward Action Request</i>
<i>GHG</i>	<i>Green House Gas(es)</i>
<i>I</i>	<i>Interview</i>
<i>IETA</i>	<i>International Emissions Trading Association</i>
<i>MoV</i>	<i>Means of Verification</i>
<i>MP</i>	<i>Monitoring Plan</i>
<i>PCF</i>	<i>Prototype Carbon Fund</i>
<i>PD</i>	<i>Project Document</i>
<i>PDD</i>	<i>Project Design Document / Project Description Document</i>
<i>UNFCCC</i>	<i>United Nations Framework Convention for Climate Change</i>
<i>VVM</i>	<i>Validation and Verification Manual</i>
<i>VCS</i>	<i>Voluntary Carbon Standard</i>
<i>VCU</i>	<i>Voluntary Carbon Units</i>

Appendix C

References

Documents submitted by Nectar Lifesciences Ltd.

- *VCS-PD dated 18/11/09 submitted by Nectar Lifesciences Limited.*
- *Revised VCS-PD dated 20/10/10 submitted by Nectar Lifesciences Limited*
- *Monitoring Report ver -01 dated 04/03/2010*
- *Monitoring Report ver -03 dated 18/10/2010*
- *Monitoring Report ver -04 dated 20/10/2010*
- *Calibration certificate for Gross Energy meter*
- *Calibration certificates for Auxiliary energy meter*
- *Calibration certificates for pressure Transmitter*
- *Calibration certificates temperature Transducer*
- *Form -V Provisional certificate for Boiler operation*
- *Daily Electricity Generation reports of the Power Plant for the Year 2007 , 2008 & 2009*
- *Daily Electricity Aux Consumption data for Power Plant for the Year 2007 , 2008 & 2009*
- *Calibration Certificate for Flow transmitter& Flow totalaizer.*
- *Daily Steam Consumption data for Unit -2 and unit 10 for the Year 2007 , 2008 & 2009*
- *Monthly Biomass Purchase/ consumption Data*
- *Monthly Boiler Efficiency data*

Other documents referred for validation

- *Voluntary Carbon Standard Programme guidelines dated 18/11/2008*
- *VCS Guidance Document, Version 1.1 dated 12/03/2009*

Persons interviewed:

List persons interviewed during the validation or persons that contributed with other information that are not included in the documents listed above.

- *Mr.H.P Singh- Sr.Vice President - Nectar Lifesciences Limited. Dist . Mohali, Punjab, India*
- *Mr.Sanjay K. Pandey - manager _ Power Plant - Nectar Lifesciences Limited. Dist . Mohali, Punjab, India*
- *Mr. Paramjithsingh Gill. Dep. Manager - Power plant - Nectar Lifesciences Limited. Dist . Mohali, Punjab, India*
- *Mr. Harish Sharma , Sr. consultant- GensolConsultant Pvt. Ltd .Haryana, India*
- *Mr.Sandeep Melana - Consultant- GensolConsultant Pvt. Ltd .Haryana, India*

Appendix D

Curricula vitae of the DOE's verification team members

H B Muralidhar: *(Internal Reviewer) Lead auditor in Bureau Veritas Certification for Environment Management System, Quality Management System and Occupational Health and Safety Management System. Graduate in Electrical Engineering with 25 years of experience power generation and distribution related fields as well as in management system auditing. He is the Lead auditor for Environmental Management System, Quality Management system and Occupational Health and Safety Management System. He has undergone intensive training on Clean Development Mechanism. He is the technical expert & conducted Validation / Verification for more than 50 CDM Projects*

Ajesh Kumar.S *(Team Leader)*

Bureau Veritas Certification, GHG Verifier.

Mechanical Engineer with over all 15 years of experience in various industries related to Auto components, Medium Engineering, Powder Metal Processing, Ceramics and Electronic hardware manufacturing. His industrial experience includes enterprise management, Green field projects related to manufacturing line installation and commissioning for process industries, engineering industries. He is the lead auditor for Environment management system, Quality management system and Occupational health and safety management system and his auditing experience spans for 3 year with BVCL. He has undergone intensive training on Clean Development Mechanism and was trained as Lead Verifier for CDM in the year 2008 and working as a lead Verifier for validation and verification of CDM/VCS projects
