VERIFICATION REPORT

(V-2-I-01-S-0313/2.0)

1.6 MW BUNDLED RICE HUSK BASED COGENERATION PLANT BY M/S MILK FOOD LIMITED (MFL) IN PATIALA (PUNJAB) & MORADABAD (U.P) DISTRICTS

PERRY JOHNSON REGISTRARS

Carbon Emissions Services, Inc.

PERRY JOHNSON REGISTRAR CARBON EMISSIONS SERVICES, INC

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Project Title	1.6 MW Bundled Rice Husk Based Cogeneration Plant by M/s Milk food Limited (MFL) in Patiala (Punjab) & Moradabad (U.P) Districts
Version	2.0
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Report Title	1.6 MW Bundled Rice Husk Based Cogeneration Plant by M/s Milk food Limited (MFL) in Patiala (Punjab) & Moradabad (U.P) Districts
Client	M/s Milk food Limited (MFL)
Pages	21
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Work Carried Out By	Ajay Verma

Summary:

- A brief description of the verification and the project,
  Verification:
  M/s Milk food Limited (MFL) has commissioned Perry Johnson Registrars Carbon Emissions Services, Inc (PJRCES or DOE) to perform verification of the project – "*1.6 MW Bundled Rice Husk Based Cogeneration Plant by M/s Milk food Limited (MFL) in Patiala (Punjab) & Moradabad (U.P) Districts*" under the Verified Carbon Standard VCS version 3.3 for the period 1st June 2011 to 13 February 2012 (both days included). The validation of the project activity was concluded by TÜV NORD CERT GmbH under VCS 2007.1 and a VCS 2007.1 validation report dated 3 May 2011 against the VCS PD version 02 dated 15 April 2011 was issued. The current report describes the verification work undertaken.
  Project:
  The VCS project undertaken is a bundle of two cogeneration plants of capacity 1.0 MW (with 14TPH steam generation) and 0.6 MW ((with 12 TPH steam generation) located at Bahadurgarh, Patiala in the state of Punjab and Mugalpur, Moradabad in the state of Uttar Pradesh respectively in India. The project activity involves utilization of rice husk (renewable biomass) available in the regions for thermal and electrical power generation (cogeneration system) for captive consumption, thereby reducing the baseline emissions.
- The purpose and scope of verification
  → To verify that the project activity is implemented as per the project details of the validated project design document (PDD) or the VCS PD
  → To assess whether the emissions reductions determined are in conformance with the monitoring plan of the VCS PD and the approved methodology.
  → To express a conclusion whether reported data are accurate, complete, consistent, and transparent with a reasonable level of assurance and free of omission or material error, based on the review of the reported data and emission reduction calculations.
- The method and criteria used for verification
  → Completeness check and desktop review of the monitoring report
  → Onsite inspection and issuance of findings from the audit
  → Resolution of the findings and preparation of the verification report
- Any findings, restrictions of uncertainties related to the verification
  → Based on the assessment of the GHG emission reductions reported in the initial version of the monitoring report version 01 dated 3 December 2012, PJRCES had requested responses from the project proponent through the means of Clarification Requests (CLs), Corrective Action Requests (CARs) and issued in the first draft verification report on 14 December 2012. The issues identified in the DVR were resolved in consultation with the project developer and PJRCES finalized the verification opinion.
- Summary of the verification conclusion
  → In PJRCES's opinion, the GHG emission reductions reported in the monitoring report final version 02, dated 8 January 2013 is fairly stated. Based on the assessment, PJRCES is able to certify that the implementation of the project has resulted in GHG emission reductions of **51,580** tCO_2e during the current monitoring period from 1 June 2011 to 13 February 2012(both days included).
  → PJRCES's opinion regarding the reported emission reductions for the given monitoring period is based on the information sought and also reviews of publicly available information where applicable. ISO-14064 guidelines have been applied in principle to assess the key issues like accuracy, completeness and conservativeness of the information. PJRCES's verification/certification of GHG emissions is limited to this information evaluation.
- Issuance and utilization of certified GHG-emission reductions is beyond the scope of PJRCES.

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1 INTRODUCTION

1.1 Objective

→ Verification under VCS version 3.3 is the independent ex-post quantification and certification of the greenhouse gas (GHG) emission reductions achieved by a project activity which has completed validation under VCS 2007.1 or validated under a VCS approved GHG program.

→ The above work is carried out through an independent assessment and a written assurance is provided on the GHG emission reductions achieved for the period specified.

1.2 Scope and Criteria

The scope of the verification covers independent objective review and ex-post determination of the monitored GHG emission reductions by the project activity "1.*6 MW Bundled Rice Husk Based Cogeneration Plant by M/s Milk food Limited (MFL) in Patiala (Punjab) & Moradabad (U.P) Districts*".

The specific scope of the verification work involves:

→ To verify that the project activity is implemented as per the project details of the validated project design document (PDD) or the VCS PD.

→ To assess whether the emissions reductions determined are in conformance with the monitoring plan of the VCS PD and the approved methodology.

→ To express a conclusion whether reported data are accurate, complete, consistent, and transparent with a reasonable level of assurance and free of omission or material error, based on the review of the reported data and emission reduction calculations.

The project is assessed against the verification requirements of VCS version 3.3 standard including the criteria that the emission reductions are real, measurable, transparent and conservative. The approach adopted by PJRCES verification team is risk-based, drawing on an understanding of the risks associated with reporting of GHG emissions data and the controls in place to mitigate these.

The work carried out by PJRCES is free from any conflict of interest.

Request for issuance of Voluntary Carbon Units (VCUs), verified and certified by PJRCES, shall be made by the project proponent to the VCS registry in accordance with the most recent version of the "VCS Procedural Document: VCS Project Registration and VCU Issuance process" version 3.4.

In view of the above, PJRCES's responsibility is limited only to verification and certification of the GHG emission reductions achieved during the specified period.

1.3 Level of assurance

In line with VCS version 3.3 requirements and as per ISO 14064-3:2006 paragraph A.2.3.2, a "***reasonable level of assurance***" is defined for the verification of the project.

This implies that, based on the process and procedures conducted, PJRCES confirms that the GHG assertion in the monitoring report.

→ is materially correct and is a fair representation of the GHG data and information, and

→ is prepared in accordance with VCS requirements, the validated CDM PDD and the approved methodology for information pertaining to GHG quantification, monitoring and reporting.

The verification work is carried out as per this requirement and details are presented in the Verification statement in section 2 below.

1.4 Summary Description of the Project

The purposed project activity utilizes rice husk available in the region for steam and electricity generation for captive consumption in industrial process of MFL. The project undertaken is a bundle of two cogeneration plants of capacity 1.0 MW (with 14TPH steam generation) and 0.6 MW ((with 12 TPH steam generation) located at Bahadurgarh, Patiala in the state of Punjab and Mugalpur, Moradabad in the state of Uttar Pradesh respectively.

PP has monitored net electricity supplied to the electrical equipment and net steam supplied to process heat requirement during current monitoring period from 1 June 2011 to 13 February 2012. The calculation was assessed by the verification team and deemed as correct. Due to the project activity, the power supply had partially been displaced which was imported from NEWNE grid through respective state electricity grids and the steam generated from coal fired boiler had completely displaced by the new rice husk based co-generation plant.

The project proponent has applied the baseline methodology for small scale project activities AMS-I.D "*Grid connected renewable electricity generation"*, version 16. The baseline scenario for the proposed project activity is the grid-connected power plants and by the addition of new generation sources into the NEWNE grid. As per CEA database version 05, 0.84 tCO_2/MWh has been chosen as ex-ante emission factor of NEWNE regional grid of India and it has been used for the calculating the baseline emissions as per the methodology.

The project proponent has also applied the baseline methodology for small scale project activities AMS-I.C "Thermal Energy production with or without electricity*"*, version 18. The baseline scenario for the proposed project activity for steam generation was coal base boilers. The efficiency of the boiler using coal that would have been used in the absence of the project activity has been considered as 82% and chosen as ex-ante and it has been used for the calculating the baseline emissions as per the methodology.
The verification team has verified the two projects following turbines and boilers with below specifications:

Boilers:

Parameters	**Units**	**Project I:Patiala –Punjab, India**	**Project II: Moradabad, Uttar Pradesh, India**
Make	-	M/s Cheema Boilers Ltd.	M/S Industrial Boiler Ltd.
Design Capacity	TPH	14	12
Design Pressure	Kg/cm^2	45	32
Steam Temperature	℃	420+/- 5	400+/-5°
Fuel Used	-	Rice Husk	Rice Husk

Turbines:

Parameters	**Units**	**Project I:Patiala –Punjab, India**	**Project II: Moradabad, Uttar Pradesh, India**
Make	-	M/S Pentagon Turbines Pvt. Ltd.	M/S I.B. Turbo Pvt. Ltd.
Design Capacity	W	1000	600
Inlet Steam Pressure	Kg/cm^2	43	30
Inlet Steam Temperature	℃	430	360

The project qualifies the start date requirements under VCS 2007.1 as Successful Commissioning of Project activities I & II was 6 May 2009 and 4 June 2009 respectively. It has been checked against the commissioning certificate. Further in line with VCS 2007.1 guidelines, crediting period starts from 6 May 2009 which is earlier commissioned in bundle and hence the crediting period is started from 6 May 2009 and end upto 5 May 2019. The project participant has chosen a 10 year renewable crediting period.

2 VALIDATION PROCESS, FINDINGS AND CONCLUSION

2.1 Validation Process

This project has been registered under UNFCCC with ref no 5219 on 14th February 2012.

In addition to CDM validation, the project has also been validated against VCS 2007.1 standard requirements and is a registered with VCS association. The project has been validated under VCS 2007.1 by TUV Nord and final VCS PD version 02 dated 15 April 2011 has been issued. PP has also already claimed the emission reduction for the 1st monitoring period from 6 May 2009 to 31 May 2011. The current monitoring period is from 1st June 2011 to 13th February 2012.

2.2 Validation Findings

2.2.1 Gap Validation

Project has been already validated and registred with VCS registry with project ID 784. Hence, gap validation is not required.

2.2.2 Methodology Deviations

Not applicable

2.2.3 Project Description Deviations

Not applicable

2.2.4 New Project Activity Instances

Not applicable

2.3 Validation Conclusion

Not applicable.

3 VERIFICATION PROCESS

3.1 Method and Criteria

The project activity applies approved baseline and monitoring methodology AMS I.D version 16 "*Grid connected renewable electricity generation*" and AMS I.C version 18 "*Thermal Energy production with or without electricity*" categorised under sectoral scope 01 'Energy industries (renewable - / non-renewable sources)'. For verification of emission reductions, PJRCES's approach involves broadly three steps:

1) Completeness check and desktop review of the monitoring report
2) Onsite inspection and issuance of findings from the audit
3) Resolution of the findings and preparation of the verification report

The following team members from PJRCES were involved in these steps:

Table 1: Verification Team Details

Name	Role	Tasks handled
Ajay Verma	Lead Verifier	Completeness check of monitoring report, desktop review, site visit, issuance and closure of findings, final verification report preparation against VCS version 3.3
Anjana Sharma	Technical Reviewer	Independent review of the verification assignment against VCS version 03.3

3.2 Document Review

On receipt of the monitoring report from the client, the completeness of information made available as per VCS 2007.1 standard requirements was reviewed. Also, based on latest request requirements against VCS version 3.2 are also reviewed. A desktop review was further carried out to assess the following:

→ The validated VCS PD version 02 dated 15 April 2011 with the monitoring plan
→ The validation report dated 3 May 2011.
→ the emission reduction calculation method used in the applied methodology and the VCS PD
→ The monitoring report version 01 dated 3 December 2011, updated monitoring report version 02 dated 8 January 2013, including frequency of monitoring and the calculation of emission reductions for the period
→ The documented operation and maintenance manual furnished by the project participant (where applicable)
→ Other external documents like grid emission factor, etc. applied

A complete list of all documents reviewed is attached in Appendix I of this report.

3.3 Interviews

List of personnel interviewed and issues discussed during the site visit is as provided below:

Table 2: List of Personnel Interviewed

Name / Designation / Company	Responsibility
Mr Amar Baljeet Singh – Vice President, Technical, MFL Mr- Bharat Bhisan- Vice President, MFL Mr. Sanjay Khanna- Dy Manager, MFL Mr.Avinash Chandra Singh- Factory Manger, MFL	▪ Monitoring of rice husk consumption in hot air generator. ▪ Determination of net heat generation ▪ Monitoring system ▪ Calibration of electricity meters ▪ NCV test of the rice husk fired in hot air generator

Ms. Ruchika Sharma, Consultant, Enen Management Group	▪ Preparation of monitoring report ▪ DVeR issues closures

3.4 Site Inspections

An onsite visit was carried out by PJRCES on 6 &7 December 2012. To verify the actual operation and monitoring of the plant. The actual operation of the project as described in the PD, the JMR sheets were reviewed and discussed during the site visit and issues identified in the desktop review of submitted documents were discussed.

Objective:

→ Objective of the site visit was to physically inspect the operation of power plant and cross checking the implementation of monitoring plan in-line with the methodology and validated PD.

Method:

→ PJRCES personnel's visited the site of power plant equipment installation and confirmed the operation of the plant.

→ Also, PJRCES made a visit to the technology providers monitoring station for cross checking the means of monitoring.

→ Further to that, PJRCES also made a visit to the substation where the interconnection metering point exists and where project activity actually delivers the net energy. PJRCES also checked the meters used and records of the past meters used for calibration requirements and accuracy class..

3.5 Resolution of Any Material Discrepancy

→ Based on the site inspection and review of records including the monitoring plan, a list of non conformities; Corrective Action Requests (CAR) were raised. The non conformities could be related to lack of adherence to the VCS version 3.3 requirements, non-conformance to the monitoring plan of as defined in the VCS validated PD or where evidence provided is found insufficient to prove conformity. They could also be mistakes in applying data/ assumptions and in calculation of emission reductions.

→ If information made available is insufficient to transparently arrive at the stated conclusion, a Clarification request (CL) is raised and communicated to the project proponent.

→ Observations may also be raised which are for the benefit of future verification period. These, however, have no impact upon the completion of the current verification activity.

→ On receipt of response from the project developer, the adequacy with compliance with VCS requirements is checked along with a revised monitoring report. Closure of comments raised occurs only if the response provided and correction made fully complies with the stated requirements of the methodology applied.

→ The list of CARs/ CLs raised and the response provided and reasons for closure are provided Appendix-II.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

Implementation status of the project activity(s), including any material discrepancies between the project and the project description:

→ The project activity involves the installation and operation of two cogeneration plants of capacity 1.0 MW (with 14TPH steam generation) and 0.6 MW (with 12 TPH steam generation) located at Bahadurgarh, Patiala in the state of Punjab and Mugalpur, Moradabad in the state of Uttar Pradesh respectively. The two project activities I &II are located at Milk food Limited at P.O. Bahadurgarh and Patiala District of Punjab with latitude 30°21'55.23" N and longitude 76°28'17.59" E and at Village: Mugalpur and Moradabad district of UP with latitude and longitude of 28° 57'43.34" N and 78° 54'20.65" E respectively.

→ The implementation of the project activity was as described in the VCS validated PD, checked against supportive documents presented. PJRCES was able to verify that there was no change in project design compared to the design presented in the VCS validated PD, version 02 dated 15 April 2011.

Implementation status of the monitoring plan and the completeness of monitoring, including any material discrepancies between the project and the project description:

→ The GHG emission reductions are calculated based on the power & steam generated and consumed in house for process requirement . PP has monitored parameters as per validated VCS PD dated 3 May 2011.
→ Complete monitored data of project activity was available for the entire verification period (1 June 2011 to 13 February 2012) which was verified by PJRCES.
→ PP has got the consent to operate from the Punjab Pollution Control Board & Uttar Pradesh Pollution Control Board to operate the rice husk based boilers and generated power from small turbines. PJRCES has checked the all consents listed in appendix I.
→ The implementation of the project activity as described in the PD was checked against supportive documents presented and also at the project site. PJRCES was able to verify that there was no change in project design compared to the design presented in the VCS PD.

Any remaining issues from previous validation or verification

This is the second verification (from 1st June 2011 to 13 Feb 2012) for the project against VCS version 3.3. There are no remaining issues from validation.

PJRCES confirmed that responsibilities and authorities for monitoring and reporting were in accordance with what was stated in monitoring plan. By means of desk review and onsite assessment it was confirmed that parameters were monitored in accordance with the monitoring plan.

4.2 Accuracy of GHG Emission Reduction or Removal Calculations

PJRCES assessed the different areas (as mentioned below) which can affect the accuracy of the final emission reduction calculations:

Baseline emissions (BEy):

Project-I

Baseline emissions for supply of electricity to and / or displacement electricity from a grid shall be calculated as per the procedures detailed in AMS I. D version 16.

As per the Para 12 of the AMS.I.D version 16, the emission factor ($EF_{grid,CM,y}$) is calculated in a transparent and conservative manner based on combined margin approach. The emission factor ($EF_{grid,CM,y}$) is calculated exante from the CEA data base and user guide version 05 (A publicly available official source http://www.cea.nic.in), which comes to 0.84 tCO2e/MWh .

Baseline emission (tCO2) = Net Electricity generated (MWh) ($EG_{PJ,y}$) x 0.84(tCO2e/MWh)
= 4827.51 MWh x 0.84 (tCO2e/MWh).
= 4055 tCO_2e

For steam/ heat would have been produced using fossil fuels the baseline emissions are calculated as follows:

As per the Para 16 of the AMS.I.C version 18, the baseline emissions are calculated as follows:

$BE_{thermal, Co2,y}$ = $(EG_{thermal,y} / \eta_{BL,thermal})$*$EF_{EF,CO2}$

= (210.30 TJ / yr / 0.82) X 95.81 tCO_2/ TJ

= 24579.88 tCO_2e

Project-II

Baseline emissions for supply of electricity to and / or displacement electricity from a grid shall be calculated as per the procedures detailed in AMS I. D version 16.

As per the Para 12 of the AMS.I.D version 16, the emission factor ($EF_{grid,CM,y}$) is calculated in a transparent and conservative manner based on combined margin approach. The emission factor ($EF_{grid,CM,y}$) is calculated exante from the CEA data base and user guide version 05 (A publicly available official source http://www.cea.nic.in), which comes to 0.84 tCO2e/MWh .

Baseline emission (tCO2) = Net Electricity generated (MWh) ($EG_{PJ,y}$) x 0.84(tCO2e/MWh)
= 2426.37 MWh x 0.84 (tCO2e/MWh).
= 2038 tCO_2e

For steam/ heat would have been produced using fossil fuels the baseline emissions are calculated as follows:

As per the Para 16 of the AMS.I.C version 18, the baseline emissions are calculated as follows:

$BE_{thermal, Co2,y}$ = $(EG_{thermal,y} / \eta_{BL,thermal})$*$EF_{EF,CO2}$

= (182.28 TJ / yr / 0.82) X 95.81 tCO_2/ TJ

= 21068.49 tCO_2e

Project emissions (PEy):

PJRCES has visited both project sites and verified the log book records for fuels consumptions. It has been found that there is no coal consumption in operating boilers during the current verification period.. The diesel consumption in DG sets used at the time of emergency and accordingly diesel consumption were found. PP has estimated the emissions due to diesel as mentioned below:

Project-I

Project Emission = Total diesel consumption * NCV of Diesel* Emission factor of Diesel
= 26620 lt * 10294 Kcal/Kg * 74 tCO_2 / TJ
= 75.47 tCO2

Project-II

Project Emission = Total diesel consumption * NCV of Diesel* Emission factor of Diesel
= 29743 lt * 10294 Kcal/Kg * 74 tCO_2 / TJ
= 84.32 tCO2

Leakage (LEy):

Leakage due to transfer of equipment was not applicable to the current project activity. The PP had demonstrated during validation that there was more than 25% excess biomass available in the region and hence was not required to calculate leakage emissions due to competing use of rice husk. As per Para 46 of AMS I C version 18, the leakage has to be considered if the biomass residue are transported over a distance of more than 200 Km due to the implementation of the project activity otherwise it can be neglected. The project activity is procuring and utilizing biomass available within the 50 Km radius from Milkfood Limited the same has been verified from rice husk purchase invoices. Hence leakage for this part is Zero.

Total Emissions Reductions (ERy):

$ER_y = BE_y – PE_y – L_y$

Total Emission Reductions = 51580 tCO2 e

Hence, total emission reductions achieved by project activity from 1st June 2011 to 13th February 2012 are 51,580 tCO_2e.

PJRCES has verified all the monitoring parameters values with relevant records and also verified the equipment calibration certificates. Details have been given in below table:

	Project-I			Project-II		
Parameters	**Value verified that applied for estimation of emission reductions**	**Equipment calibration details**	**Sources of data verified**	**Value verified that applied for estimation of emission reductions**	**Equipment calibration details**	**Sources of data verified**
Net electricity generated [$EG_{PJ,y}$], MWh/Year	4827.51	Electronic Energy Meter, Last calibration date-23/04/2011 Calibration due date -23/04/2012 Calibration agency- Alisha Instruments Results: under the specified limits	Log books	2426.27	Electronic Energy Meter, Last calibration date- 01/06/2011 Calibration due date-31/05/2012 Calibration agency : Precision Calibration and Testing Centre Results: under the specified limits	Log books
Quantity of fossil fuel (Diesel) combusted in DG set in year y [$FC_{,l,j,y}$], Liters	26620	This has been verified as receipt basis	Log books	29743	This has been verified as receipt basis	Log books
Quantity of steam generated form project activity biomass boiler [Q_{steam}], Tonnes	78216.30	Electronic steam flow meter Last calibration date -11/04/2011 Calibration due date -10/04/2012 Calibration agency-Modern Electronics Results: under the specified limits	Log books	62238.30	Electronic steam flow meter Last calibration date- 01/06/2011 Calibration due date- 31/05/2012 Calibration agency-Precision Calibration and Testing Centre Results: under the specified limits	Log books
Temperature of the steam generated. [T_{steam}], ℃	419	Electronic Temperature gauge. Last calibration date -13/04/2011 Calibration due date -12/04/2012 Calibration agency-Modern Electronics Results: under the specified limits	Log books	400	Electronic Temperature gauge. Last calibration date- 01/06/2011 Calibration due date- 31/05/2012 Calibration agency-Precision Calibration and Testing Centre Results: under the specified limits	Log Books
Pressure of the steam generated [P_{steam}], Kg/cm^2	44.52	Electronic Pressure gauge. Last calibration date -12/04/2011 Calibration due date -11/04/2012 Calibration agency-Modern Electronics Results: under the specified limits	Log Books	32	Electronic Pressure gauge. Last calibration date- 01/06/2011 Calibration due date- 31/05/2012 Calibration agency-Precision Calibration and Testing Centre Results: under the specified limits	Log Books
Quantity of steam used in the process at high pressure(after conjunction point of direct and bleed steam)(at high	24115	Electronic steam flow meter Last calibration date - 04/04/2011 Calibration due date :-03/04/2012 Calibration agency-Modern Electronics Results: under the specified limits	Log Books	12771.90	Electronic steam flow meter Last calibration date- 01/06/2011 Calibration due date- 31/05/2012 Calibration agency-Precision Calibration and Testing Centre Results: under the specified limits	Log books

pressure side) [$Q_{steam,HP}$], tonnes						
Temperature of the steam used in the process at high pressure(after conjunction point of direct and bleed steam)(at high pressure side) [$T_{steam,HP}$], ℃	239	Electronic Temperature gauge. Last calibration date -12/04/2011 Calibration due date -11/04/2012 Calibration agency-Modern Electronics Results: under the specified limits	Log books	360	Electronic Temperature gauge. Last calibration date- 01/06/2011 Calibration due date- 31/05/2012 Calibration agency-Precision Calibration and Testing Centre Results: under the specified limits	Log books
Pressure of the steam used in the process at high pressure(after conjunction point of direct and bleed steam)(at high pressure side) [$P_{steam,HP}$], Kg/Cm^2	16.56	Electronic Pressure gauge. Last calibration date- 09/04/2011 Calibration due date- 08/04/2012 Calibration agency-Modern Electronics Results: under the specified limits	Log books	30	Electronic Pressure gauge. Last calibration date- 01/06/2011 Calibration due date- 31/05/2012 Calibration agency-Precision Calibration and Testing Centre Results: under the specified limits	Log books
Quantity of steam extracted from the turbine that is used in the process at low pressure (Exhaust Steam at the outlet of the turbine) (at Low pressure side) [$Q_{steam,LP,}$], tonnes	54101.30	Electronic steam flow meter Last calibration date -04/04/2011 Calibration due date -03/04/2012 Calibration agency-Modern Electronics Results: under the specified limits .	Log books	49466.40	Electronic steam flow meter Last calibration date- 01/06/2011 Calibration due date- 31/05/2012 Calibration agency-Precision Calibration and Testing Centre Results: under the specified limits	Log books
Temperature of the steam extracted from the turbine that is used in the process(at low pressure side) [$T_{steam,LP}$], ℃	169	Electronic Temperature gauge. Last calibration date- 12/04/2011 Calibration due date- 11/04/2012 Calibration agency-Modern Electronics Results: under the specified limits	Log books	240	Electronic Temperature gauge. Last calibration date- 01/06/2011 Calibration due date- 31/05/2012 Calibration agency-Precision Calibration and Testing Centre Results: under the specified limits	Log books
Pressure of the steam extracted from the turbine that is used in the process(at low	4	Electronic Pressure gauge. Last calibration date -12/04/2011 Calibration due date -11/04/2012 Calibration agency-Modern	Log books	3	Electronic Pressure gauge. Last calibration date- 01/06/2011 Calibration due date- 31/05/2012 Calibration agency- Precision	Log books

pressure side) [$P_{steam,LP}$], Kg/cm^2		Electronics Results: under the specified limits			Calibration and Testing Centre Results: under the specified limits	
Temperature of the feed water in the boiler. [T_{FW}], ℃	104	Electronic Temperature gauge. Last calibration date -11/04/2011 Calibration due date- 11/04/2012 Calibration agency-Modern Electronics Results: under the specified limits. Results: under the specified limits	Log books	104	Electronic Temperature gauge. Last calibration date- 01/06/2011 Calibration due date- 31/05/2012 Calibration agency-Precision Calibration and Testing Centre Results: under the specified limits	Log books
Quantity of rice husk consumed annually. [$Q_{biomass}$],tonnes	18232	Calibrations details of weighbridge: calibration date :18/11/2010 Calibration date : 23/12/2011 Calibration agency : Controller of Legal Meteorology (Weights and Measures) Govt of Punjab Results: under the specified limits	Log books	15572	Calibrations details of weighbridge: calibration date : 24/02/2011 Calibration date:01/03/2012 Calibration agency : Controller of Legal Meteorology (Weights and Measures) Govt of UP Results: under the specified limits	Log books

4.3 Quality of Evidence to Determine GHG Emission Reductions or Removals

All the parameters were monitored by the project proponent continuously and recorded in the plant records. The same were checked by PJRCES. The monitored parameters of electricity consumed, quantity of rice husk consumed on site and it's NCVs were all monitored using calibrated equipment. Transposition errors into the spreadsheet used to determine the emission reductions were intimated to the PP and corrected.

These practices meet the requirements of the applied methodology and approved monitoring plan as validated in the VCS PD version 02 dated 15 April 2011.

PJRCES was able to verify that the calculations are based on the authentic data from the plant records books. The excel sheet used to calculate the monthly emission reduction figure were all tracked, checked and found to be consistent. Some errors were found in data transfer which were communicated to the project developer and the excel sheet was corrected accordingly.

4.4 Management and Operational System

The clients have established and implemented procedures to monitor the project activity and its operation as per the validated PD. These procedures cover management responsibilities, data monitoring and reviewing procedures and have provided with reports.

5 VERIFICATION CONCLUSION

Perry Johnson Registrars Carbon Emission Services Inc. (PJRCES) has carried out verification of the emission reductions achieved by the project "1*.6 MW Bundled Rice Husk Based Cogeneration Plant by M/s Milk food Limited (MFL) in Patiala (Punjab) & Moradabad (U.P) Districts*" against the guidelines of VCS version 3.3. The VCS project undertaken is a bundle of two cogeneration plants of capacity 1.0 MW (with 14TPH steam generation) and 0.6 MW ((with 12 TPH steam generation) located at Bahadurgarh, Patiala in the state of Punjab and Mugalpur, Moradabad in the state of Uttar Pradesh respectively in India. The project activity involves utilization of rice husk (renewable biomass) available in the regions for thermal and electrical power generation for captive consumption, thereby reducing the baseline emissions. Verification was sought for the emission reductions achieved by the project within the period 1 June 2011 to 13 February 2012 under VCS version 3.3. The project proponent has applied the small scale CDM methodologies AMS-I.D "Grid connected renewable electricity generation" version 16 and AMS I.C "Thermal Energy production with or without electricity" version 18. The emission reductions are **51,580** tCO_2 e as reported in the version 02 of the monitoring report, dated 8 January 2013.

PJRCES's approach is risk-based, drawing on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate them. The assessment was based on review of supporting evidences and information provided, including other explanations where necessary to enable PJRCES to provide reasonable assurance that the reported amount of GHG emission reductions for the specified period is materially correct and fairly stated.

Certification statement:

PJRCES confirms that the project activity has been implemented as per the VCS validated PD and that the emission reductions presented in the monitoring report version 02 dated 8 January 2013 are correctly determined as per the VCS version 3.3 standard and AMS-I.D version 16 & AMS I.C version 18 methodologies. Based on the above information, PJRCES confirms the following:

Name of the project	1.6 MW Bundled Rice Husk Based Cogeneration Plant by M/s Milk food Limited (MFL) in Patiala (Punjab) & Moradabad (U.P) Districts
VCS 2007.1 PD	Version 02 dated 15 April 2011
VCS 2007.1 Validation Report	Version 01 dated 3 May2011
Methodologies	AMS-ID Version 16 & AMS I.C version 18
Monitoring Report	Version 02 dated 8 January 2013
Reporting period	1 June 2011 to 13 February 2012 (Both days included)

GHG Emission Reductions or Removals	tCO_2e
Baseline Emissions	51740
Project Emissions	160
Leakage	0
Net GHG emission reductions or removals	51580

Total Emission Reductions:

Period	Emission Reductions(tCO_2e)
1 June 2011 – 13 February 2012	51580

Ajay Kr Verma

Project Manager
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Site Program Manager
PJRCES

APPENDIX I: DOCUMENTS REVIEWED

Sl. No.	Document reference
[01]	Monitoring report: "1.6 MW Bundled Rice Husk Based Cogeneration Plant by M/s Milk food Limited (MFL) in Patiala (Punjab) & Moradabad (U.P) Districts", Version 02, dated 8 January 2013, and all previous versions
[02]	Emission reduction spreadsheet,
[03]	Project Document: "1.6 MW Bundled Rice Husk Based Cogeneration Plant by M/s Milk food Limited (MFL) in Patiala (Punjab) & Moradabad (U.P) Districts", version 02 dated 15 April 2011
[04]	VCS Validation Report for "1.6 MW Bundled Rice Husk Based Cogeneration Plant by M/s Milk food Limited (MFL) in Patiala (Punjab) & Moradabad (U.P) Districts" Version 01, dated 3 May 2011
[05]	Approved Small-scale Methodology – Indicative simplified baseline and monitoring methodology for selected small scale CDM project activities AMS-I.D., version 16: "*Grid connected renewable electricity generation*"
[06]	Approved Small-scale Methodology – Indicative simplified baseline and monitoring methodology for selected small scale CDM project activities AMS-I.C., version 18:"Thermal *Energy production with or without electricity*".
[07]	VCS Standard valid from 4 October 2012, v3.3
[08]	VCS Program Guide valid from 4 October 2012, v3.3
[09]	Plant records for electricity consumption for the period 1 June 2011 to 13 February 2012
[10]	Biomass weightment records for the 1 June 2011 to 13 February 2012
[11]	Weighbridge calibration records
[12]	Calibration records for energy meters, steam flow meters, temperature sensors, pressure sensors
[13]	• Consent to Operate issues by Punjab Pollution control board dated 21 May 2010 which clear stated that consent to operate has been given till 21 October 2012 • Consent to Operate issues by Uttar Pradesh Pollution control Board dated 8 April 2011 and 21 March 2012
[14]	Diesel NCV: http://www.ipcc.ch/meetings/session25/doc4a4b/vol2.pdf
[15]	Density of Diesel: http://www.iocl.com/Products/DieselSpecifications.pdf

APPENDIX II: RESOLUTION OF CARs AND CLs

Draft report clarification requests and corrective action requests by verification team	Ref.	Summary of project owner response	Verification team conclusion
CAR#1 Please revise the monitoring report as per current version 3.2 which is applicable from 4th October 2012.		The monitoring report has been revised as per current MR version 3.2.	PJRCES has reviewed the monitoring report (MR)version 02 dated 8 January 2013 and found that format of MR has been used as per current version 3.2 which is applicable from 4th October 2012 of VCS. It is found appropriate. This CAR#1 is closed.
CAR#2 Please add discussion and calculation about coal and diesel consumption in project I and project 2 in monitoring report section 4.2 and elaborate on project emission due to that if any??		The discussion has been added in the section 4.2 of the revised MR version 02.	PJRCES has verified during project site visit 6th & 7th December 2012 that there is no coal fuel has been used in the current boiler and only rice husk has been fired for steam generation. It has been found that PP has DG sets which have been used as backup and sometime during the monitoring period it has been used. Validation team has checked the diesel records as receipt basis and same has been used for project emission estimation. It is found appropriate. The same details have been added the MR section 4.2 and found OK. This CAR#2 is Closed.
CAR#3 As per As per Para 46 of AMS I C version 18, the leakage has to be considered if the biomass residue are transported over a distance of more than 200 Km due to the implementation of the project activity otherwise it can be neglected. In the validated PDD, PP has claimed that the rice husk is being procured and utilizing biomass available within the 75 Km		PP has procured biomass available within 50 Km radius from the project site. The same can be confirmed by the sample copy of rice husk receipts. The same has been submitted to the DOE as supportive.	PJRCES has verified the weighbridge records which have each trucks details and locations. It has been found that rice husk has been transported from not more 50 Km radius from the plant site. So as per As per Para 46 of AMS I C version 18, the leakage has to be considered if the biomass residue are transported over a distance of more than 200 Km due to the implementation of the project activity otherwise it can be neglected.

radius from Milkfood Limited. But in monitoring report claim that the rice utilised during monitoring period 1 June 2011 to 12 February 2012 has been procured from 50 Km distance. Hence leakages has been considered zero. Please provide the supporting document for that.			This CAR#3 is Closed.
CL#1 Please clearly justify the difference of emission reduction estimated during validation and actual emission reduction achieved during current monitoring period 1 June 2011 to 13 February 2012.		The difference in the estimated Emission reduction and ER reductions actual achieved during the monitoring period has been justified in section 05 of the revised MR version 02.	PJRCES has reviewed the revised MR version 02 dated 8 January 2013. It has been found that estimated emissions in VCS PD and actual emissions for the period of 1 June 2011 to 13 February 2012 is approx 5% higher. PJRCES has checked the analysis presented and found that net thermal energy generation has been increased by 7.67 % and electrical energy decreased by 11.25 % compare to estimated in registered VCS PD. PJRCES has found that the slight increase in emission reduction due higher PLF achieve for boiler which is that is well within the sensitivity analysis. It is found OK. This CL#1 is Closed.
CAR#4 Please provide following document for Patiala site: 1. Consent to operate form Punjab Pollution Control Board applicable for period of 1 June 2011 and 13 February 2012. 2. Diesel consumption records applicable for period of 1 June 2011 and 13 February 2012 if any. 3. Calibration of Weigh Bridge applicable for period of 1 June 2011 and 13 February 2012.		Following document has been provided as supportive for Patiala site: 1. Consent to operate form Punjab Pollution Control Board applicable for period of 1 June 2011 and 13 February 2012. 2. Diesel consumption records applicable for period of 1 June 2011 and 13 February 2012. 3. Calibration of Weigh Bridge applicable for period of 1 June 2011 and 13 February 2012.	PJRCES has verified the following documents: 1. A letter from Punjab Pollution Control Board date 21 May 2010 which clear stated that consent to operate has been given till 21 October 2012. It is found OK. 2. PJRCES team has verified the diesel consumption records from purchase receipt which has been found OK. 3. PJRCES has verified the weigh bridge calibration certificates as following: Serial number of equipment : EB98H018 Calibrations details of weighbridge: calibration date :18/11/2010 Calibration date : 23/12/2011 Calibration agency : Controller of Legal Meteorology (Weights and Measures) Govt of Punjab

			This CAR#$ is Closed
CAR#5 Please provide following document for Moradabad site: 1. Consent to operate form Uttar Pradesh Pollution Control Board applicable for period of 1 June 2011 and 13 February 2012. 2. Diesel consumption records applicable for period of 1 June 2011 and 13 February 2012 if any. 3. Coal consumption records applicable for period of 1 June 2011 and 13 February 2012 if any. 4. Calibration of Weigh Bridge applicable for period of 1 June 2011 and 13 February 2012.		Following document has been provided as supportive for Moradabad site: 1. Consent to operate form Uttar Pradesh Pollution Control Board applicable for period of 1 June 2011 and 13 February 2012. 2. Diesel consumption records applicable for period of 1 June 2011 and 13 February 2012. 3. Project activity does not involve any coal consumption. 4. Calibration of Weigh Bridge applicable for period of 1 June 2011 and 13 February 2012.	1. A letter from Uttar Pradesh Pollution Control Board date 8 April 2011 and 21 March 2012 which clearly stated that consent to operate has been given to operate plant for current monitoring period. It is found OK. 2. PJRCES team has verified the diesel consumption records from purchase receipt which has been found OK. 3. PJRCES has verified the weigh bridge calibration certificates as following: Serial number of equipment : EB04W256 Calibrations details of weighbridge: calibration date :18/11/2010 Calibration date : 23/12/2011 Calibration agency : Controller of Legal Meteorology (Weights and Measures) Govt of Punjab This CAR#5 is Closed.

ABBREVIATIONS

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CL	Clarification Request
CSEB	Chhattisgarh State Electricity Board
CECB	Chhattisgarh Environmental Conservation Board
GHG	Greenhouse gas
IPCC	Intergovernmental Panel on Climate Change
KVKBEPL	KVK Bio Energy Power Limited
KWh	Kilo Watt hour
NCV	Net Calorific Value
PD	Project Description
PJRCES	Perry Johnson Registrars Carbon Emission Services, Inc
PP	Project Proponent
NEWNE	North East West Northeast Grid
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Voluntary Carbon Standard