



DNV

VCS VERIFICATION REPORT

SHREE NAKODA ISPAT LTD 12MW BIOMASS POWER GENERATION PROJECT IN INDIA

MONITORING PERIOD:
27 JANUARY 2009 TO 21 OCTOBER 2010

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Summary:

DNV Climate Change Services AS (DNV) has performed the VCS verification of the emission reductions reported for the CDM project activity (UNFCCC registration number # 3148) “Shree Nakoda Ispat Ltd 12MW Biomass power generation project” in India, for the pre-CDM registration period of 27 January 2009 to 21 October 2010.

The project activity involves the installation and operation of a 12 MW biomass based power plant. As emission reductions occur prior to the registration of the project as CDM project activity, these emission reductions cannot be claimed as Certified Emission Reductions (CERs). The emission reductions are thus claimed as Voluntary Carbon Units (VCU) under the Voluntary Carbon Standard (VCS) 3.1 issued on 15 July 2011. This is in accordance to the present VCS Guidance for projects that are registered in two GHG programs.

In DNV’s opinion, the emission reductions reported for the “Shree Nakoda Ispat Ltd 12MW Biomass power generation project” in the VCU monitoring report are fairly and correctly stated. DNV is therefore able to certify that the emission reductions from the “Shree Nakoda Ispat Ltd 12MW Biomass power generation project” during the period from 27 January 2009 to 21 October 2010, amount to 68 566 tCO₂ equivalent.

DNV does not assume any responsibility towards the issuance and utilization of VCUs hereby verified and certified. Request for issuance of VCUs shall be made by the project proponent to an approved VCS Program Registry based on the requirements set out under the most recent version of the VCS Program Guidelines clause on VCS Registration. The verification of reported emission reductions is based on the information made available to DNV and the engagement conditions detailed in this report. Hence, DNV cannot be held liable by any party for decisions made or not made based on this report.

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1 INTRODUCTION

Shree Nakoda Ispat Ltd has commissioned DNV Climate Change Services AS (DNV) to carry out the verification and certification of emission reductions reported for the “Shree Nakoda Ispat Ltd 12MW Biomass power generation project” (the project) in the pre-CDM registration period 27 January 2009 to 21 October 2010. This report contains the findings from the validation and verification and includes a validation statement for the project and verification statement for the verified carbon units.

1.1 Objective

Verification is the periodic independent review and ex-post determination by an accredited verification body of the monitored reductions in GHG emissions that have occurred as a result of the registered VCS project activity during a defined verification period.

A verification statement is the written assurance by a verification body that, during a specific period in time, a project activity achieved the emission reductions as verified.

The objective of this verification was to verify and provide a verification statement of emission reductions reported for the “Shree Nakoda Ispat Ltd 12MW Biomass power generation project” for the period 27 January 2009 to 21 October 2010.

1.2 Scope and Criteria

The scope of the verification is:

- To verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the registered project monitoring plan.
- To evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emissions reduction data is free from material misstatement.
- To verify that reported GHG emissions and emission reduction data are sufficiently supported by evidence.

The criteria of the verification are:

- VCS Program Guide version 3.0
- VCS Standard version 3.1 and other relevant requirements defined by VCSA.
- The approved CDM methodology AMS- I.D (version 13).

The verification shall ensure that reported emission reductions data are complete and accurate in order to be verified.

1.3 Level of assurance

The verification report expresses a conclusion with a reasonable level of assurance about whether the reported GHG emissions reduction data is free from material misstatement. DNV applied a materiality threshold of 1% with respect to omission or misstatements concerning reported quantities as per VCS standard 3.1.

1.4 Summary Description of the Project

The proposed project activity involves the installation and operation of a grid connected 12MW biomass (rice husk) based power plant in the industrial facility of SNIL, located at Siltara, Raipur district in the state of Chattisgarh, India.

The project activity would be used for captive power consumption at SNIL and export of surplus power to the grid. In the absence of the project activity the electricity requirement of the SNIL facility would be met by the existing waste heat recovery unit and grid supplied electricity. The project activity will thus replace grid power.

The biomass based power plant will generate electricity by mainly utilizing rice husk. The plant and machinery of the project consists of a high-pressure steam turbine configuration that will be used for this purpose. To generate steam a circulating fluidized bed combustion boiler (CFBC) will be used. Other plant and equipment includes fuel conveyors, ash handling system, water treatment plant, compressed air plant, electrostatic propitiator etc. The proposed plant will have one turbine which is of impulse, multistage, single cylinder with horizontally split casing and straight condensing type capable of generating 12 MW at 11 KV, 50 Hz, 0.8 power factor at the generator terminals.

The project has applied the approved CDM small-scale baseline and monitoring methodology AMS-I.D, version 13, “*Grid connected renewable electricity generation*” /17/.

This verification report accounts for emission reductions generated by the project from 27 January 2009 to 21 October 2010. The projects emission reductions are determined as the product of the net amount of electricity exported to the southern regional grid and the *ex-ante* fixed combined grid emission coefficient of 0.7959 tCO₂e/MWh for the western regional grid of India.

Title of the project activity: Shree Nakoda Ispat Ltd 12MW Biomass power generation project

Location of the project activity: Plot number 109, Phase II, Siltara Industrial Growth Centre, Siltara, Raipur in the state of Chhattisgarh in India.

VCU Verification period: 27 January 2009 to 21 October 2010

Project Operation start date: 27 January 2009.

2 VALIDATION PROCESS, FINDINGS AND CONCLUSION

Shree Nakoda Ispat Ltd 12MW Biomass power generation project has been registered as a CDM project activity (UNFCCC Reference Number: 3148) and available on the website <http://cdm.unfccc.int/Projects/DB/TUEV-SUED1258718628.58/view>.

Therefore, DNV only performed validation for the project on those additional requirements by VCSA. This validation was completed as part of the current VCU verification.

2.1 Validation Process

The validation was performed through means of the following three phases in accordance with the requirement of the registered CDM PPD, the applied methodology, and the VCS Standard version 3.1 and other relevant VCS requirements.

The validation consisted of the following three phases:

- A desk review of the project documents
- Follow-up interviews with project stakeholders and site inspection where necessary
- The resolution of outstanding issues and the issuance of the validation report and opinion

The following sections outline each step in more detail. The team composition used for the validation can be found in section 3.1 of this report.

2.1.1 Document Review

The documentation was reviewed in combination with the verification activity for the project as the project is already a registered project with UNFCCC, reference no 3148. The other documents reviewed can be found in section 3.2 of this report.

2.1.2 Interviews

The interviews were performed in combination with the verification activity for the project. Please refer to details in Section 3.3.

2.1.3 Site Inspections

A site inspection was performed in combination with the verification activity for the project. Refer to details in Section 3.4.

2.1.4 Resolution of Any Material Discrepancy

This activity was performed in combination with the verification activity for the project. Refer to details in Section 3.5.

2.2 Validation Findings

2.2.1 Gap Validation

As the project has been validated under the CDM, only the cover page and sections 1.2, 1.3, 1.5, 1.6, 1.7, 1.9, 1.10, 1.12.1, 1.12.2, 1.12.3, 1.12.4 and 1.13 of the *VCS Project Description Template* shall be completed. DNV has undertaken a validation of same, as detailed below.

Cover page

All the relevant information has been provided in the cover page of VCS monitoring report as per the requirement.

1.2: Sectoral Scope and Project Type

According to the VCS version 3.1 Guidelines and the list of Sectoral Scopes of the UNFCCC, the project is applicable under the following activity categories:

- Category 1 – Renewable energy (wind, PV, solar, thermal, biomass, liquid biofuels, geothermal, run-of-river hydro).

According to Annex A of the Kyoto Protocol, the project is applicable under the sectoral scope 1

- Energy Industries (renewable/ non-renewable sources).

1.3: Project Proponent

Shree Nakoda Ispat Ltd is the project participant.

1.5: Project Start Date

The start date of the project activity is 27 January 2009. The project activity was commissioned on 13 January 2009 and the commercial operation started on 27 January 2009. The commissioning date of the project activity has been verified from the commissioning certificate /11/. VCS credits are claimed from 27 January 2009.

1.6: Project Crediting Period

The CDM crediting period of the project activity is 22 October 2010 to 21 October 2020. The VCS crediting period is therefore from 27 January 2009 to 21 October 2010.

1.7: Project Scale and Estimated GHG Emission Reductions or Removals

Project	✓
Mega-project	

Years	Estimated GHG emission reductions or removals (tCO2e)
27 January 2009 to 31 December 2009	32 164
1 January 2010 to 21 October 2010	36 402
Total estimated ERs	68 566

1.9: Project Location

The project is located at at Shree Nakoda Ispat Ltd's (SNIL) sponge Iron plant located at Plot number 109, Phase II, Siltara Industrial Growth Centre, Siltara, Raipur in the state of Chhattisgarh in India. The geo coordinates of the project activity are 21° 21'36" North and 81° 39' 6" East.

1.10: Conditions Prior to Project Initiation

The project activity involves the installation of 12 MW renewable biomass based power plant which will displace the fossil fuel dominated grid electricity. In the absence of the project activity the electricity requirement of the SNIL facility, in which the project activity is located would be met by the existing waste heat recovery unit and grid supply.

1.12.1: Proof of Title

Evidence of proof of title has been demonstrated by a :

- 1) Letter of Approval issued by the Ministry of Environment & Forest (MoEF) dated 25 July 2008 /18/ for the proof of emission reductions.
- 2) The owner has also obtained all relevant permits for the proposed project including consent to operate /14/. The ownership of the project activity has been verified from the consent to operate /14/, as per the VCS registry guidance. Title to VCU has been evidenced by the Letter of Approval and the deed of representation signed by the PP. The project's design and implementation has been carried out in compliance with all relevant and national legislation in India.

1.12.2: Emissions Trading Programs and Other Binding Limits

This is not applicable as the project is registered by UNFCCC Registration ID-3148 and is approved by the Indian DNA.

1.12.3: Participation under Other GHG Programs

The project has been registered as a CDM project, and it does not fall into rejected projects under other GHG programs. The reference number of the project with UNFCCC is 3148 and its documentation is available on the UNFCCC website /22/.

1.12.4: Other Forms of Environmental Credit

The project is located in India and is developed and operated by Shree Nakoda Ispat Ltd, which is an Indian Investment Enterprise. There is no other environmental credit (for example renewable energy certificate) which has or will be produced by or obtained for the project. A self-declaration letter from project proponent addressing that the project does not yield any green benefits / renewable energy certificates and has not claimed emission reductions under any other GHG program for the verification period (27 January 2009 to 21 October 2010) has been provided /10/.

1.13: Additional Information Relevant to the Project

No such additional requirement is relevant to the project that needs to be provided and verified by DNV.

2.2.2 Methodology Deviations

No methodology deviations have been applied to the project.

2.2.3 New Project Activity Instances

Not applicable. The project is not a grouped project.

2.3 Validation Conclusion

DNV is able to confirm the project is in compliance with the VCS requirements for validation as all the additional clauses applicable to VCS have been validated under section 2.2.1.

3 VERIFICATION PROCESS

3.1 Method and Criteria

The verification was performed through means of the following three phases in accordance with the requirement of the registered CDM PPD, the applied methodology, and the VCS Standard version 3.1 and other relevant VCS requirements.

- A desk review of the monitoring report and all support documents.
- Follow-up interviews with project stakeholders and site inspection.
- The resolution of outstanding issues and the issuance of the verification report and statement.

The following sections outline each step in more detail.

The verification of the emission reductions has assessed all factors and issues that constitute the basis for emission reductions from the project. These include:

- The emission reduction calculations and the relevant data records.
- The calibration and maintenance records for the monitoring instruments.
- The management systems to support the project operation and monitoring.

Verification team

Role/Qualification	Last Name	First Name	Country	Type of involvement					
				Desk review	Site Interviews/interview	Reporting	Supervision of work	Technical review	TA 1.1 competence
CDM verifier / technical team leader	Shome	Sharmistha	India	√	√	√			
Expert	Prabhu	Ravi Kumar	India	√	√	√			√
Expert (assisting TR)	Chattopadhyay	Sasim	India			√			√
Technical Reviewer	Telnes	Einar						√	

Duration of verification

Preparations: 5-6 April 2011
 On-site verification/interview: 8 April 2011
 Reporting and QA/QC: 25 April 2011 to 28 November 2011

3.2 Document Review

The monitoring reports /1/, emission reduction spreadsheet /5/, and the turbine log books were assessed as a part of the verification /4/. In addition the baseline estimations and the monitoring plan contained in the registered CDM PDD, CDM validation report /6/, and the project commissioning certificate /11/ and calibration report /2//7/ were also assessed.

In addition, the project’s Project Design Document (PDD), in particular the monitoring plan included in the PDD and the validation report No: 1099813 was also assessed.

3.3 Interviews

Site visit interview has been carried out by DNV on 8 April 2011. DNV has verified the actual operation of the project as described in the registered CDM PDD.

See detail requirement in the below Section 3.4

3.4 Site Inspections

During the site visit, DNV has reviewed the detailed project documentation and production records, interviews with personnel at project plant site, collection of measurements, observation of established monitoring and reporting practices and assessment of the reliability of monitoring equipment. This has enabled the verification team to assess the accuracy and completeness of reported monitoring results and verify the correct application of the approved monitoring methodology. Data from other sources include the grid emission factor which is fixed through-out the crediting period and the analysis of carbon content in coal used, have been verified and assessed.

Personnel interviewed during the site visit have been listed under section 6 of this report.

The on-site assessment involves:

- (i) Assessment of the implementation and operation of the proposed CDM project activity as per the registered PDD/3/;
- (ii) Review of information flows for generating, aggregating and reporting the monitoring parameters/4/;
- (iii) A cross-check between information provided in the monitoring report and data from other sources such as store records /4/ /12/;
- (iv) A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the PDD and the selected methodology;
- (v) Review of calculations and assumptions made in determining the GHG data and emission reductions /5/;
- (vi) Identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters /2//7/.

3.5 Resolution of Any Material Discrepancy

A corrective action request (CAR) is issued, where:

- i. Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;
- ii. Mistakes have been made in applying assumptions, data or calculations of emission reductions which will impair the estimate of emission reductions;
- iii. Issues identified in a FAR during validation to be verified during verification have not been resolved by the project participants.

A clarification request (CL) shall be raised if information is insufficient or not clear enough to determine whether the applicable VCS requirements have been met.

A forward action request (FAR) is issued for actions if the monitoring and reporting require attention and/or adjustment for the next monitoring period.

DNV was able to verify that the GHG emission reductions reported for the “Shree Nakoda Ispat Ltd 12MW Biomass power generation project” in the VCU monitoring report of 9 September 2011 are fairly and correctly stated.

Four CARs and four CLs were raised during the verification. These have been closed by the verification team subsequent to the response provided and satisfactory revisions made in the monitoring report and excel spreadsheet.

No forward action request (FAR) was identified for the future verification of Voluntary Emission Reductions (VERs) under the Voluntary Carbon Standard (VCS) version 3.1/19/

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

As part of the site visit DNV was able to confirm that the project implementation is in accordance with the project description contained in registered CDM PDD of 2 June 2010, and that the project monitoring has been carried out in accordance with the monitoring plan contained in the registered CDM PDD of 2 June 2010.

The project was commissioned on 13 January 2009 and the commercial production (export of surplus electricity) started on 27 January 2009. The commissioning certificate has been verified by DNV.

The project boundaries and all key equipments are in line with the registered CDM PDD. The project boundary covers the electricity generation and the grid to which the generated electricity is exported. The following equipment is operational: as addressed in the PDD:

- Rice husk based boiler of 70 TPH, 66 kg/cm², 485⁰C.
- 12 MW turbine.

The project has all statutory clearances, such as consent to operate /14/ and commissioning certificate /11/. These facts have been verified by DNV during the site visit.

The following plant outages during the chosen verification period (27 January 2009 to 21 October 2010) have been recorded and verified from the downtime register /15/:

- Total non-running hours : 2 674 hours
- Total running hours : 12 494 hours

The CDM approved baseline and monitoring methodology AMS-I.D (version 13) has been applied for the project activity. In accordance with AMS-I.D, the baseline for the project activity has been estimated by determining the CO₂ emissions from the electricity generation from the Indian western regional grid using the combined margin approach. An ex-ante determined combined margin grid emission factor of 0.7959tCO₂/MWh, as validated in the registered CDM PDD, has been used for the calculation of emission reductions. Based on the validated emission factor and net electricity supplied to the steel manufacturing unit, the total emission reductions have been verified to be 68 566 tCO₂e for the period 27 January 2009 to 21 October 2010 /5/.

As required by the monitoring methodology AMS-I.D, version 13, the only monitoring of parameter required is the electricity generation- net export to the sponge iron manufacturing unit.

It has been verified that the electricity generated and auxiliary consumption by the project activity are monitored by the dedicated energy meters. The energy meters are calibrated annually as per the registered PDD, dated 2 June 2010 /3/. Weighbridge meters are also calibrated on yearly basis.

	Assessment/ Observation
Data / Parameter: (as in monitoring plan of PDD):	EG _{Gross y} : Gross electricity generated by the project plant.
Measuring frequency:	Continuous and hourly recording
Reporting frequency:	Daily
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Measuring/recording frequency is in accordance with the plan.
Type of monitoring equipment:	Energy meter Make: Elster Serial no.: 04954131
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	In line with the registered PDD, meter of accuracy class 0.2 has been installed.
Calibration frequency /interval:	Annually. As per the registered PDD, the calibration shall be conducted once in 3 years. Since, the actual calibration frequency of the energy meter is higher (annually) than the committed calibration frequency in the registered PDD, yearly calibration has been accepted by DNV.
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	Calibration has been done on annually and is in line with the monitoring plan.
Company performing the calibration:	Chhattisgarh Power Transmission Company Ltd and Elster.
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes
Is(are) calibration(s) valid for the whole reporting period?	Yes. Calibration of this meter has been carried out on the following dates /2/:

	Meter Serial no.: 04954131 – 1) 25 January 2009 with validity up to 24 January 2010 and 2) 2 January 2010 with validity up to 1 January 2011.
If applicable, has the reported data been cross-checked with other available data?	NA
How were the values in the monitoring report verified?	Monitored value has been checked with the plant daily log book.
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA.

	Assessment/ Observation
Data / Parameter: (as in monitoring plan of PDD):	EG _{aux y} : Auxiliary consumption of electricity for operation of power plant
Measuring frequency:	Continuous and hourly recording
Reporting frequency:	Daily
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Measuring/recording frequency is in accordance with the plan.
Type of monitoring equipment:	Energy meter Make: SATEC Serial no.: 813358
Is accuracy of the monitoring equipment as	In line with the registered PDD, meter of accuracy

<p>stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?</p>	<p>class 0.2 has been installed.</p>
<p>Calibration frequency /interval:</p>	<p>Annually. Annually. As per the registered PDD, the calibration shall be conducted once in 3 years. Since, the actual calibration frequency of the energy meter is higher (annually) than the committed calibration frequency in the registered PDD, yearly calibration has been accepted by DNV.</p>
<p>Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?</p>	<p>It has verified that the calibration of the auxiliary energy meter was delayed from 26 May 2009 to 26 August 2009. The auxiliary consumption has been adjusted with the correction factor of 0.2 (accuracy class of the energy meter), in line with the “Guidelines for assessing compliance with the calibration frequency requirements”, version 01.</p>
<p>Company performing the calibration:</p>	<p>Chhattisgarh Power Transmission Company Ltd and SATEC.</p>
<p>Did calibration confirm proper functioning of monitoring equipment? (Yes / No):</p>	<p>Yes</p>
<p>Is(are) calibration(s) valid for the whole reporting period?</p>	<p>Yes. Calibration of this meter has been carried out on the following dates /2/:</p> <p>Meter Serial no.: 813358 –</p> <ol style="list-style-type: none"> 1) 26 May 2008 with validity up to 25 May 2009; 2) 27 August 2009 with validity up to 26 August 2010 3) 6 July 2010 with validity up to 5 July 2011.
<p>If applicable, has the reported data been cross-checked with other available data?</p>	<p>NA</p>
<p>How were the values in the monitoring report verified?</p>	<p>Monitored value has been checked with the plant daily log book.</p>
<p>Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?</p>	<p>Yes.</p>

In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA.
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	Assessment/ Observation
Data / Parameter: (as in monitoring plan of PDD):	Q _{Biomass,y} : Quantity of biomass (Rice husk) fired for power generated FC _{Coal} : Quantity of fossil fuel (coal) fired in the power plant during non-availability of biomass
Measuring frequency:	Daily
Reporting frequency:	Daily
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Measuring/recording frequency is in accordance with the plan.
Type of monitoring equipment:	Weighbridge meter Serial no.: O7E18 and O11EM06
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	The accuracy class of the weighbridge meter is not mentioned in the registered PDD. The weighbridge meter of class III is used and is a good practice as per industrial standard.
Calibration frequency /interval:	Annually
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	Calibration has been done on annually and is in line with the monitoring plan.
Company performing the calibration:	Weight & Measurement Department Govt. of Chhattisgarh

Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes
Is(are) calibration(s) valid for the whole reporting period?	<p>Yes. Calibration of this meter has been carried out on the following dates /7/:</p> <p>Meter Serial no.: O7E18 –</p> <ol style="list-style-type: none"> 1) 25 September 2008 with validity up to 24 September 2009; 2) 24 September 2009 with validity up to 23 September 2010 3) 26 September 2010 with validity up to 25 September 2011 <p>Meter serial no.: O11EM06</p> <ol style="list-style-type: none"> 4) 3 February 2010 with validity up to 2 February 2011. 5) 4 March 2011 with validity up to 3 March 2012
If applicable, has the reported data been cross-checked with other available data?	NA
How were the values in the monitoring report verified?	<p>Monitored value has been checked with the purchase records and weighbridge slips. Rice husk consumption for the period from 27 January 2009 to 31 January 2009 has not been recorded. Thus, as a conservative approach, the fuel used during this period for the electricity generation has been considered to be coal.</p>
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA.

	Assessment/ Observation
Data / Parameter: (as in monitoring plan of PDD):	$W_{C, coal}$: Weighted average mass fraction of carbon in Coal
Measuring frequency:	Monthly
Reporting frequency:	Monthly
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Measuring/recording frequency is in accordance with the plan.
Type of monitoring equipment:	The data as provided by the coal supplier
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	NA
Calibration frequency /interval:	NA
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA
Company performing the calibration:	
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	NA
Is(are) calibration(s) valid for the whole reporting period?	NA
If applicable, has the reported data been cross-checked with other available data?	The coal analysis reports from the outside labs /8/ have been verified.
How were the values in the monitoring report verified?	The coal analysis reports from the outside labs /8/ have been verified.
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC	Yes.

processes in place?	
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

4.2 Accuracy of GHG Emission Reduction or Removal Calculations

No significant reporting risks have been identified for the data reported. All the data required for emission reduction calculations are manually recorded by the project participant. These are then transferred to spreadsheets for emission reduction calculations. These have been verified by DNV. DNV confirms that the electricity generation has not exceeded the design output capacity (as stated by the manufacturer) for any given month of the verification period and the average plant load factor for the verification period (27 January 2009 to 21 October 2010) is verified to be 66.61%.

The emission reduction has been calculated as per the applied methodology, AMS-I.D, version 13. Baseline emission is the product of net electricity supplied by the project activity to the sponge iron manufacturing unit and the combined margin emission factor of the western regional grid. As per paragraph 16 and 18 of AMS-I.D, version 13, the net electricity generation from biomass will be calculated as the lowest of

- Option 1: Electricity generated metered adjusted to deduct electricity generated from fossil fuels using specific fuel consumption and the quantity of fossil fuel consumed.
- Option 2: The amount of electricity generation calculated using specific fuel consumption and amount of each type of biomass fuel used.

The carbon percentage in coal has been verified from the supplier's data and also from the lab analysis /8/. The specific fuel consumption of coal of 1 tonnes/MWh has been calculated from the boiler manufacturer's technical specifications /13/ and net calorific value of the coal /8/. Specific fuel consumption of biomass of 1.2 tonnes/MWh has been verified from the registered PDD.

During the verification period the project activity, using biomass and coal as fuel, has the gross electricity generation of 121 433.3 MWh and the net electricity supplied to the sponge iron manufacturing unit is 105 483.48 MWh, as per the reading of the electricity meter. The net electricity supplied to the sponge iron unit has been calculated after applying the correction factor of 0.2% to the auxiliary meter reading for the delayed calibration period from 26 May 2009 to 26 August 2009 (as detailed in section 4.1). Due to the application of the correction factor of 0.2%, the auxiliary consumption has increased by 4.99 MWh than the actual measured value. Based on the aforementioned approach of paragraph 16 and 18 of AMS-I.D, version 13, the net electricity generated by the project activity from biomass, during the monitoring period, is 86 149.09 MWh.

Biomass consumption details for the period from 27 to 31 January 2009 were not reported in the Enterprise Resource Planning system /12/ and thus, as a conservative approach, the electricity generated during this period (calculated as per the methodology) has been accounted as coal. This has resulted in the deduction of -120.7 MWh of net electricity generation for the month of January 2009, and this amount being considered as generated by coal. The CO₂ emission due to the coal usage has been accounted for as per paragraph 16 and 18 of AMS-I.D, version 13.

No other fossil fuel is used in the project activity. Thus, no project emission is associated with the project activity during the monitoring period.

The availability of biomass (rice husk) has been verified from the biomass assessment report by MCJ Energy Engineers (P) Ltd /9/. The total surplus biomass (rice husk) available in the region (50 kms radius) is 940 000 tons, which is approximately 77% larger than the amount of biomass (rice husk) used by the project activity during the verification period (27 January 2009 to 21 October 2010).

Based on the combined margin CO₂ emission coefficient for the of the western regional grid of India of 0.7959 tCO₂/MWh and net electricity generated by the project activity from biomass, the emissions reduction have been verified to be 68 566 tCO₂ equivalent for the period 27 January 2009 to 21 October 2010 /5/.

4.3 Quality of Evidence to Determine GHG Emission Reductions or Removals

The emission reductions reported during 27 January 2009 to 21 October 2010 was verified to be 68 566 tCO₂e.

Sufficient evidence was presented for the reported net emission reductions. The monitoring and the report procedure is in line with the monitoring plan as per the CDM registered PDD and the applied monitoring methodology AMS-ID, version 13.

4.4 Management and Operational System

The responsibility of ensuring that there is no data misstatement is with the head of CDM team, who is responsible for examining the reports generated by the project manager from the monthly electricity generated, exported and annual emission reduction calculations as per the monitoring plan.

The organizational structure, responsibilities, competencies, non-conformance handling, internal audits and management review for the project was found to be adequate to ensure a successful operation of the project and the credibility and verifiability of the ERs achieved.

5 VERIFICATION CONCLUSION

DNV Climate Change Services AS (DNV) has performed the verification of the emission reductions that have been reported for the “Shree Nakoda Ispat Ltd 12MW Biomass power generation project” (UNFCCC Registration No. 3148) for the period 27 January 2009 to 21 October 2010.

The project participants are responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the project.

It is DNV’s responsibility to express an independent verification statement on the reported GHG emission reductions from the project. DNV does not express any opinion on the selected baseline scenario or on the validated and registered CDM PDD.

DNV conducted the verification on the basis of the approved methodology AMS-I.D (version 13), the monitoring plan contained in the registered CDM PDD of 2 June 2010 and the monitoring report (4) dated 28 November 2011. The verification included i) checking whether the provisions of the monitoring methodology and the monitoring plan were consistently and appropriately applied and ii) the collection of evidence supporting the reported data.

DNV’s verification approach draws on an understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. DNV planned and performed the verification by obtaining evidence and other information and explanations that DNV considers necessary to give reasonable assurance that reported GHG emission reductions are fairly stated.

In our opinion the GHG emissions reductions of the “Shree Nakoda Ispat Ltd 12MW Biomass power generation project” (UNFCCC Registration No. 3148) for the period 27 January 2009 to 21 October 2010 are fairly and correctly stated in the monitoring report (version 4) dated 28 November 2011.

The GHG emission reductions were calculated correctly on the basis of the approved methodology AMS-I.D (version 13) and the monitoring plan contained in the registered CDM PDD of 2 June 2010.

DNV Climate Change Services AS is able to certify that the emission reductions from the “Shree Nakoda Ispat Ltd 12MW Biomass power generation project” during the period 27 January 2009 to 21 October 2010 amount to 68 566 tonnes of CO₂ equivalent, detailed as below.

Reporting period: 27 January 2009 to 21 October 2010

Verified GHG emission reductions or removals in the above reporting period:

GHG Emission Reductions or Removals	tCO ₂ e
Baseline Emissions	68 566
Project Emissions	0
Leakage	0
Net GHG emission reductions or removals	68 566

DNV does not assume any responsibility towards the issuance and utilization of the VCU’s hereby verified and certified. Request for issuance of VCU’s shall be made by the project proponent to an approved VCS

Program Registry based on the requirements set out under the most recent version of the VCS Program Guidelines clause on VCS Registration.

The verification of reported emission reductions is based on the information made available to DNV and the engagement conditions detailed in this report. DNV cannot be held liable by any party for decisions made or not made based on this report.

6 REFERENCES

Documents provided by the Project Participants that relate directly to the GHG components of the project. These have been used as direct sources of evidence for the periodic verification conclusions, and are usually further checked through interviews with key personnel.

- /1/ Shree Nakoda Ispat Ltd , VER/VCU Monitoring Report – “Shree Nakoda Ispat Ltd 12MW Biomass power generation project” Monitoring period: from 27 January 2009 to 21 October 2010, (version 2) of 17 June 2011, version 3, dated 9 September 2011 and version 4, dated 28 November 2011..
- /2/ Calibration certificates of electricity gross meter: 1) 25 January 2009 2) 2 January 2010. Auxiliary meter: 1) 26 May 2008; 2) 27 August 2009 and 3) 6 July 2010.
- /3/ “Shree Nakoda Ispat Ltd 12MW Biomass power generation project” CDM Project Design Document version 6 of 2 June 2010.
- /4/ Shree Nakoda Ispat Ltd: Turbine log book for generation data and auxiliary consumption for the monitoring period 27 January 2009 to 21 October 2010 .
- /5/ Shree Nakoda Ispat Ltd: Spreadsheet for Calculation of Voluntary Emission Reductions.
- /6/ CDM validation report by TÜV SÜD Industrie Service GmbH (validation Report No: 1099813)
- /7/ Calibration certificates of weighbridge Meter Serial no.: O7E18 – 1) 25 September 2008; 2) 24 September 2009; 3) 26 September 2010
- /8/ Monthly coal analysis report by Sudha Metallurgical, Raipur.
- /9/ Biomass assessment report by MCJ Energy Engineers (P) Ltd, 2010.
- /10/ Shree Nakoda Ispat Ltd: Self Declaration letter from project proponent that the project does not yield any green benefits / renewable energy certificates & has not claim emission reductions under any other GHG programme for the verification period (27 January 2009 to 21 October 2010).
- /11/ Commissioning certificate from Karyala Mukhya Vidyut Nirikshak, Chhattisgarh, dated 13 January 2009
- /12/ Shree Nakoda Ispat Ltd: Enterprise Resource Planning system for rice husk consumption and coal consumption and char dolachar disposal for the monitoring period 27 January 2009 to 21 October 2010
- /13/ Shree Nakoda Ispat Ltd: Technical specifications of the biomass based boiler (project activity).
- /14/ Consent to operate from the Chhattisgarh Environment Conservation Board, dated 19 June 2009, valid with up 2011.
- /15/ Shree Nakoda Ispat Ltd: Shutdown details from Downtime register covering the verification period 27 January 2009 to 21 October 2010.

Background documents related to the design and/or methodologies employed in the design or other reference documents.

- /16/ CDM EB: Validation and Verification Manual. Version 1.2
- /17/ CDM Executive Board: AMS I.D, version 13 “Grid connected renewable electricity generation”.
- /18/ Letter of Approval from the host Party India dated 25 July 2008
- /19/ Voluntary Carbon Standard – VCS version 3.1: “Voluntary Carbon Standard - Specification for

the project-level quantification, monitoring and reporting as well as validation and verification of greenhouse gas emission reductions or removals”

- /20/ Voluntary Carbon Standard – VCS version 3.1: “Program Guidelines, 15 July 2011”
- /21/ Voluntary Carbon Standard – Project Description Template. Available at: <http://www.v-c-s.org/sites/v-c-s.org/files/VCS%20Standard%2C%20v3.1.pdf>
- /22/ UNFCCC weblink for the project activity (CDM registration): <http://cdm.unfccc.int/Projects/DB/TUEV-SUED1258718628.58/view>

Persons interviewed during the initial verification, or persons who contributed with other information that are not included in the documents listed above.

- /23/ *Mr. Kishore Kumar Gupta, DGM (Commercial)*
- /24/ *Mr. Kaushik Sen, AGM (Purchase)*
- /25/ *Mr. S.K. Pandey, GM (Power Plant)*
- /26/ *Mr. Aravindhan Nagarajan, Consultant, Agrinergy*
- /27/ *Mr. Sachin Nagarkar, Consultant, Agrinergy*

APPENDIX A

CORRECTIVE ACTION REQUESTS, CLARIFICATION REQUESTS AND FORWARD ACTION REQUESTS

Corrective action requests

CL ID	Corrective action request	Response by Project Participants	DNV's assessment of response by Project Participants
CAR 1	Generation, auxiliary, biomass and coal consumption has been taken up to 31 October 2010 instead of 21 October 2010. This is to be corrected.	Data for generation, auxiliary, biomass and coal consumption is taken up to 21/10/2011 in the revised CER spreadsheet.	The excel sheet and the emission reduction calculation has been corrected to 21 October 2011 as applicable according to the verification period. OK. CAR 1 is closed.
CAR 2	Biomass consumption for January 2009 is not recorded in ERP. This is to be considered as coal, conservatively.	The biomass consumption for January 2009 is considered as coal consumption in the revised spreadsheet for conservativeness.	The emission reduction calculation has been revised to consider coal for the month of January 2009, for which the biomass consumption data was not available. OK. CAR 2 is closed.
CAR 3	Date of calibration of generation meter and auxiliary meter to be corrected as per the calibration certificate.	Date of calibration of generation meter and auxiliary meter are corrected as per the calibration certificate in the revised MR.	The date of calibrations for the generation meter and the auxiliary meter has been corrected as per the calibration certificates. OK. CAR 3 is closed.
CAR 4	Self declaration from the project proponent confirming that emission reductions are not claimed from other voluntary bodies.	Self declaration from the project proponent confirming that emission reductions are not claimed from other voluntary bodies is provided to DOE.	Self declaration letter from the project proponent has been provided. OK. CAR 4 is closed.

Clarification requests

CL ID	Clarification request	Response by Project Participants	DNV's assessment of response by Project Participants
CL 1	PCB consent for 12 MW biomass power project to be provided.	PCB consent for 12 MW biomass power project is provided to DOE.	Consent to operate from the Chhattisgarh Environment Conservation Board, dated 19 June 2009, valid with up 2011, has been provided. OK. CL 1 is closed.
CL 2	Commissioning certificate for the project activity to be provided.	Commissioning certificate for the project activity is provided to DOE.	Commissioning certificate from Karyala Mukhya Vidyut Nirikshak, Chhattisgarh, dated 13 January 2009, has been provided. OK. CL 2 closed.
CL 3	NCV of coal and biomass to be provided	NCV of coal and biomass are provided to DOE.	NCV of coal and biomass has been provided. OK. CL 3 is closed.
CL 4	Energy balance, inline with the rice husk and coal consumption, NCV and boiler specifications, to be provided.	Energy balance in line with the rice husk and coal is provided in the revised CER spreadsheet. NCV and boiler specification are provided to DOE.	Energy balance has been provided in the revised excel sheet. OK. CL 4 is closed.

Forward action requests from previous verification

FAR ID	Forward action request	Summary of how FAR has been addressed in this reporting period	Assessment of how FAR has been addressed
FAR 1	Not applicable	NA	NA

Forward action requests from this verification

FAR ID	Forward action request	Response by Project Participants	DNV's assessment of response by Project Participants
FAR 1	Not applicable.	NA	NA