VERIFICATION AND CERTIFICATION REPORT

TATA SPONGE IRON LIMITED

TSIL- Waste Heat Recovery Based Power Project.

SGS Climate Change Programme
SGS United Kingdom Ltd
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United Kingdom

Date of Issue:	**Project Number:**
07/07/2008	CDM.VER0095
Project Title:	
TSIL – Waste Heat Recovery Based Power Project	
Organisation:	**Client:**
SGS United Kingdom Limited	Tata Sponge Iron Limited
Publication of Monitoring Report:	
Monitoring Period:	01/04/2006 to 31/03/2007
First Monitoring Version and Date:	Version 01, Dated 24/03/2008
Final Monitoring Version and Date:	Version 03, Dated 30/06/2008

Summary:

SGS United Kingdom Ltd has performed the second periodic verification of the CDM project TSIL-Waste Heat Recovery Based Power Project, UNFCCC Ref. Number 0274. The verification includes confirming the implementation of the monitoring plan of the registered PDD UNFCCC reg. no 0274 and the application of the monitoring methodology as per ACM0004, version 01 dated 8 July, 2005. A site visit was conducted to verify the data submitted in the monitoring report.

The project activity is a waste heat recovery based power generation project which utilizes the heat energy of the waste gasses generated in the 2nd DRI Kiln to produce steam which is further utilized to generate 7.5 MW power. The WHR based power plant primarily consists of waste heat recovery boiler (WHRB), Turbo generator sets (TG) and other auxiliaries. Steam pressure and temperature at the outlet of the WHRB is fixed at the optimum level of 46 atm. and 485^{0}C respectively. As per engineering specification the WHRB is of unfired, single drum, top supported and natural circulation type.

SGS confirms that the project is implemented in accordance with the validated and registered Project Design Document. The monitoring system is in place and the emission reductions are calculated without material misstatements. Our opinion relates to the projects GHG emissions and the resulting GHG emission reductions reported and related to the valid and registered project baseline and monitoring and its associated documents. Based on the information seen and evaluated we confirm that the implementation of the project has resulted in 25649 tCO2e during period 01/04/2006 up to 31/03/2007.

Subject:			
CDM Verification			
Verification Team:			
Ajoy Gupta– Lead Assessor Sanjay Banerjee – Local Assessor (trainee)			☒ No Distribution (without permission from the Client or responsible organisational unit)
Technical Review:	**Trainee Technical Reviewer:**		
Date: 07/07/2008 Name: Sanjeev Kumar	Name: Vikrant Badve		☐ Limited Distribution
Authorised Signatory:			
Name: Siddharth Yadav Date: 07/07/2008			☐ Unrestricted Distribution
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0	05/05/2008	17	
1	07/07/2008	18	

Abbreviations

BE	Baseline Emissions
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reductions
CO2	Carbon Dioxide
COP/MOP	Conference of parties serving as the meeting of parties to Kyoto Protocol
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
ER	Emission Reduction
GHG	Green House Gas(es)
IPCC	Intergovernmental Panel on Climate Change
MT	Metric Tonne
MU	Million Unit (Million kWh) or GWh
NIR	New Information Request
PDD	Project Design Document
PE	Project Emissions
TSIL	Tata Sponge Iron Limited.
UNFCCC	United Nations Framework Convention for Climate Change

Table of Content

1. Introduction

1.1 Objective

SGS United Kingdom Ltd has been contracted by Tata Sponge Iron Limited to perform an independent verification of its CDM project TSIL- Waste Heat Recovery Based Power Project. CDM projects must undergo periodic audits and verification of emission reductions as the basis for issuance of Certified Emission Reductions (CERs).

The objectives of this verification exercise are, by review of objective evidence, to establish that:

- The emissions report conforms with the requirements of the monitoring plan in the registered PDD and the approved methodology; and
- The data reported are complete and transparent.

1.2 Scope

The scope of the verification is the independent and objective review and ex post determination of the monitored reductions in GHG emission by the project activity. The verification is based on the validated and registered project design document and the monitoring report. The project is assessed against the requirements of the Kyoto Protocol, the CDM Modalities and Procedures and related rules and guidance.

SGS has, based on the recommendations in the Validation and Verification Manual, employed a risk-based approach in the verification, focusing on the identification of significant reporting risks and the reliability of project monitoring.

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 design.

1.3 Project Activity and Period Covered

This engagement covers emissions and emission reductions from anthropogenic sources of greenhouse gases included within the project boundary of the following project and period.

Title of Project Activity:	TSIL- Waste Heat Recovery Based Power Project
UNFCCC Registration No:	UN 0274
Monitoring Period Covered in this Report	01/04/2006 to 31/03/2007
Project Participants	Tata Sponge Iron Limited.
Location of the Project Activity:	Joda/Keonjhar/Orissa/India.

The project activity is a waste heat recovery based power generation project which utilizes the heat energy of the waste gasses generated in the 2nd DRI Kiln to produce steam which is further utilized to generate 7.5 MW power. The WHR based power plant primarily consists of waste heat recovery boiler (WHRB), Turbo generator sets (TG) and other auxiliaries. Steam pressure and temperature at the outlet of the WHRB is fixed at the optimum level of 46 atm. and 485^{0}C respectively. As per engineering specification the WHRB is of unfired, single drum, top supported and natural circulation type.

2. Methodology

2.1 General Approach

SGS's approach to the verification is a two-stage process.

In the first stage, SGS completed a strategic review and risk assessment of the projects activities and processes in order to gain a full understanding of:

- Activities associated with all the sources contributing to the project emissions and emission reductions, including leakage if relevant;
- Protocols used to estimate or measure GHG emissions from these sources;
- Collection and handling of data;
- Controls on the collection and handling of data;
- Means of verifying reported data; and
- Compilation of the monitoring report.

At the end of this stage, SGS produced a Periodic Verification Checklist which, based on the risk assessment of the parameters and data collection and handling processes for each of those parameters, describes the verification approach and the sampling plan.

Using the Periodic Verification checklist, SGS verified the implementation of the monitoring plan and the data presented in the Monitoring Report for the period in question. This involved a site visit and a desk review of the monitoring report. This verification report describes the findings of this assessment.

2.2 Verification Team for this Assessment

Name	*Role*	*SGS Office*
Ajoy Gupta	Lead Assessor	SGS India
Sanjay Banerjee	Local Assessor (Trainee)	SGS India

2.3 Means of Verification

2.3.1 Review of Documentation

The validated PDD, the monitoring report submitted by the client and additional background documents related to the project performance were reviewed. A complete list of all documents reviewed is attached in section 8 of this report.

2.3.2 Site Visits

As part of the verification, the following on-site inspections have been performed

Location: Joda/Keonjhar/Orissa/India	
Date: 27/03/2008 & 28/03/2008	
Coverage	***Source of information / Persons interviewed***
Overall project planning, roles & responsibility for the designated project management team and Verification of monitoring and data handling procedure	Mr. D. K. Mohanty, A.G.M (P,S & E) Mr. S. N. Dey, A.G.M (Electrical) Mr. S. Arukha, Manager (Power Plant)
Confirmation of data collection and handling procedures. Cross checking daily records, monthly records, emission reduction calculation.	Mr. D. K. Mohanty, A.G.M (P,S & E) Mr. S. N. Dey, A.G.M (Electrical) Mr. S. Arukha, Manager (Power Plant)
Assessment of project boundary, inspection of infrastructure and equipments, calibration, maintenance, personnel training. Detailed audit of project procedures, verification of implementation of monitoring procedures.	Mr. S. N. Dey, A.G.M (Electrical) Mr. S. Arukha, Manager (Power Plant) Mr. Amit Adhikari, Sr. Officer (Power Plant)

2.4 Reporting of Findings

As an outcome of the verification process, the team can raise different types of findings

In general, where insufficient or inaccurate information is available and clarification or new information is required the team shall raise a New Information Request (NIR) specifying what additional information is required.

Where a non-conformance arises the team shall raise a Corrective Action Request (CAR). A CAR is issued, where:

I. the verification is not able to obtain sufficient evidence for the reported emission reductions or part of the reported emission reductions. In this case these emission reductions shall not be verified and certified;

II. the verification has identified misstatements in the reported emission reductions. Emission reductions with misstatements shall be discounted based on the verifiers ex-post determination of the achieved emission reductions

The verification process may be halted until this information has been made available to the assessors' satisfaction. Failure to address a NIR may result in a CAR. Information or clarifications provided as a result of an NIR may also lead to a CAR.

Observations may be raised which are for the benefit of future projects and future verification actors. These have no impact upon the completion of the verification activity.

Corrective Action Requests and New Information Requests are detailed in Periodic Verification Checklist. The Project Developer is given the opportunity to "close" outstanding CARs and respond to NIRs and Observations.

2.5 Internal Quality Control

Following the completion of the assessment process and a recommendation by the Assessment Team, all documentation will be forwarded to a Technical Reviewer. The task of the Technical Reviewer is to check that all procedures have been followed and all conclusions are justified. The Technical Reviewer will either accept or reject the recommendation made by the assessment team.

3. Verification Findings

3.1 Project Documentation and Compliance with the Registered PDD

The project documentation was found in compliance with the registered PDD. The project was registered with CDM EB on 12/05/2006 and the project meets the criteria for claiming credits for the monitoring period which starts from 01/04/2006 to 31/03/2007. This was checked from the UNFCCC website: http://cdm.unfccc.int/Projects/DB/DNV-CUK1140622960.5/view

CAR 01 was raised as the interference of new 18.5 MW power generation facility with the project boundary was not clear.

There are three power generation scenarios existing at 7.5 MW power plant of TSIL as discussed below –

- Scenario-1: Power generation in the existing 7.5MW power plant with steam only from WHRB-2
- Scenario-2: Power generation in the existing 7.5MW power plant with steam partially from WHRB-2 and partially from WHRB-1 and/or WHRB-3
- Scenario-3: Power generation in the existing 7.5MW power plant with steam entirely from WHRB-1 and/or WHRB-3

The Scenario 01 considered steam solely from WHRB-2 to generate 7.5 MW power, which is the project activity. The power generation in 7.5 MW power plant taken place through scenario 2 & 3 have not been considered at all for Emission reduction calculations, which has been thoroughly cross checked with the monthly power generation/ Consumption Report for entire monitored period, i.e. April 2006 – March 2007 and emission reduction calculation worksheet and found satisfactory. This approach to the steam accountability for power generation in 7.5 MW power plant and data consideration to arrive at the most accurate emission reductions is justified and found satisfactory. There is as such no interference of 18.5 MW power generation facility in the project boundary of 7.5 MW power plant as per the registered PDD, which is accepted. Thus CAR 01 was closed out.

3.2 *Monitoring Results*

- **Total Electricity Generated (MWh)**

The total electricity generated is continuously measured by the Electronic Trivector Meter (Make: L&T, Model: ER300N, Sl. No.: 00810108) installed at the project site. The periodic calibration of the energy meter is carried by NABL accredited Standard Testing Laboratory (STL), Govt of Orissa. The following are the test report number and issue date for the respective meter which were checked and found satisfactory.

Electronic Trivector Meter (Make: L&T, Model: ER300N, Sl. No.: 00810108)	
Certificate Reference	Date of Calibration
Camp/06/01	10/10/2006

The parameter is monitored continuously in a PLC based system and recorded by the operator on an hourly basis in the CPP log sheets. The shift engineers of the respective shift, record the data in the Daily Maintenance Report. The same is then checked by the Manager- Electrical and forwarded to AGM-Electrical for further review. AGM-Electrical presents the daily Electricity Generated data in the Morning Meeting held at 9:00 AM every morning chaired by MD/VP-Operations/GM-Works. The data is discussed and reviewed and finally entered into the TNS (MIS) system and archived on a daily basis. Data once archived in the TNS system cannot be altered under any circumstances thereby ensuring the security of the data archiving system.

The QA/QC procedures were followed as per QMS procedure. The reported values were cross checked and found correct.

- **Auxiliary Electricity (MWh)**

The auxiliary electricity consumption is a calculated parameter, which is in line with the registered PDD.
The base values and assumptions towards computation of the auxiliary consumptions were not clear and needed to be substantiated by the Project Proponent, thus NIR 02 was raised.
The auxiliary electricity of the power plant is calculated based on the rated capacity of the motors and running hours. The auxiliary consumption of the 7.5 MW power plant is calculated based on the rated capacity of the auxiliary equipments along with their respective operating hours. The rated capacities of the auxiliary equipments/ motors installed in the 7.5 MW power plant have been verified from the tag plates of each and every equipment during the verification site visit. The calculation of the auxiliary consumption for the 7.5 MW power plant is found justified. In that approach the maximum possible auxiliary consumption was considered, this was a conservative approach towards computation of baseline emissions and emission reduction resulting from the project activity. Hence the NIR 02 was closed out.

The daily data is reviewed by the AGM-Electrical and the AGM-Electrical presents the daily Electricity Generated data in the Morning Meeting held at 9:00 AM every morning chaired by MD/VP-Operations/GM-Works. The data is discussed and reviewed and finally entered into the TNS (MIS) system and archived on a daily basis. Data once archived in the TNS system cannot be altered under any circumstances thereby ensuring the security of the data archiving system.

The QA/QC procedures were followed as per QMS procedure. The reported values were cross checked and found correct.

- **Net Electricity Exported (MWh)**

The net electricity exported parameter is entailing net electricity exported out of 7.5 MW WHRB based power generation facility, which comprises power supplied to the Tata Sponge Iron manufacturing facility (Kiln-1, Kiln-2, Kiln-3, Raw Material Circuit, Water Treatment Plant, MD Block, Administrative Building, Township Feeder-1, Township Feeder-2, 18.5 MW TG Generation Meter, Auxiliary Electricity Consumption Meters of 18.5 MW Power Plant) and power exported to the grid system (Power Export (33 kV) NESCO Meter, 220 kV Feeder Meter).

According to the Baseline Methodological choice mentioned in the page 44 of the registered PDD, Net Electricity Exported is calculated from Total Electricity Generated and Auxiliary Consumption ($EGy = EG_{GEN} – EG_{AUX}$).

However, the net electricity exported is continuously measured by the Electronic Trivector Meters installed at the plant facility of TSIL. The periodic calibration of the energy meters has been carried out as per QMS procedure. The following are the technical specifications, calibration report number and issue date for the respective meters which were checked and found satisfactory.

Meter location	Energy Meter Details	Certificate Reference	Date of calibration
Kiln-1 Meter	Make: ENERCON Sl. No.: F30/668-0802 Type: DM5230	Internal Test certificate by TSIL	22.10.206
Kiln-2 Meter	Make: L&T Model: ER300P Sl. No.: DR85333	Internal Test certificate by TSIL	04/05/2006
Kiln-3 Meter	Make: L&T Model: ACRUX Sl. No.: 06878156	Calibration done by L&T Ltd., Mysore Works	23/03/2006
Raw Material Circuit Meter	Make: L&T Model: EM201F Sl. No.: JT658225/2000	Internal Test certificate by TSIL	06/06/2006
Water Treatment Plant Meter	Make: L&T Model: EMF201F Sl. No.: BT650849/2000	Internal Test certificate by TSIL	07/06/2006
MD Block Meter	Make: L&T Model: EM201F Sl. No. BT650801/2000	Internal Test certificate by TSIL	04/05/2006
ADM Building	Make: L&T	Internal Test certificate by	04/05/2006

Meter location	Energy Meter Details	Certificate Reference	Date of calibration
Lighting	Model: EM201F Sl. No. BT650809/2000	TSIL	
Township Feeder-1 Meter	Make: ENERCON Model: DM5230 Sl. No. F30/664-0802	Internal Test certificate by TSIL	04/05/2006
Township Feeder-2	Make: ENERCON Model: DM5230 Sl. No.: F30/665-0802	Internal Test certificate by TSIL	04/05/2006
18.5MW Generation Meter	Electronic TVM, Make: L&T, Model: ER300P, Sl. No.: 04259829	Ref. Camp/06/2 dated 21.05.2006 *Calibration done by Standard Testing Laboratory, Govt. of Orissa*	21.05.2006
Auxiliary Electricity Consumption Meters of 18.5 MW Power Plant	MCW-1 Meter: Make: Conzerv Model: ELF3234 Sl. No.: 84127/15155-4705	Initial Test Certificate by Manufacturer (Conzerv)	02.01.2007
	MCW-2 Meter: Make: Conzerv Model: ELF3234 Sl. No.: 84127/15151-4705	Initial Test Certificate by Manufacturer (Conzerv)	02.01.2007
	MCW 3 Meter: Make: Conzerv Model: ELF 3234, Sl. No.:84127/15153-4705	Initial Test Certificate by Manufacturer (Conzerv)	02.01.2007
	BFP-1 Meter: Make: Conzerv Model: ELF 3234, Sl. No.:84127/ 15149-4705	Initial Test Certificate by Manufacturer (Conzerv)	02.01.2007
	BFP-2 Meter: Make: Conzerv Model: ELF 3234, Sl. No.: 84127/ 15150-4705	Initial Test Certificate by Manufacturer (Conzerv)	02.01.2007
	BFP-3 Meter: Make: Conzerv Model- ELF 3234, Sl. No.:84127/ 15154-4705	Initial Test Certificate by Manufacturer (Conzerv)	02.01.2007
	AUX TR-1 Meter: Make: Conzerv Model: EM 6400 DM, Sl. No.: 84126 / 665-4705	Initial Test Certificate by Manufacturer (Conzerv)	02.01.2007
	AUX TR-2 Meter: Make: Conzerv Model- EM 6400 DM, Sl. No.:84126 / 667-4705	Initial Test Certificate by Manufacturer (Conzerv)	02.01.2007
Power Export (33 kV)	NESCO Meter: Make: SEMS Model: E3V051 Sl. No.: NSC16390	North Eastern Electricity Supply Company (NESCO) of Orissa Ltd., M.R.T division, Keonjhar Sl. No. 4369 *Note: Power export meter is property of State grid authority (NESCO) and the meter is calibrated and sealed by the grid authority periodically, project proponent does not have any control on the same.*	30/10/2005

Meter location	Energy Meter Details	Certificate Reference	Date of calibration
220 kV Feeder Meter	Make: Secure Meters, Model: ER300N, Sl. No.:NSC17306	Secure Meter Ltd., Apex Metering Report, dated: 24.03.2007. *Power export meter is property of State grid authority (GRIDCO and NESCO) and the meter is calibrated and sealed by the grid authority periodically, project proponent does not have any control on the same.*	24.03.2007

Auxiliary Electricity Consumption Meters of 18.5 MW Power Plant are newly installed meters, thus the Initial Test Certificates provided by the equipment manufacturer supplied with the instruments have been checked for consistence.

The in-house calibration is carried out with reference to a standard energy meter (3 Phase 4 Wire Static Watt hour Meter), according to TSIL QMS procedure and Standard Testing Laboratory (STL), Govt of Orissa the standard energy meter is subject to calibration at a frequency of once in five years.The following are the references of test report number and issue date for the respective meter which was checked and found satisfactory.

Standard Energy Meter	
3 Phase 4 Wire Static Watt hour Meter (Make: L&T , Model: EM 301, Sl. No.: 08804322)	
Certificate Reference	Date of Calibration
Larsen & Tubro Ltd, Mysore Works	02/02/2005

The parameter is monitored continuously in a PLC based system and recorded by the operator on an hourly basis in the CPP log sheets. The shift engineers of the respective shift, record the data in the Daily Maintenance Report. The same is then checked by the Manager- Electrical and forwarded to AGM-Electrical for further review. AGM-Electrical presents the daily Electricity Generated data in the Morning Meeting held at 9:00 AM every morning chaired by MD/VP-Operations/GM-Works. The data is discussed and reviewed and finally entered into the TNS (MIS) system and archived on a daily basis. Data once archived in the TNS system cannot be altered under any circumstances thereby ensuring the security of the data archiving system.

The parameter is permanently archived in the TNS system on a daily basis. Once archived, it can not be altered thereby ensuring the security of the data archiving system. The QA/QC procedures were followed as per QMS procedure. The reported values were cross checked and found correct.

- **Turbine Outage hours**

The parameter is monitored and recorded manually on a daily basis in the Power Plant Log Sheet only when there is an outage. The 'turbine outage hours' is monitored and recorded manually in the 'Power Plant Log Sheet' following the guidance of the Registered PDD/ Version 02. Detail on the same has been verified during on-site verification and found satisfactory. Most of the time during the period of turbine outages, the full auxiliary loads of the power plant equipments have been maintained i.e. all the power plant equipments were under operational condition during the turbine outage period. This was to ensure a minimum revamping time of the power plant so that power generation can be resumed immediately on recovery of the turbine from its outage. Only nine days during the period of turbine outages within the verification period under consideration (i.e. 14th April 2006, 9th February 2007, 11-14th February 2007 and 28-30th March 2007), the power plant equipments have been run partially i.e.

- Either all the power plant equipments have been run for few hours, or
- Some of the power plant equipments have been run on a trial basis for maintenance purpose/testing for few hours

The auxiliary electricity consumption under such situations depends on the power consumption of the operational equipments and their individual running hours. The project proponent has recorded the rated capacity of the

equipments operational under these situations and their individual running hours for computation of auxiliary electricity.

Turbine outage hours and date - the day in which the auxiliary were run on partial load which was verified with log sheet in the plant.	14-Apr-06 24 Hrs 9-Feb-07 24 Hrs 11-Feb-07 24 Hrs 12-Feb-07 24 Hrs 13-Feb-07 24 Hrs 14-Feb-07 24 Hrs 28-Mar-07 16 Hrs 29-Mar-07 24 Hrs 30-Mar-07 24 Hrs

CAR 03 was raised as the representation of energy units in the Monitoring report and final calculation of emission reductions are not clear and the emission reduction computation sheet provided in the monitoring report express the unit in MWh which was not clear with respect to the conversion from the units expressed in kWh in the spread sheet.

The discrepancy or representation error of the energy figures (Total electricity generated, Auxiliary electricity consumption and Net electricity exported) and units as represented in Monitoring Report and emission reduction calculation work sheet version 01, has been rectified by the project proponent in Monitoring Report / version 02 dated 03/04/08 in accordance with the Registered PDD. All the energy parameters represented in MWh under revised MR and emission reduction calculation sheet has been cross checked with reference to the respective plant energy records and found correct. The final emission reduction calculation is also found satisfactory. Hence the CAR 03 was closed out.

3.3 Remaining Issues, CAR's, FAR's from Previous Validation or Verification

The project got registered with the CDM EB as on 12 May 2006. There were no issue remaining to be addressed with regard to Validation. This is the second monitoring period starting from 01/04/2006 to 31/03/2007 and there is no previous issue remaining to be addressed with regard to Verification.

3.4 Project Implementation

Project was implemented and equipment installed as described in the registered PDD; The project was registered with CDM EB on 12/02/2006 (UN Ref. 0274) and the crediting period starts (this monitoring report) from 01/04/2006 to 31/03/2007.

3.5 Completeness of Monitoring

The reporting procedures reflect the content of the monitoring plan. The monitoring mechanism is effective and reliable

3.6 Accuracy of Emission Reduction Calculations

The calculation of emission reductions is found to be correct. The data involved in emission reduction calculation has been thoroughly verified with plant records and found satisfactory. The details of the reported and the verified values for all parameters are listed in section 4.

3.7 Quality of Evidence to Determine Emission Reductions

Critical parameters used for the determination of the Emission Reductions are discussed above in section 3.2 above. All the data recorded is in compliance with the monitoring report.

3.8 Management System and Quality Assurance

The project facility has a dedicated team comprising of the members having long standing experience in the said field of operations and the roles and responsibilities towards the project operation and management are well structured. The project parameters are monitored continuously in a PLC based system and recorded by the operator on an hourly basis in the CPP log sheets. The shift engineers of the respective shift, record the data in the Daily Maintenance Report. The same is then checked by the Manager- Electrical and forwarded to AGM-Electrical for further review. AGM-Electrical presents the daily Electricity Generated data in the Morning Meeting held at 9:00 AM every morning chaired by MD/VP-Operations/GM-Works. The data is discussed and reviewed and finally entered into the TNS (MIS) system and archived on a daily basis. Data once archived in the TNS system cannot be altered under any circumstances thereby ensuring the security of the data archiving system.

Tata Sponge Iron Limited is ISO 9001 (Approval date 11.01.1995, Expiry date 10.01.2009) and ISO 14001 (Approval date 28.03.2003, Expiry date 27.03.2009) certified facility and having a robust internal QA-QC and audit procedures implemented. The internal training records (Doc. Ref. TSI/F/TRG/006/02 dated 27.01.2006, 30.01.2007) as per ISO procedures have been cross checked found satisfactory.

3.9 Data from External Sources

The parameters used for grid emission factor calculation mentioned in the PDD table D.2.1.3. were stated to be monitored yearly. The same is not required as the Grid Emission Factor used for emission reduction calculation has been determined *ex ante* as Combined Margin on the basis of power sector values provided by Central Electricity Authority, Ministry of Power, Government of India and the value is fixed for the entire crediting period, same was checked with the Validation Report (report no. 2006-0211, dated 2005-11-09, page 6, (available at *http://cdm.unfccc.int/Projects/DB/DNV-CUK1140622960.5/view*) of the registered project activity (UN0247) and found satisfactory. However the CEA (Central Electricity Authority) data is available for every year with the plant, the recent most Combined Margin Grid Emission Factor value for Indian Eastern Regional Grid system (1.01 tCO2/ MWh) as provided by Central Electricity Authority, Ministry of Power, Govt. of India (CO2 Baseline Database for the Indian Power Sector, Version 3.0, dated December 2007.) has been cross checked and found that the Grid Emission Factor used for emission reduction calculation for the current monitoring period is conservative, thus the Grid Emission Factor (822.748 tCO2/GWh) used for emission reduction calculation has been accepted.

The Grid Emission Factor (822.748 tCO2/MU) value was cross checked from the registered PDD version 02 (Page 19/93) dated 27th December 2005 and found consistent.

4. Calculation of Emission Reductions

Parameter	***Reported Value*** 01/04/2006 – 31/03/2007	***Verified Value*** 01/04/2006 – 31/03/2007
Total Electricity Generated (MWh)	37.3001	37300
Auxiliary Electricity (MWh)	6.1259	6126
Net Electricity Exported (MWh)	31.1742	31174
Grid Emission factor[££] (tCO_2/MU)	822.748	822.748

[££] - Grid emission factor used for emission reduction calculation is determined ex-ante and the value is fixed for the entire crediting period, as mentioned under registered PDD.

1. Net Electricity Exported (EGy) = Total Electricity Generated (EG_{GEN}) – Auxiliary Electricity (EG_{AUX})
   = 37300 – 6126
   = 31174 MWh
2. Total Baseline Emissions = Net Electricity Exported (EGy) x Grid emission Factor (EFy)
   = 31174 MWh x 822.748 tCO2/MU
   = (31174/1000) x 822.748 tCO2/MU
   = 25649 tCO_2
3. Total Project Emissions = 0 tCO_2
4. Emission Reduction = Total Baseline Emissions – Project Emissions
   = (25649-0) tCO_2
   = 25649 tCO_2

5. Recommendations for Changes in the Monitoring Plan

No recommendation was provided to the client to improve their monitoring plan.

6. Overview of Results

Assessment Against the Provisions of Decision 17/CP.7:

Is the project documentation in accordance with the requirements of the registered PDD and relevant provision of decision 17/CP.7, EB decisions and guidance and the COP/MOP?

Yes. The results of the compliance assessment are recorded in the verification checklist which is used as an internal report only.

Have on-site inspections been performed that may comprise, inter alia, a review of performance records, interviews with project participants and local stakeholders, collection of measurements, observations of established practices and testing of the accuracy of monitoring equipment?

Yes. Mr. Sanjay Banerjee visited the site and undertook interviews, collected data, audited the implementation of procedures, checked calibration certificates and checked data, inter alia.

The results of the site visits are recorded in the verification checklist which is used as an internal report only.

The evidences have been checked and collected. The revised monitoring report is attached with this verification report.

Has data from additional sources been used? If yes, please detail the source and significance.

As mentioned in section 3.9 above, the baseline emission factor for grid is determined ex-ante as mentioned in registered PDD dated 27/12/2005 is accepted during for the monitoring period and the value of the same is 822.748 tCO2 / MU which has been cross checked from the registered PDD (Page 19/93) dated 27th December 2005 and found correct.

Please review the monitoring results and verify that the monitoring methodologies for the estimation of reductions in anthropogenic emissions by sources have been applied correctly and their documentation is complete and transparent.

Yes. The monitoring methodology has been correctly applied and the monitoring report and supporting references are complete and transparent.

Have any recommendations for changes to the monitoring methodology for any future crediting period been issued to the project participant?

No recommendation was provided to the Client to change the Monitoring Plan.

Determine the reductions in anthropogenic emissions by sources of greenhouse gases that would not have occurred in the absence of the CDM project activity, based on the data and information using calculation procedures consistent with those contained in the registered project design document and the monitoring plan.

The data used in anthropogenic emission reduction calculation is consistent with those contained in the registered PDD and monitoring plan. The emission reduction was 33884 tCO2 for the period 01/04/2006 to 31/03/2007 as per the estimation made in the registered PDD. The actual emission reduction has been verified as 25649 tCO2 for the same period.

Identify and inform the project participants of any concerns related to the conformity of the actual project activity and its operation with the registered project design document. Project participants shall address the concerns and supply relevant additional information.

No such non conformity of the actual project activity and its operation with the registered project design document has been observed.

Post monitoring report on UNFCCC website

Yes, the monitoring report is available at ref. UNFCCC Project Reference Number 0274 on UNFCCC website: http://cdm.unfccc.int/Projects/DB/DNV-CUK1140622960.5/view

7. Verification and Certification Statement

SGS United Kingdom Ltd has been contracted by Tata Sponge Iron Limited to perform the verification of the emission reductions reported for the CDM project TSIL-Waste Heat Recovery Based Power Project, UNFCCC Ref No. 0274 in the period 01/04/2006 to 31/03/2007.

The verification is based on the validated and registered project design document and the monitoring report for this project. Verification is performed in accordance with section I of Decision 3/CMP.1, and relevant decisions of the CDM EB and CoP/MoP. The scope of this engagement covers the verification and certification of greenhouse gas emission reductions generated by the above project during the above mentioned period, as reported in TSIL-Waste Heat Recovery Based Power Project at Joda, Keonjhar, Orissa by M/s Tata Sponge Iron Limited (TSIL), date 03 April 2008, version 02 of the Monitoring report.

The management of the Tata Sponge Limited is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project Monitoring Report version 02 03/04/2008. Calculation and determination of GHG emission reductions from the project is the responsibility of the management of the Tata Sponge Limited. The development and maintenance of records and reporting procedures are in accordance with the monitoring report.

It is our responsibility to express an independent GHG verification opinion on the GHG emissions and on the calculation of GHG emission reductions from the project for the period 01/04/2006 to 31/03/2007 based on the reported emission reductions in the Monitoring Report version 02 dated 03/04/2008 for the same period.

Based on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these, SGS planned and performed our work to obtain the information and explanations that we considered necessary to provide sufficient evidence for us to give reasonable assurance that this reported amount of GHG emission reductions for the period is fairly stated.

SGS confirms that the project is implemented as described in the validated and registered project design documents. Based on the information we have seen and evaluated, we confirm the following:

Name and Reference Number of Project	TSIL-Waste Heat Recovery Based Power Project, Ref No. UN 0274.
Registered PDD and Approved Methodology used for Verification	Registered PDD, version 02, dated 27/12/2005 ACM0004 / version 01 dated 8 July 2005.
Applicable Period	01/04/2006 to 31/03/2007
Total GHG Emission Reductions Verified	25649 tCO_2

Signed on behalf of the Verification Body by Authorized Signatory

Signature:

Name: Siddharth Yadav

Date: 07/07/2008

8. Document References

/1/ Registered PDD, version 02, dated 27/12/2005 (UN 0274)

/2/ Monitoring Report version 1 dated 24/03/2008
/3/ Monitoring Report /Version 02 dated 03/04/08
/4/ Monitoring Report /Version 03 dated 30/06/08
/5/ Emission Reduction Computation Sheet_Version2
/6/ TSIL Auxiliary Electricity consumption during turbine outage period – calculation sheet.
/7/ Methodology ACM0004 version 01 dated 8 July' 2005
/8/ Monthly Power Generation/ Consumption Report for entire monitored period, i.e. April 2006 – March 2007.
/9/ Calibration Certificates for energy meters for the period April 2006 – Mar 2007.
/10/ ISO 14001: 2004 certificate (Approval date 28.03.2003, Expiry date 27.03.2009)
/11/ ISO 9001: 2000 certificate (Approval date 11.01.1995, Expiry date 10.01.2009)
/12/ UNFCCC website (http://cdm.unfccc.int/Projects/DB/DNV-CUK1140622960.5/view)
/13/ Training records (Doc. Ref. TSI/F/TRG/006/02 dated 27.01.2006, 30.01.2007)
/14/ Confirmation from PP regarding installation of auxiliary energy meters (Ref. TSI/J/E8.3; dated 04/07/2008)

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