

**MONITORING REPORT FORM (CDM-MR) \***  
**Version 01- in effect as of: 28/09/2010**

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\* as contained within the document entitled "Guidelines for completing the monitoring report form (CDM-MR)" (EB 54 meeting report, annex 34).

**MONITORING REPORT**  
**VERSION NUMBER 03, 14/10/2011**  
**Lohgarh, Chakbhai and Sidhana Mini Hydroelectric Projects**  
**Reference No. UNFCCC 0327**  
**Fifth Monitoring Report (01/04/2010 to 31/07/2011)**

**SECTION A. General description of the project activity**

**A.1. Brief description of the project activity:**

>>

Three Mini Hydro electric projects aggregating to 5.20 MW at Lohgarh, Chakbhai and Sidhana on the Bathinda Branch Canal, District Ludhiana, Sangrur and Bathinda respectively in Punjab, India have been set-up. Mini Hydroelectric Project at Lohgarh (2 MW) was commissioned in October, 2005, Chakbhai (2 MW) was commissioned in November 2004 and Sidhana (1.20 MW) was commissioned in October, 2007. The plants are operating successfully.

The purpose of the project activity is to generate electricity by utilizing water flowing through the existing canal system as a renewable energy resource to meet the ever- increasing demand for energy in the region. The development of the project activity contemplates the production of clean hydroelectric power that will contribute to reduce the CO<sub>2</sub> emissions, which would have occurred otherwise, in the absence of these projects.

Lohgarh with total installed capacity of 2.0 MW, Chakbhai 2.0 MW and Sidhana 1.2 MW generate electricity and sell it to the Punjab State Electricity Board (PSEB) through Power Purchase Agreement (PPA) contract.

These projects are low head, canal drop based mini hydroelectric projects (project activity) located on the Bathinda Branch Canal, District Ludhiana, Sangrur and Bathinda respectively in Punjab. The projects are run-off-river renewable hydroelectric generating plants, which include forebay, mechanical intake gates, trashracks, draft tubes, vertical turbine and a powerhouse with its discharge channel and adjoining roads. The projects do not involve any type of displacement, rehabilitation or relocation.

The Projects are generating electricity successfully by converting the potential and kinetic energy of the canal water and the electricity produced is fed into the Punjab State Electricity Board Grid thereby replacing the equivalent amount of electricity produced from Thermal stations and thus reducing green house gas emissions.

### Equipment Details:

The projects were completed with major equipment supplied by the supplier as under:

S.No.	MHP	Equipment	Qty/capacity	Supplier
1	Lohgarh	Turbine & its accessories	2*1000kW	Boving Fouress Limited, Bangalore
		Synchronous Generator	2*1000 kW	
2	Chakbhai	Turbine & its accessories	2*1000kW	Boving Fouress Limited, Bangalore
		Synchronous Generator	2*1000 kW	
3	Sidhana	Turbine & its accessories	1*1200kW	Boving Fouress Limited, Bangalore
		Synchronous Generator	1*1200 kW	

The projects were completed as planned and described in the Project Design Document (PDD). During the present monitoring period i.e. 01/04/2010 to 31/07/2011, all the three (3) Plants achieved net energy generation of 36.68 Million kWh and have achieved 34,547 tCO<sub>2</sub> emissions reduction in this monitoring period.

## A.2. Project Participants

### Aqua Power Pvt. Limited

The name of the Company has been changed from “Aqua Power Limited” to “Aqua Power Private Limited”. The fresh certificate of incorporation and Host Country approval for the same has been received by the project activity. The records at CDM Registry with respect to the revised modalities of communication signed by all Project Participants have been updated.

## A.3. Location of the project activity:

LOHGARH: The project is located on Bathinda branch canal.

Latitude        30° 35' 49.69" N ; Longitude 75° 40' 2.91" E  
Town:            Raikot  
Distt:            Ludhiana  
State:            Punjab  
Country:        India

CHAK BHAI : The project is located on Bathinda branch canal .

Latitude        30° 34' 38.94" N ; Longitude 75° 29' 54.51" E

Town : Mehal Kalan  
Distt.: Barnala  
State: Punjab  
Country: India

SIDHANA : The project is located on Bathinda branch canal having

Latitude 30° 21' 5.29" N ; Longitude 75° 30' 42.43" E  
Town : Rampura Phul  
Distt.: Bathinda  
State: Punjab  
Country: India

#### **A.4. Technical description of the Project**

The project consists of 3 sites of Small hydro Power Plant i.e Chakbhai, Lohgarh & Sidhana utilizing the potential and kinetic Energy of the canal water to generate electricity.

Lohgarh:- The Powerhouse comprises of two synchronous generators of capacity 1000 kW each coupled to two numbers of vertical Full Kaplan turbines. The power is generated at a voltage of 6.6 kV, which is further stepped- up to 11 kV to match the nearest substation voltage level.

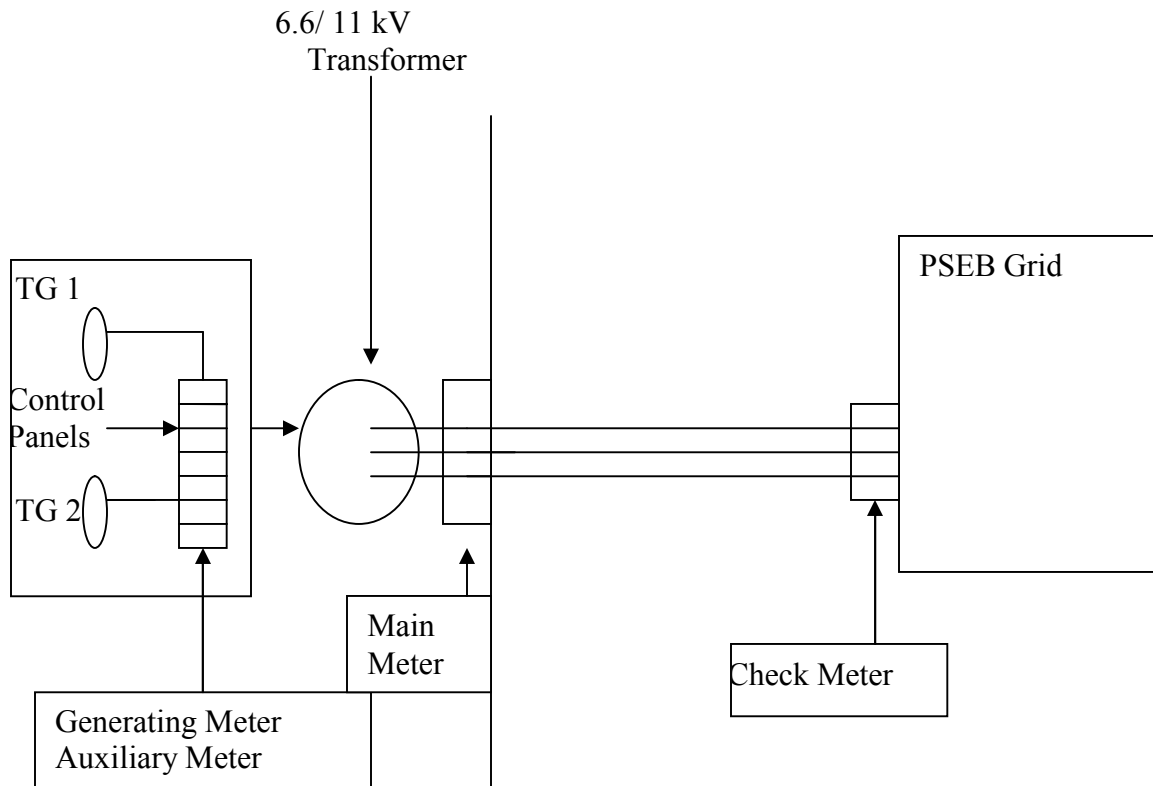
Chakbhai: The powerhouse comprises of two synchronous generators of capacity of 1000 kW each coupled to two numbers of vertical Full- Kaplan turbines. The power is generated at a voltage of 6.6 kV which is further stepped-up to 11 kV to match the nearest substation voltage level.

Sidhana: The Powerhouse comprises of one synchronous generator of capacity 1200 kW coupled to a vertical Full-Kaplan turbine. The power is generated at a voltage of 6.6 kV, which is further stepped-up to 11 kV to match the nearest substation voltage level.

The principal components of each scheme are:-

- (a) Forebay and Intake: Forebay is partly trapezoidal and RCC and trough section where the water is diverted towards the powerhouse upon closure of main canal gates via the intake.
- (b) Power House:- A semi outdoor type powerhouse has been provided to house the turbines, generators and related electro- mechanical equipment.
- (c) Draft Tube:- RCC draft tube has been provided to convey the tail water emerging from discharge side of the turbine to the main canal via tailrace channel.
- (d) Turbine:- Vertical full Kaplan has been provided for all the three projects.

- (e) Tailrace:- The discharge emerging out the draft tubes is carried back to main canal on downstream of the project by trapezoidal shaped tailrace channel connecting draft tube exit to the main canal.
- (f) Switchyard:- Surface type switchyard has been provided with necessary equipment for interfacing with the Grid.



**Note:- Control panels comprise of Relays, Breakers, Generation Meters and Auxiliary Meters.**

**A.5. Title, reference and version of the baseline and monitoring methodology applied to the project activity:**

Type I- Renewal Energy Projects  
 Category: I.D.: Renewable electricity generation for a grid  
 Version: 07

**A.6. Registration date of the project activity:**

30/04/2006

**A.7. Crediting period of the project activity and related information (start date and choice of crediting period):**

Crediting Period for this project activity is 20/11/2004 to 19/11/2014 (fixed).

This is the fifth monitoring report associated with the project activity. The First monitoring report covered the period from 20/11/2004 to 31/3/2006 (both days included) and the second monitoring report covered the period from 01/04/2006 to 30/04/2007 (both days included), third monitoring report covered the period from 01/05/2007 to 30/06/2008 (both days included), fourth monitoring report covered the period from 01/07/2008 to 31/03/2010 (both days included) and the CERs for the same have already been issued.

The period covered in this monitoring report is from 01/04/2010 to 31/07/2011 (both days included). This monitoring report does not cover any period of time covered by the previous monitoring report.

#### **A.8. Name of responsible person(s)/entity(ies):**

Name:- Pushpinder Singh

Contact No. +919779450009

Email:- [pushpindersingh68@gmail.com](mailto:pushpindersingh68@gmail.com)

### **SECTION B. Implementation of the project activity**

#### **B.1. Implementation status of the project activity**

The projects were completed as planned and described in the Project Design Document (PDD).

The project at Lohgarh (2MW) is in operation continuously (with outages – forced & planned) since October 2005, Chakbhai (2MW) is in operation since November 2004 and Sidhana (1.2MW) is in operation since October 2007.

#### **Details of down time from 1<sup>st</sup> April 2010 to 31<sup>st</sup> July, 2011**

<b>PROJECT SITES</b>	<b>DOWNTIME (IN HOURS)</b>
<b>Chakbhai</b>	2330
<b>Lohgarh</b>	2933
<b>Sidhana</b>	3852

#### **B.2. Revision of the monitoring plan**

The monitoring plan has not been revised.

<b>B.3. Request for deviation applied to this monitoring period</b>
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Not Applicable

<b>B.4. Notification or request of approval of changes</b>
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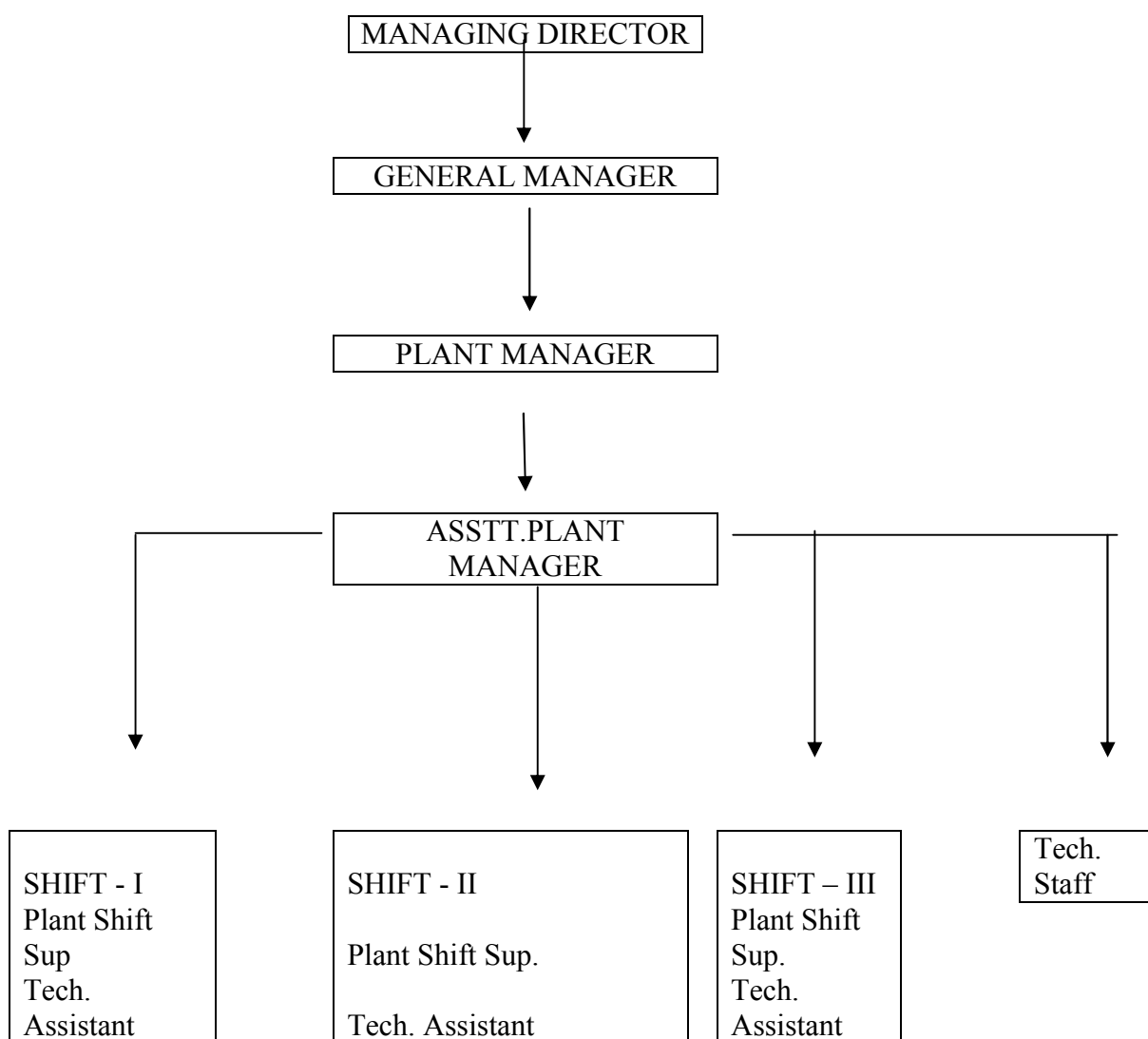
Not Applicable

<b>SECTION C. Description of the monitoring system</b>
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For this project activity the monitoring systems and procedures was followed as described below.

- i. The Energy exported (kWh) and Energy imported (kWh) at the interconnection point have been measured from the electronic energy meters (i.e. Trivector Meters) installed at the interconnection points at all 3 (three) project schemes.
- ii. The Net saleable energy has been calculated as a difference between energy exported and energy imported. It is based on monthly joint meter readings.
- iii. Monthly joint meter readings were taken at interconnection point and certified by representatives of Aqua Power Private Limited (APPL) and the purchaser i.e. Punjab State Electricity Board (PSEB).
- iv. The joint meter readings were used to raise invoice for sale of net energy to PSEB.
- v. The energy generated has been measured by the energy meters installed at the generation end on an hourly basis.
- vi. The auxiliary energy consumption has been measured by the auxiliary energy consumption meters installed at each of the plant sites on an hourly basis.
- vii. The data of the aforesaid parameters are recorded on hourly basis which are summed into a daily reading.
- viii. The Daily readings were aggregated to monthly readings.
- ix. Monthly reports stating the energy exported, energy imported, energy generated and auxiliary energy consumption were prepared by shift-in-charge and verified by plant managers.
- x. The finance department cross checked the data provided by plant managers.

The Organizational structure responsible for monitoring the various parameters as per Monitoring Plan for each site is as below:-



The Hourly data is monitored and recorded in the log books by the Shift Staff comprising of Plant Shift Supervisor and Technical Assistant. The daily data is checked and countersigned by the Assistant Plant Manager. The daily and monthly data is checked and verified by the Plant Manager. The data is audited annually by the auditor of the Company having financial background.

**The Diagram showing all relevant monitoring points has been displayed in Section A.4 at Page 6.**

## SECTION D. Data and parameters

### D.1 Data and parameters determined at registration and not monitored during the monitoring period, including default values and factors

<b>Data / Parameter:</b>	Grid Emission Factor
<b>Data unit:</b>	kg of CO <sub>2</sub> / kWh
<b>Description:</b>	The Grid Emission Factor has been calculated as the weighted average of the operating Margin Emission Factor (EF <sub>OM</sub> ) and the Build Margin Emission Factor (EF <sub>BM</sub> ).
<b>Source of data used:</b>	Northern Region Grid's emission from Central Electricity Authority
<b>Value(s) :</b>	0.942
<b>Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)</b>	Baseline emission calculations
<b>Additional comment:</b>	This parameter is fixed ex-ante for the full crediting period

### D.2. Data and parameters monitored

<b>Data / Parameter:</b>	Energy exported		
<b>Data unit:</b>	kWh		
<b>Description:</b>	Energy Exported to grid		
<b>Measured /Calculated /Default:</b>	Measured		
<b>Source of data:</b>	Main meters		
<b>Value(s) of monitored parameter:</b>	36,747,200 (Chabhai: 16,179,370, Lohgarh: 13,144,450 and Sidhana: 7,423,380)		
<b>Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)</b>	Baseline emissions		
<b>Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)</b>	<b>Lohgarh</b>	<b>Chakbhai</b>	<b>Sidhana</b>

	<p>Electronics Bidirectional meter ( L&amp; T ) Old meter S. No.04223075 (New meter S.No. 11059669 replaced on 01/04/2011) accuracy: <math>\pm 0.5\%</math> Calibration Frequency- 6 month Dates of Calibration <b>Date Valid Upto</b> 22/02/2010 to 22/08/2010 19/08/2010 to 19/02/2011 15/09/2011 New meter 16/03/2011 to 16/09/2011</p>	<p>Electronics Bidirectional meter ( L&amp; T ) S. No.04187462 accuracy: <math>\pm 0.5\%</math> Calibration Frequency- 6 month Dates of Calibration <b>Date Valid Upto</b> 26/11/2009 to 26/05/2010 15/05/2010 to 15/11/2010 12/11/2010 to 12/05/2011 10/05/2011 to 10/11/2011</p>	<p>Electronics Bidirectional meter ( L&amp; T ) S. No.05271089 accuracy: <math>\pm 0.5\%</math> Calibration Frequency- 6 month Dates of Calibration <b>Date Valid Upto</b> 20/03/2010 to 20/09/2010 06/09/2010 to 06/03/2011 05/03/2011 to 05/09/2011</p>
Measuring/ Reading/ Recording frequency:	Monthly		
Calculation method (if applicable):	Not Applicable		
QA/QC procedures applied:	<p>The power exported by Aqua Power Private Limited is monitored and recorded on the basis of reading of the Main Meter. The same is cross checked with the Check Meter installed before feeding electricity produced by the project into the Grid. Joint Meters reading are based on the Main Meter reading for the export and import of the electricity to and from the Grid.</p> <p>The principles of Frequency, Data recording and Reliability as mentioned in the PDD are strictly adhered to. The Main Meter and Check Meter are test checked for accuracy every six months by the team of Punjab State Electricity Board.</p> <p>The Meters installed at generation end are also test checked for accuracy every six months.</p>		

<b>Data / Parameter:</b>	Energy imported
Data unit:	kWh
Description:	Energy imported from grid
Measured /Calculated /Default:	Measured
Source of data:	Main meters
Value(s) of monitored	65,290 (Chakbhai: 15,150, Lohgarh: 17,220 and Sidhana: 32,920)

parameter:			
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emissions		
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	<b>Lohgarh</b>	<b>Chakbhai</b>	<b>Sidhana</b>
	Electronics Bidirectional meter ( L& T ) Old mtr. S. No.04223075 (New meter S.No. 11059669 replaced on 01/04/2011 accuracy: $\pm 0.5\%$ Calibration Frequency- 6 month Dates of Calibration <b>Date Valid Upto</b> 22/02/2010 to 22/08/2010 19/08/2010 to 19/02/2011 15/09/2011 New meter 16/03/2011 to 16/09/2011	Electronics Bidirectional meter ( L& T ) S. No.04187462 accuracy: $\pm 0.5\%$ Calibration Frequency- 6 month Dates of Calibration <b>Date Valid Upto</b> 26/11/2009 to 26/05/2010 15/05/2010 to 15/11/2010 12/11/2010 to 12/05/2011 10/05/2011 to 10/11/2011	Electronics Bidirectional meter ( L& T ) S. No.05271089 accuracy: $\pm 0.5\%$ Calibration Frequency- 6 month Dates of Calibration <b>Date Valid Upto</b> 20/03/2010 to 20/09/2010 06/09/2010 to 06/03/2011 05/03/2011 to 05/09/2011
Measuring/ Reading/ Recording frequency:	Monthly		
Calculation method (if applicable):	Not Applicable		
QA/QC procedures applied:	The Main and Check Meters installed are bidirectional Tri -Vector Meters capable of recording energy exported and energy imported. The same are test checked for accuracy every six months. The data of the Main Meter is checked / compared with the data of the Check Meter.		

<b>Data / Parameter:</b>	Net saleable energy
Data unit:	kWh
Description:	Net saleable energy to grid
Measured /Calculated /Default:	Calculated
Source of data:	Log book/main meter
Value(s) of	36,681,910

monitored parameter:	(Chakbhai: 16,164,220, Lohgarh: 13,127,230 and Sidhana: 7,390,460)
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emissions
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	As this is calculated, this section is not applicable for this monitoring parameter.
Measuring/ Reading/ Recording frequency:	Monthly
Calculation method (if applicable):	Energy exported – Energy imported
QA/QC procedures applied:	<p>Net Saleable energy is the net exported energy which is the difference of energy exported and energy imported. Joint Meters reading are taken from the Main and Check Meter every month to arrive at Net Saleable energy.</p> <p>The Main and Check Meters are tested for accuracy every six months.</p>

<b>Data / Parameter:</b>	Energy generated		
Data unit:	kWh		
Description:	Gross energy generated		
Measured /Calculated /Default:	Measured		
Source of data:	Generation Meters		
Value(s) of monitored parameter:	37,751,251 (Chakbhai: 16,531,043, Lohgarh: 13,586,090 and Sidhana: 7,634,118)		
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emissions		
Monitoring equipment (type, accuracy class,	<b>Lohgarh</b>	<b>Chakbhai</b>	<b>Sidhana</b>

serial number, calibration frequency, date of last calibration, validity)	Make: Minsun Digital Power Meter 882-332 Unit1:6851013 Unit 2:68B0512 Accuracy ( $\pm$ )1% Frequency of calibration- 6 month Dates of calibration <b>Date Valid Upto</b> 30/11/2009 to 31/05/2010 15/05/2010 to 15/11/2010 14/11/2010 to 14/05/2011 13/05/2011 to 13/11/2011	Make: Minsun Digital Power Meter 882-332 Unit 1: 6851001 Unit 2 : 6790517 Accuracy ( $\pm$ )1% Frequency of calibration- 6 month Dates of calibration <b>Date Valid Upto</b> 30/11/2009 to 31/05/2010 15/05/2010 to 15/11/2010 14/11/2010 to 14/05/2011 13/05/2011 to 13/11/2011	Make: Enercon EM 6400 66927/3665-0605 Accuracy ( $\pm$ )0.5% Frequency of calibration- 6 month Dates of calibration <b>Date Valid Upto</b> 30/11/2009 to 31/05/2010 15/05/2010 to 15/11/2010 14/11/2010 to 14/05/2011 13/05/2011 to 13/11/2011
Measuring/ Reading/ Recording frequency:	Hourly		
Calculation method (if applicable):	Not Applicable		
QA/QC procedures applied:	The reading of the Energy generated are taken from the meters installed at generation end. These are test checked for accuracy every six months.		

<b>Data / Parameter:</b>	Auxiliary energy consumption		
Data unit:	kWh		
Description:	Auxiliary energy consumed for running the plant		
Measured /Calculated /Default:	Measured		
Source of data:	Auxiliary Meters		
Value(s) of monitored parameter:	530,294 (chakbhai: 172,333, Lohgarh: 192,592, and Sidhana: 165,369)		
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emissions		
Monitoring equipment (type, accuracy class,	<b>Lohgarh</b>	<b>Chakbhai</b>	<b>Sidhana</b>

serial number, calibration frequency, date of last calibration, validity)	<b>Make: Enercon</b> 56248/1285-3404 Accuracy (±)1% Frequency of calibration- 6 month Dates of calibration <b>Date Valid</b> <b>Upto</b> 30/11/2009 to 31/05/2010 15/05/2010 to 15/11/2010 14/11/2010 to 14/05/2011 13/05/2011 to 13/11/2011	<b>Make: Enercon</b> E 64/1640-903 Accuracy (±)1% Frequency of calibration- 6 month Dates of calibration <b>Date Valid</b> <b>Upto</b> 30/11/2009 to 31/05/2010 15/05/2010 to 15/11/2010 14/11/2010 to 14/05/2011 13/05/2011 to 13/11/2011	<b>Make: Enercon</b> 148153/13538-1608 Accuracy (±)1% Frequency of calibration- 6 month Dates of calibration <b>Date Valid</b> <b>Upto</b> 30/11/2009 to 31/05/2010 15/05/2010 to 15/11/2010 14/11/2010 to 14/05/2011 13/05/2011 to 13/11/2011
Measuring/ Reading/ Recording frequency:	Hourly		
Calculation method (if applicable):	Not Applicable		
QA/QC procedures applied:	Auxiliary Energy Consumption readings are recorded at the Auxiliary meters installed in the panel. These are test checked for accuracy every six months		

## SECTION E. Emission reductions calculation

### E.1. Baseline emissions calculation

>>

The formula used for the determination of baseline emissions which is line with the PDD section E:

Baseline Emissions (tCO<sub>2</sub>/yr) = Emission Coefficient (EF<sub>y</sub>) (kg CO<sub>2</sub>/kWh) x Net Saleable Energy (kWh) / 1000

Sn	Description	Formula	Unit	Value
A	Energy exported		kWh	36,747,200.00
B	Maximum inaccuracy specification in the meter		%	0.50%
C	Less: Maximum inaccuracy specification in the meter during the month of Feb 2011 to March 2011	C=Energy exported (Feb 2011 to March 2011 )*0.50	kWh	7,771.35
D	Energy exported based on maximum inaccuracy specification of the meters	D=A-C	kWh	36,739,428.65

<b>E</b>	<b>Energy exported based on maximum inaccuracy specification of the meters – Considered after round down</b>		<b>kWh</b>	<b>36,739,428</b>
F	Energy imported		kWh	65,290.00
G	Maximum inaccuracy specification in the meter		%	0.50%
H	Add: Maximum inaccuracy specification in the meter during the month of Feb 201 to March 2011	J=Energy imported (Feb 2011 to March 2011)*0.50%	kWh	4.75
I	Energy imported based on maximum inaccuracy specification of the meters	<b>I=F+J</b>	kWh	65,294.75
<b>K</b>	<b>Energy imported based on maximum inaccuracy specification of the meters – Considered after round up</b>		<b>kWh</b>	<b>65,295.00</b>
<b>L</b>	<b>Net Saleable Energy after applying correction factor<sup>1</sup></b>	<b>L=E-K</b>	<b>kWh</b>	<b>36,674,133</b>
M	Carbon Emission Factor as per the baseline adopted		kg CO <sub>2</sub> /kWh	0.942
<b>N</b>	<b>Baseline Emissions</b>	<b>N=(L*M) / 1,000</b>	<b>ton CO<sub>2</sub></b>	<b>34,547</b>

## **E.2. Project emissions calculation**

No project emissions are associated with the project activity during this monitoring period. This is also in line with the PDD and methodology.

## **E.3. Leakage calculation**

As the energy generating equipment is not transferred from another activity or the existing equipment is also not transferred to another activity, leakage is not considered. The same is in line with the methodology and the registered PDD.

## **E.4. Emission reductions calculation / table**

>>

Baseline Emissions	:	34,547
Project Emissions	:	NIL
Emission Reductions	:	Baseline emissions – Project emissions
		= 34,547
		= 34,547 tCO <sub>2</sub>

## **E.5. Comparison of actual emission reductions with estimates in the CDM-PDD**

<sup>1</sup> Correction has been applied due to delayed calibration in accordance with Annex 60 of EB 52.

>>

Item	Values applied in ex-ante calculation of the registered CDM-PDD	Actual values reached during the monitoring period
Emission reductions (tCO <sub>2</sub> e)	35,948 <sup>2</sup>	34,547

<b>E.6. Remarks on difference from estimated value in the PDD</b>
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The actual emission reductions during this monitoring period are less than estimated value in the registered PDD for the equivalent time period.

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<sup>2</sup> The ex-ante emission reduction from the registered project activity is 26,961 tCO<sub>2</sub> per annum (i.e.12 months). The operating months for the monitoring period was 16. The extrapolated emission reduction for the monitoring period is calculated by using multiplying with a factor of 16/12, i.e. 35,948 tCO<sub>2</sub>e.

### **Annexure - I**

The month-wise data on energy generated is given in Table 3 below: This monthly data is based on the hourly reading taken at the meters installed at the Generation end.

**Table 3: Energy Generation (kWh)**

<b>Billing Month</b>	<b>Year</b>	<b>Chakbhai</b>	<b>Lohgarh</b>	<b>Sidhana</b>	<b>Total</b>
<b>Apr</b>	<b>2010</b>	432,730	359,950	309,635	<b>1,102,315</b>
<b>May</b>	<b>2010</b>	1,368,070	1,112,902	835,595	<b>3,316,567</b>
<b>June</b>	<b>2010</b>	1,448,390	1,172,712	805,698	<b>3,426,800</b>
<b>July</b>	<b>2010</b>	1,241,365	1,044,861	677,900	<b>2,964,126</b>
<b>August</b>	<b>2010</b>	1,350,710	1,128,886	686,010	<b>3,165,606</b>
<b>Sept.</b>	<b>2010</b>	723,045	605,110	278,790	<b>1,606,945</b>
<b>Oct.</b>	<b>2010</b>	588,370	471,907	351,360	<b>1,411,637</b>
<b>Nov.</b>	<b>2010</b>	981,140	839,020	649,600	<b>2,469,760</b>
<b>Dec.</b>	<b>2010</b>	1,182,270	973,595	723,980	<b>2,879,845</b>
<b>Jan</b>	<b>2011</b>	993,190	830,174	206,810	<b>2,030,174</b>
<b>Feb</b>	<b>2011</b>	936,223	777,599	526,290	<b>2,240,112</b>
<b>Mar</b>	<b>2011</b>	908,990	835,127	369,290	<b>2,113,407</b>
<b>Apr</b>	<b>2011</b>	465,975	388,532	112,470	<b>966,977</b>
<b>May</b>	<b>2011</b>	1,157,370	755,191	56,070	<b>1,968,631</b>
<b>June</b>	<b>2011</b>	1,328,045	1,087,809	749,320	<b>3,165,174</b>
<b>July</b>	<b>2011</b>	1,425,160	1,202,715	295,300	<b>2,923,175</b>
<b>Total</b>		<b>16,531,043</b>	<b>13,586,090</b>	<b>7,634,118</b>	<b>37,751,251</b>

## Annexure II

The month-wise data on auxiliary energy consumption is given in Table 4 below: This monthly data is based on the hourly reading taken at the Auxiliary meters installed at the Panel.

**Table 4: Auxiliary Energy Consumption**

<b>Billing Month</b>	<b>Year</b>	<b>Chakbhai</b>	<b>Lohgarh</b>	<b>Sidhana</b>	<b>Total</b>
<b>Apr</b>	<b>2010</b>	8,364	7,906	8,356	<b>24,626</b>
<b>May</b>	<b>2010</b>	13,572	14,512	13,756	<b>41,840</b>
<b>June</b>	<b>2010</b>	13,180	12,828	13,843	<b>39,851</b>
<b>July</b>	<b>2010</b>	12,966	13,912	12,712	<b>39,590</b>
<b>August</b>	<b>2010</b>	14,335	15,554	13,742	<b>43,631</b>
<b>Sept.</b>	<b>2010</b>	10,113	10,614	7,654	<b>28,381</b>
<b>Oct.</b>	<b>2010</b>	8,237	8,181	8,699	<b>25,117</b>
<b>Nov.</b>	<b>2010</b>	9,999	12,517	11,315	<b>33,831</b>
<b>Dec.</b>	<b>2010</b>	11,068	15,928	12,605	<b>39,601</b>
<b>Jan</b>	<b>2011</b>	11,039	14,085	7,852	<b>32,976</b>
<b>Feb</b>	<b>2011</b>	8,193	11,377	11,545	<b>31,115</b>
<b>Mar</b>	<b>2011</b>	8,212	10,900	11,089	<b>30,201</b>
<b>Apr</b>	<b>2011</b>	7,917	8,315	6,693	<b>22,925</b>
<b>May</b>	<b>2011</b>	11,653	9,943	5,742	<b>27,338</b>
<b>June</b>	<b>2011</b>	10,886	12,547	11,220	<b>34,653</b>
<b>July</b>	<b>2011</b>	12,599	13,473	8,546	<b>34,618</b>
<b>Total</b>		<b>172,333</b>	<b>192,592</b>	<b>165,369</b>	<b>530,294</b>

The Gross energy generated data and auxiliary Energy consumption data is not used for calculation of emission reductions as the calculations of emission reductions is based on Net Saleable Energy i.e the difference of Energy exported and Energy imported.

### Annexure III

#### Power Generation:

Month-wise data on Net Saleable Energy for the monitoring period is given in Table 5 below:

As per the Project Design Document, Emission reductions are to be calculated based on the energy exported minus energy imported during shut-down and start-ups by the power plant.

**Table 5: Net Saleable Energy (kWh)**

Billing Month	Year	Energy Exported				Energy Imported				Net Saleable Energy
		Chakbhai	Lohgarh	Sidhana	Total	Chakbhai	Lohgarh	Sidhana	Total	
<b>Apr</b>	<b>2010</b>	422,440	346,820	299,920	<b>1,069,180</b>	3,740	3,830	2,960	<b>10,530</b>	<b>1,058,650</b>
<b>May</b>	<b>2010</b>	1,338,700	1,079,960	813,800	<b>3,232,460</b>	620	950	780	<b>2,350</b>	<b>3,230,110</b>
<b>June</b>	<b>2010</b>	1,419,030	1,141,190	783,000	<b>3,343,220</b>	250	410	720	<b>1,380</b>	<b>3,341,840</b>
<b>July</b>	<b>2010</b>	1,214,850	1,012,370	658,540	<b>2,885,760</b>	750	910	1,040	<b>2,700</b>	<b>2,883,060</b>
<b>August</b>	<b>2010</b>	1,321,160	1,091,720	666,740	<b>3,079,620</b>	150	180	320	<b>650</b>	<b>3,078,970</b>
<b>Sept.</b>	<b>2010</b>	705,820	583,020	270,980	<b>1,559,820</b>	1,770	1,520	3,400	<b>6,690</b>	<b>1,553,130</b>
<b>Oct.</b>	<b>2010</b>	575,790	457,270	342,380	<b>1,375,440</b>	2,590	3,190	3,000	<b>8,780</b>	<b>1,366,660</b>
<b>Nov.</b>	<b>2010</b>	961,110	809,080	633,300	<b>2,403,490</b>	990	330	640	<b>1,960</b>	<b>2,401,530</b>
<b>Dec.</b>	<b>2010</b>	1,157,760	934,330	705,800	<b>2,797,890</b>	60	120	160	<b>340</b>	<b>2,797,550</b>
<b>Jan</b>	<b>2011</b>	970,480	794,510	199,220	<b>1,964,210</b>	800	1,360	4,540	<b>6,700</b>	<b>1,957,510</b>
<b>Feb</b>	<b>2011</b>	916,890	747,770	510,140	<b>2,174,800</b>	30	130	460	<b>620</b>	<b>2,174,180</b>
<b>Mar</b>	<b>2011</b>	890,280	806,500	356,360	<b>2,053,140</b>	570	820	2,000	<b>3,390</b>	<b>2,049,750</b>

<b>Apr</b>	<b>2011</b>	454,530	375,760	107,860	<b>938,150</b>	2,090	2,360	4,220	<b>8,670</b>	<b>929,480</b>
<b>May</b>	<b>2011</b>	1,132,340	734,330	54,220	<b>1,920,890</b>	450	680	4,820	<b>5,950</b>	<b>1,914,940</b>
<b>June</b>	<b>2011</b>	1,302,010	1,057,880	733,940	<b>3,093,830</b>	180	240	700	<b>1,120</b>	<b>3,092,710</b>
<b>July</b>	<b>2011</b>	1,396,180	1,171,940	287,180	<b>2,855,300</b>	110	190	3,160	<b>3,460</b>	<b>2,851,840</b>
<b>Total</b>		<b>16,179,370</b>	<b>13,144,450</b>	<b>7,423,380</b>	<b>36,747,200</b>	<b>15,150</b>	<b>17,220</b>	<b>32,920</b>	<b>65,290</b>	<b>36,681,910</b>