

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 02, 23/04/2012

5 MW Debal Grid-connected Hydroelectric Project in Uttarakhand, India
UNFCCC Reference No.: 2965
First Monitoring Report Period: 15/03/2010 to 31/03/2011 (first and last days included)

SECTION A. General description of the project activity

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

>>

Chamoli Hydro Power Private Limited (CHPPL) has implemented small hydropower project with two units of 2.5 MW each totaling to 5.0 MW in Narain Bagar taluk of district Chamoli, of Uttarakhand State. The Small Hydro-Power project is proposed on the right bank of Kailganga River just before its confluence with Pinder River near Debal village.

The project activity comprises a diversion structure, water conducting system, feeder channel, desilting tank, power channel (Pipe), fore-bay tank, penstock, power house, and tail race channel. After power generation the water goes back into the river. The generated voltage 6.6 kV is stepped up to 33 kV and evacuated from the powerhouse to 33 kV grid sub-station at Debal (near Nandakesari). In this process there are no greenhouse gas emissions or burning of any fossil fuels. Thus electricity is generated through sustainable means without causing any negative effect on the environment.

Both the Units of project were commissioned on 21/07/2007, from there onwards both units of the project activity are in continuous operation to till date.

The present monitoring period is chosen from 15/03/2010 to 31/03/2011. The net electricity exported to the state grid by the project activity is 18.97 GWh and the net emission reductions are 15,359 tCO₂e for the present monitoring period.

A.2. Project Participants

>>

Name of the party involved(*) (host) indicates a host party)	Private and/or public entity (ies) project participants	Kindly indicate if the Party involved wishes to be considered as project participant (Yes/No)
India (Host)	Private Entity: Chamoli Hydro Power Private Limited	No.

A.3. Location of the project activity:

>>

The location of project activity is:

Village : Debal
Taluk : Narain Bagar
District : Chamoli
State : Uttarakhand
Country : India.

The geographical co-ordinates of the location are 79° 33' 10" E (longitude) and 30° 0' 3" N (latitude).

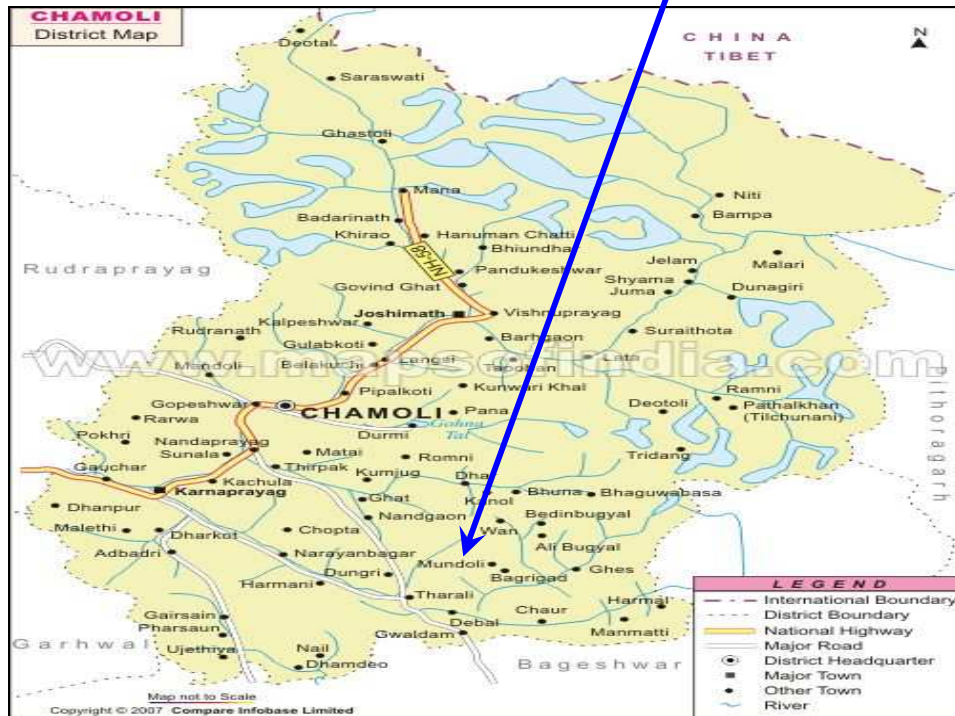
Physical location of the project is marked in the maps below:



Location of Uttaranchal state in India



Location of Chamoli District in Uttarakhand state



Location of 5 MW Debal SHP in Chamoli District.

A.4. Technical description of the project

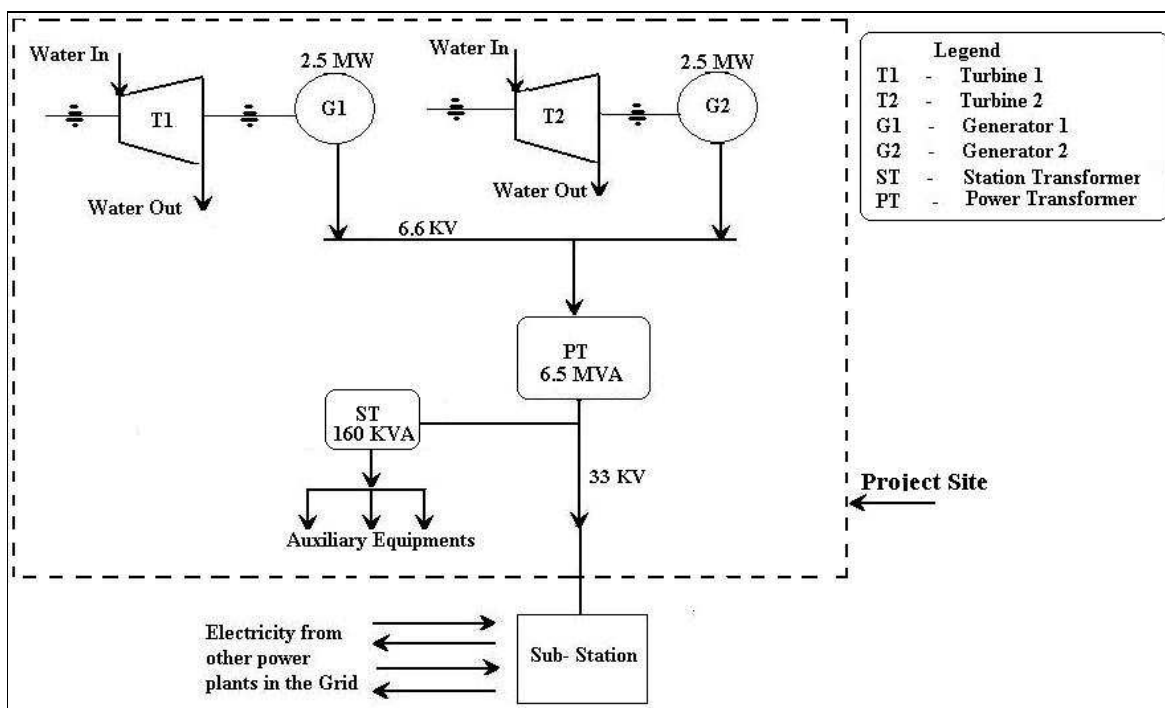
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The technology or power generation process using hydro resources is converting the potential energy available in the water flows into mechanical energy using hydro turbines and then to electrical energy using alternators. The generated power will be transformed to match the nearest grid sub-station for proper interconnection and smooth evacuation of power.

The details of major equipment of the project activity are furnished below:

Equipment Specifications	
<u>Turbine:</u> Make : Boving Fouress Ltd. Type : Horizontal Francis Rated discharge : 14 cu.m/sec Rate Power : 2500 kW Speed : 600 rpm Quantity : 2 Nos.	<u>Generator:</u> Make : WEG Model : SSA710 Sl. No : 156668 & 156669 Capacity : 3125 KVA. Power factor : 0.8 Voltage : 6600 V Rated speed : 600 rpm Frequency : 50 Hz Quantity : 2 Nos.
<u>Power Transformer</u> Sl. No. : ST-34683 Type : ONTR 6500/33 Capacity : 6500 kVA Frequency : 50 Hz Step up : 6.6/33 KV	<u>Auxiliary Transformer</u> Sl. No. : ST-34701 Capacity : 160 kVA Frequency : 50 Hz Step down : 33000/415 V
<u>DG Set</u> Make : Kirloskar Capacity : 63 KVA Frequency : 50 Volts: 415, Power Factor: 0.8. Tank Capacity: 145 Litres	

Detailed technical process diagram of the project activity is furnished below:



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

>>

Title : **Type I**, Renewable Energy Projects

Reference : **AMS-I.D.** Grid connected renewable electricity generation

Version : **Version 13**, AMS-I.D, Scope: 01, EB 36

<http://cdm.unfccc.int/Projects/DB/DNV-CUK1252576926.35/view>

A.6. Registration date of the project activity:

>>

15/03/2010

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

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15/03/2010 to 14/03/2020 (Fixed)

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

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Name/Entity	Project Participant (Yes/No)
Mr. B. Sadasiva Reddy Chamoli Hydro Power Private Limited Telephone : +91-040-23546759 Fax : +91-040-23541474 E-Mail : chamolihydro@yahoo.com	Yes

SECTION B. Implementation of the project activity

B.1. Implementation status of the project activity

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The project activity has been commissioned on 21/07/2007 and registered with CDM EB on 15/03/2010. The project promoter has installed all monitoring equipments to monitor the parameters, which were described in the registered CDM-PDD.

The details of the project operations during this monitoring period are presented below:

(Hr.: MM)

Period	15/03/2010 to 31/03/2011	
	Unit-1	Unit-2
Total no. of hours	9168:00	9168:00
Non-running hours	5289:35	2769:20
Running hours ^a	3878:25	6398:40

^aThe plant has been operated effectively by interchanging between the two units during less water flows in the river. For major plant outages and reasons for the reported period is furnished in Annex - 1.

No significant events occurred during this monitoring period, which may impact the applicability of the methodology.

B.2. Revision of the monitoring plan

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The monitoring plan of the project activity has been revised and the same has been approved by Executive Board on 17/02/2012. The details are available at the UNFCCC web site vid.

<http://cdm.unfccc.int/Projects/DB/DNV-CUK1252576926.35/view>

B.3. Request for deviation applied to this monitoring period

>>

N.A.

B.4. Notification or request of approval of changes

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The following changes are observed in the project design as against the values mentioned in the registered CDM-PDD

Parameter	As per Reg CDM-PDD	Actual
Generator Capacity	2500 kVA	2500 kWh
Design Head	45 m	42.5 m

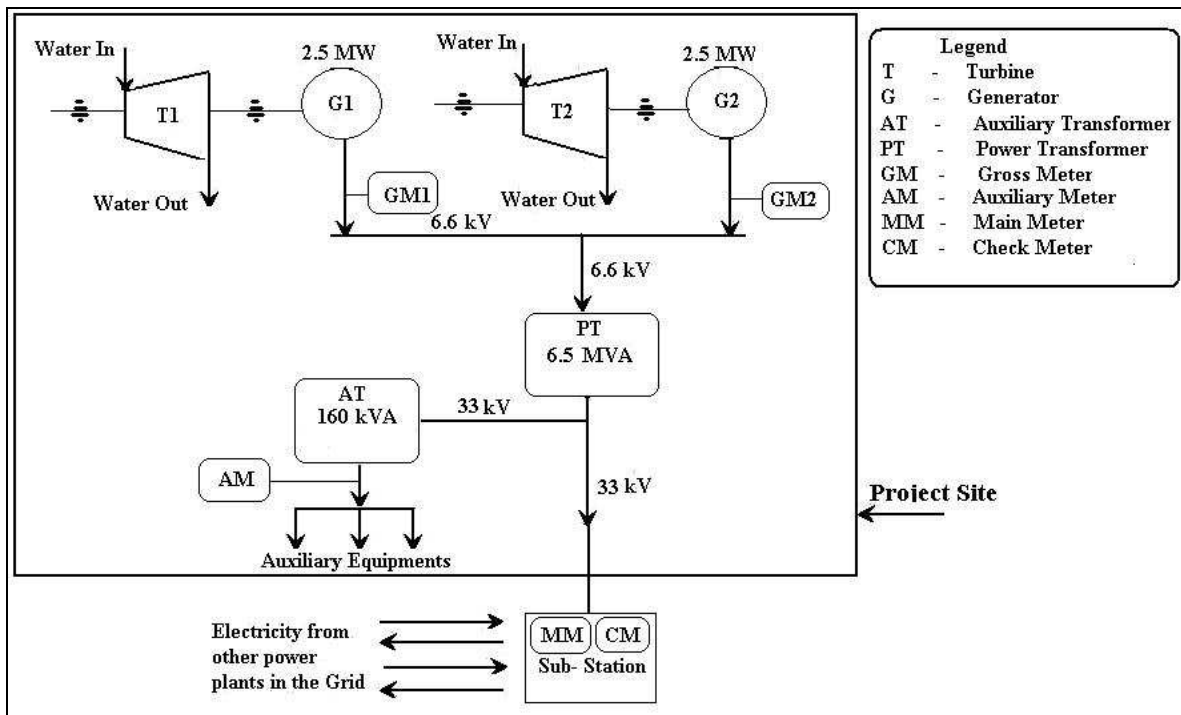
These changes were notified to CDM Executive board and the same is approved by Executive Board on 17/02/2012. The details are available at the UNFCCC web site vid,

<http://cdm.unfccc.int/Projects/DB/DNV-CUK1252576926.35/view>

SECTION C. Description of the monitoring system

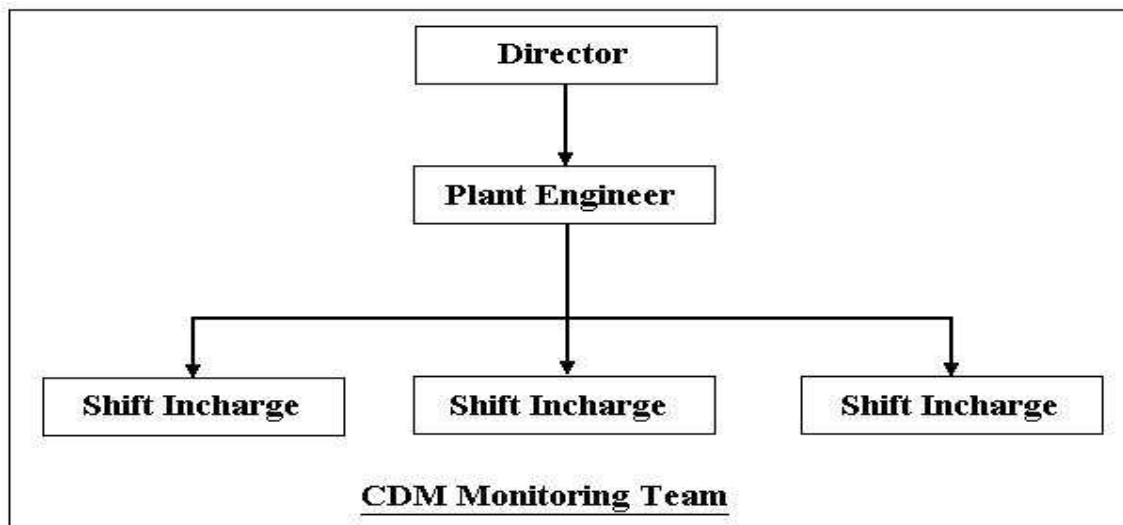
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The project had been provided the monitoring equipments which were described in the registered CDM-PDD and the line diagram for the monitoring parameters are furnished below:



CDM Monitoring Team

A CDM team has been formed in Chamoli Hydro Power Private Limited (CHPPL) for monitoring and verification of all the monitoring parameters as per the guidelines formulated by the management of CHPPL. Qualified and trained people monitor the parameters and emission reduction calculations. CHPPL is the sole agency responsible for implementation and monitoring of the project activity. The monitoring organisation structure is shown below:



Roles and Responsibilities

Board of Directors

The authority and responsibility for monitoring, measuring, reporting and reviewing of the data rests with the Board of Directors. The Board have delegated the same to General Manager.

General Manager

The General Manager is the person who is responsible for GHG monitoring activities in the project activity. He has appointed experienced persons (mechanical and electrical) in various disciplines to assist him. He is responsible for review the monthly reports submitted by Plant Manager and prepare a report on operational conditions of plant and also compiling the data on electricity export to the grid system for submission to the Board of Directors.

The responsibility of storage and archiving of information in good condition also lies with the General Manager

Plant Engineer

The Plant Engineer will examine the reports generated by the Shift Incharge with respect to the monthly electricity generation, export, import and annual emission reduction calculations as per the monitoring plan. The calibration of the meters installed will be taken care by him as per the monitoring plan.

Shift Incharge

Shift Incharge is responsible for recording the total electricity generation, auxiliary consumption, electricity export, import, plant shut down times, etc. The monthly reports will be generated and submitted to the Plant Engineer for verification and emission reduction calculations.

Calibration

Main meter and Check meter are being tested and certified at least once in six months against an accepted laboratory standard meter in accordance with electricity standards. The calibration of the meters is carried out by UPCL. The meters are deemed to be working satisfactorily if the errors are within the meter specifications of 0.2s accuracy class.

Methods of data transfer and archiving policy

The data will be recorded by plant personnel at the project site and also the monthly export & import readings will be recoded & certified by UPCL officials. The electricity generation and distribution structure will be measured using calibrated meters. Records of measurements will be used for verification of emissions reductions. Sales bills / receipts may be compared as an alternative proof of the electricity exported to the grid.

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

Data / Parameter:	EF_y
Data unit:	tCO ₂ /GWh
Description:	CO ₂ emission factor for the regional grid system
Source of data used:	CEA Published grid emission factor
Value(s) :	810.46
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emission calculations
Additional comment:	--

Data / Parameter:	EF_{CO₂, i}
Data unit:	tCO ₂ /Tj
Description:	CO ₂ emission coefficient of fuel type i

Source of data used:	IPCC 2006 upper bound value at 95% confidence interval Web Link: http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf
Value(s) :	74.8
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project emission calculations
Additional comment:	The project activity may combust only one type of fossil fuel i.e., diesel during the project operation to meet the emergency power requirement of the project. Hence only emission factor of diesel is provided in the parameter

Data / Parameter:	NCV_{Diesel}
Data unit:	TJ/Gg
Description:	Net Calorific value of diesel
Source of data used:	IPCC 2006 upper bound value at 95% confidence interval (“2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 2 Tables”) Web Link: http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf
Value(s) :	43.3
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project emission calculations
Additional comment:	--

Data / Parameter:	Density_i
Data unit:	Kg/Lit
Description:	Density of fossil fuel used for the project site (Diesel)
Source of data used:	Indian Oil Corporation Ltd http://www.iocl.com/Products/HSD_BS_IV_Specification.pdf
Value(s) :	0.845
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project emission calculations
Additional comment:	--

D.2. Data and parameters monitored

Data / Parameter:	EG_{gross,y}
Data unit:	GWh
Description:	Total electricity generated by the project during the year y
Measured /Calculated /Default:	Measured using calibrated meters
Source of data:	On-site measurement

Value(s) of monitored parameter:	19.299 (The month wise generation details are provided in ER spread sheet)
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	This value is used for cross check the electricity exported to grid by the project activity.
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Serial No. : B 3260957 (Unit – I) & B 3260958 (Unit – II) Type : SR 489 Accuracy class : 1.0 Calibration Frequency : Once in three years Date of Calibrations: Factory calibrated meters were tested and installed on 21/07/ 2007 and recalibrated on 13/03/2010. Validity : the recalibration of meters are valid till 12/03/2013
Measuring/ Reading/ Recording frequency:	Measured continuously, recorded daily and aggregated monthly.
Calculation method (if applicable):	---
QA/QC procedures applied:	The meters are calibrated as per industrial standards of energy meters, but at least once in three years

Data / Parameter:	EG_{Auxiliary,y}
Data unit:	GWh
Description:	Auxiliary electricity consumption of the project during the year y
Measured /Calculated /Default:	Measured using calibrated meter
Source of data:	On-site measurement
Value(s) of monitored parameter:	0.086 (The month wise generation details are provided in ER spread sheet)
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	This value is used for cross check the electricity exported to grid by the project activity.
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Serial No. : 19599TM1106 Type / Model No : TM7400 Accuracy class : 1.0 Calibration Frequency : Once in three years Date of Calibrations: Factory calibrated meters were tested and installed on 21/07/ 2007 and recalibrated on 13/03/2010. Validity : the recalibration of meters are valid till 12/03/2013
Measuring/ Reading/ Recording frequency:	Measured continuously, recorded daily and aggregated monthly.
Calculation method (if applicable):	---
QA/QC procedures applied:	The meters are calibrated as per industrial standards of energy meters, but at least once in three years

Data / Parameter:	EG_{export,y}
Data unit:	GWh
Description:	Electricity supplied to the grid by the project during the year y
Measured /Calculated /Default:	Measured at Grid interconnection point
Source of data:	Monthly Joint Meter Readings Reports certified by UPCL officials
Value(s) of monitored parameter:	18.976 (after applying the correction factor due to delay in Calibration) (Month wise export details and adjustment of export figures due to delay in calibration is provided in ER sheet).

Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	<p>Main Meter Serial No. : 7007478 & 8039587 Type / Model No : ER300P _ Accuracy class : 0.2 Calibration Frequency : Once in 6 months (as per valid PPA) Date of Calibrations : 7007478 (used to monitor EG_{export,y} for the period from 15.03.2010 to 31.08.2010): calibrated on 08.01.2010 and was valid till 07.07.2010, recalibrated on 13.10.2010. 8039587: (used to monitor EG_{export,y} for the period from 01.09.2010 to 31.03.2011): calibrated on 28.07.2010 and was valid till 28.01.2011, recalibrated on 15.09.2011. Validity : Please refer below Table-1</p> <p>Check Meter Serial No. : 7007475 & 8039591 Type / Model No : ER300P _ Accuracy class : 0.2 Calibration Frequency : Once in 6 months (as per valid PPA) 7007475 (used to monitor EG_{export,y} for the period from 15.03.2010 to 10.08.2010): calibrated on 03.12.2009 and was valid till 02.06.2010. 8039591: (used to monitor EG_{export,y} for the period from 11.08.2010 to 31.03.2011): calibrated on 28.07.2010 and was valid till 28.01.2011. Validity : Please refer below Table-1</p>
Measuring/ Reading/ Recording frequency:	Measured continuously and recorded monthly.
Calculation method (if applicable):	---
QA/QC procedures applied:	Meters are recalibrated & inspected periodically by UPCL. Records of measurements are used for verification of emissions reductions. Sales bills / receipts are used for cross verification.

Data / Parameter:	EG_{import,y}
Data unit:	GWh
Description:	Grid electricity import to the project activity during the year y
Measured /Calculated /Default:	Measured at Grid interconnection point
Source of data:	Monthly Joint Meter Readings Reports certified by UPCL officials
Value(s) of monitored parameter:	0.005204 (after applying the correction factor due to delay in Calibration) Month wise import details and adjustment of import figures due to delay in calibration is provided in ER sheet).
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emission calculation
Monitoring equipment (type, accuracy class, serial	<p>Main Meter Serial No. : 7007478 & 8039587</p>

number, calibration frequency, date of last calibration, validity)	<p>Type / Model No : ER300P _</p> <p>Accuracy class : 0.2</p> <p>Calibration Frequency : Once in 6 months (as per valid PPA)</p> <p>Date of Calibrations :</p> <p>7007478 (used to monitor EG_{export,y} for the period from 15.03.2010 to 31.08.2010): calibrated on 08.01.2010 and was valid till 07.07.2010, recalibrated on 13.10.2010.</p> <p>8039587: (used to monitor EG_{export,y} for the period from 01.09.2010 to 31.03.2011): calibrated on 28.07.2010 and was valid till 28.01.2011, recalibrated on 15.09.2011.</p> <p>Validity : Please refer below Table-1</p> <p>Check Meter</p> <p>Serial No. : 7007475 & 8039591</p> <p>Type / Model No : ER300P _</p> <p>Accuracy class : 0.2</p> <p>Calibration Frequency : Once in 6 months (as per valid PPA)</p> <p>7007475 (used to monitor EG_{export,y} for the period from 15.03.2010 to 10.08.2010): calibrated on 03.12.2009 and was valid till 02.06.2010.</p> <p>8039591: (used to monitor EG_{export,y} for the period from 11.08.2010 to 31.03.2011): calibrated on 28.07.2010 and was valid till 28.01.2011.</p> <p>Validity : Please refer below Table-1</p>
Measuring/ Reading/ Recording frequency:	Measured continuously and recorded monthly.
Calculation method (if applicable):	---
QA/QC procedures applied:	Meters are recalibrated & inspected periodically by UPCL. Records of measurements are used for verification of emissions reductions. Sales bills / receipts are used for cross verification.

Data / Parameter:	F _{i,y}
Data unit:	litres
Description:	Quantity of fossil fuel type i (Diesel) combusted in the project plant during year y
Measured /Calculated /Default:	Recorded on daily basis in D.G. Set log books and aggregated on monthly basis.
Source of data:	On-site records (DG set log book)
Value(s) of monitored parameter:	5,120
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project emission calculation (Month wise details provided in ER spread sheet)
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	<p>Mechanical Gauge</p> <p>Make : Powerka</p> <p>Model No. : 225MM</p> <p>Error limits : $\pm 2\%$</p> <p>Factory calibrated level gauge was tested and installed on 21.07.2007 and this calibration was valid till 20.07.2010. No further calibration of level gauge was performed.</p> <p>Hence as a conservative approach, for the current verification total diesel procured during the current monitoring period has been considered as consumed. This resulted in overestimation of project</p>

	emissions in comparison to project emissions calculated based on the actual diesel consumed.
Measuring/ Reading/ Recording frequency:	Recorded on daily basis in D.G. Set log books and aggregated on monthly basis.
Calculation method (if applicable):	---
QA/QC procedures applied:	The data recorded can be cross checked against the fuel purchase receipts.

Table- 1: Main and Check meters Recalibration Test Details

	Serial No.	Period of usage	Date of calibration	Validity (As per valid PPA)
Main Meter	7007478	15/03/2010 to 31/08/2010	08/01/2010	07/07/2010
Check Meter	7007475	15/03/2010 to 10/08/2010	03/12/2009	02/06/2010
Main Meter	8039587	01/09/2010 to 31/03/2011	28/07/2010	29/01/2011
Check Meter	8039591	10/03/2011 to 31/03/2011		

SECTION E. Emission reductions calculation

E.1. Baseline emissions calculation

>>

The baseline emissions are calculated as follows:

$$BE_y = EG_y \cdot EF_y$$

Where EG_y is the net electricity export to grid in a given year (GWh)

$$[EG_y = EG_{\text{Export}} - EG_{\text{Import}}]$$

EF_y is the emission factor for a given year (tCO₂/GWh)

E.2. Project emissions calculation

>>

The project emissions due to usage of fossil fuel (Diesel) are calculated as:

$$PE_{\text{diesel},y} = Fd,y \cdot \text{Density} \cdot \text{NCV} \cdot \text{EFCO}_2 \cdot \text{OXID} / 10^6$$

Where,

Fd,y : The quantity of diesel used during the year (Ltrs)

Density: The density of diesel (0.845 kg/Ltr. as per Indian Oil Corporation Ltd http://www.iocl.com/Products/HSD_BS_IV_Specification.pdf)

NCV : The calorific value of diesel (43.3 TJ/Gg as per IPCC 2006 default value)

EFCO₂ : The CO₂ emission factor of Diesel (74.8 t CO₂/TJ as per IPCC 2006)

OXID : The oxidation factor of the coal (1 as per IPCC 2006 default value)

E.3. Leakage calculation

>>

Leakage is not considered from the project activity.

E.4. Emission reductions calculation / table

>>

Emissions reductions for the monitored period

The following formula is adopted for calculating emission reductions generated by the project activity:

$$ER_y = BE_y - PE_y - L_y$$

Where ER_y is emission reductions in a given year
 BE_y is baseline emissions in a given year
 PE_y is project emissions in a given year
 L_y is leakage in a given year

Total baseline emissions	:	15,388 tCO ₂ e
Total project emissions	:	15 tCO ₂ e
Total leakage	:	0 tCO ₂ e
Emissions due to delay in calibration	:	14 tCO ₂ e
Total emission reductions	:	15,359 tCO ₂ e

The month wise baseline emissions, project emissions and emission reductions are provided in Annex - 2

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

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Item	Values applied in ex-ante calculation of the registered CDM-PDD	Actual values reached during the monitoring period
Emission reductions (tCO ₂ e)	24,992 tCO ₂ e (382 days)	15,359 tCO ₂ e

E.6. Remarks on difference from estimated value in the PDD

>>

During the present reported period the project activity has achieved 38.55% less emissions as compared with emissions indicated in Registered CDM- PDD. The main reasons for less generation during the monitored period are given below:

1. More no. of grids failures, due to which the plant was forced to shut down most of the time.
2. More rainfalls in the project region, the project activity was forced to shut down due to slit accumulation in the penstock even after a moderate rainfall in the catchment area.

History of the document

Version	Date	Nature of revision
01	EB 54, Annex 34 28 May 2010	Initial adoption.
Decision Class: Regulatory Document Type: Guideline, Form Business Function: Issuance		

Annex - 1

Details of major shut downs and reasons for the monitored period

Unit - I

Hr:MM

Monitored Period	Planned	Forced	Reason
17.03.2010 to 18.03.2010		26:05	Transmission lines B/D and problems in Sub Station
26.03.2010 to 27.03.2010		20:00	Insufficient water flows
24.04.2010		8:35	Grid failure
29.04.2010		5:20	Grid failure
02.05.2010 to 16.05.2010	351:55		Changing the MIV bearing bush and main gate work
17.05.2010 to 03.07.2010		1133:00	Insufficient water flows
05.07.2010		16:00	Grid failure
12.07.2010	7:35		Plant stopped for changing D.G flywheel plant stopped. And Grid failure due to cable joining kit was burned.
15.07.2010 to 17.07.2010		39:45	Grid failure and UPCL takes S/D due to line B/D
20.07.2010 to 21.07.2010		34:10	Transmission lines breakdown
25.07.2010 to 26.07.2010		16:15	Grid failure
28.07.2010		6:20	Dirty water in river
30.07.2010 to 31.07.2010		34:40	Line B/D due to pin insulator and jumper problem
03.08.2010		8:15	Grid failure
8.08.2010 to 09.08.2010		28:50	66 kV line break down and grid failure
19.08.2010		10:10	Grid failure
22.08.2010		16:00	Grid failure
01.09.2010		16:15	Grid failure
04.09.2010		12:10	Dirty water and trash cleaning work
08.09.2010		21:55	Dirty water in river
18.09.2010 to 27.09.2010		225:45	Trash cleaning, Dirty water and Transmission line break downs
23.10.2010		14:15	Grid failure
08.11.2010		24:00	Grid failure
18.11.2010 to 04.12.2010		384:45	Insufficient water flows
09.12.2010 to 29.03.2011		2544:15	Insufficient water flows
Other Short interrupts*		283:20	
Total	359:30	4930:05	

Unit – II

Hr:MM

Monitored Period	Planned	Forced	Reason
15.03.2010 to 25.03.2010		264:00	SF6 gas pressure low and low discharge of water
26.03.2010 to 09.05.2010		1062:50	Insufficient water flows
13.05.2010 to 14.05.2010	37:30		UPCL take S/D for 132 KV lines maintenance work
17.05.2010 to 18.05.2010		28:35	Grid failure
02.06.2010 to 03.06.2010		43:45	SF6 Breaker mechanism problem
05.06.2010		11:05	Grid failure
07.06.2010		12:45	Turbine abnormal sound
25.06.2010		20:50	Grid failure
27.06.2010		10:05	Grid failure
08.08.2010 to 09.08.2010		28:50	Grid failure
19.08.2010		10:10	Grid failure and line failure from sub station to power house.
22.08.2010		15:55	Grid failure
01.09.2010		16:55	Grid failure
04.09.2010		12:00	Grid failure
08.09.2010 to 09.09.2010		39:40	Grid failure
18.09.2010 to 27.09.2010		225:35	Transmission Lines B/D due to heavy rain.
23.10.2010		14:20	Grid failure
08.11.2010		24:00	Grid failure
04.12.2010 to 08.12.2010		95:45	Insufficient water flows
15.12.2010 to 16.12.2010		25:30	Insufficient water flows
18.02.2011 to 20.02.2011		49:00	Insufficient water flows
28.02.2011 to 5.03.2011		108:10	M/C tripped due to Dame site Floring (Bottom I Beam Damage)
30.03.2011 to 31.03.2011		38:30	Low discharge Water and This unit Thrust Bearing checking purpose
Other Short interrupts*		573:35	
Total	37:30	2731:50	

* Short interruptions includes the both grid failures and transmission line problems and non- availability of water.