



Monitoring report form
(Version 05.1)

MONITORING REPORT

Title of the project activity	10 MW bundled Luni-III & Luni-II hydroelectric projects for a grid system at Sri Sai Krishna Hydro Energies Private Limited in Kangra District, Himachal Pradesh.	
UNFCCC reference number of the project activity	2698	
Version number of the monitoring report	03	
Completion date of the monitoring report	13-July-2016	
Monitoring period number and duration of this monitoring period	12/02/2010 to 31/12/2015	
Project participant(s)	Sri Sai Krishna Hydro Energies (P) Limited	
Host Party	India	
Sectoral scope(s)	Energy industries (renewable -/ non-renewable sources)	
Selected methodology(ies)	AMS-I.D.ver.13 - Grid connected renewable electricity generation	
Selected standardized baseline(s)	N/A	
Estimated amount of GHG emission reductions or net GHG removals by sinks for this monitoring period in the registered PDD	192279 tCO ₂ e (for 5 Years 10 Months 20 Days)	
Total amount of GHG emission reductions or net GHG removals by sinks achieved in this monitoring period	GHG emission reductions or net GHG removals by sinks reported up to 31 December 2012	GHG emission reductions or net GHG removals by sinks reported from 1 January 2013 onwards
	102174 tCO ₂ e	116929 tCO ₂ e

SECTION A. Description of project activity

A.1. Purpose and general description of project activity

>> The Purpose of 10MW Bundled Luni-III& Luni-II Hydroelectric projects is to generate clean electrical energy in a sustainable manner & The project activity is a bundle of two individual hydroelectric projects (a) Luni-III small hydroelectric project & (b) Luni-II small hydroelectric project of capacity 5 MW each across Luni Khad, a tributary of river Binwa in Baijnath Tehsil, Kangra District of Himachal Pradesh, India. The main purpose of the project activity is generation of electricity using hydro potential available in the river and exporting the generated power to Himachal Pradesh State Electricity Board (HPSEB). Thus electricity is generated through sustainable means without causing any negative effect on the environment.

The total capacity of the Turbine Generators are 10MW. Which generates electricity at 3.3 Level and evacuated at 33KV level and the project proponent does not result in GHG Emission's and it does not cause any Negative impact on the environment.

The project Units have been commissioned and came to operation's for Luni-II on 02/11/2009 & for Luni-III operation was started on 31/05/2009, Registered with CDM EB on 12/02/2010. The present Monitoring Period (1st Verification) is from 12/02/2010 to 31/12/2015), the net electricity exported to the state Grid is 2, 71,206 Mwh and the net emission reductions are 219802 tCO₂e for the present Monitoring Period.

>> The locations of the two are as follows:

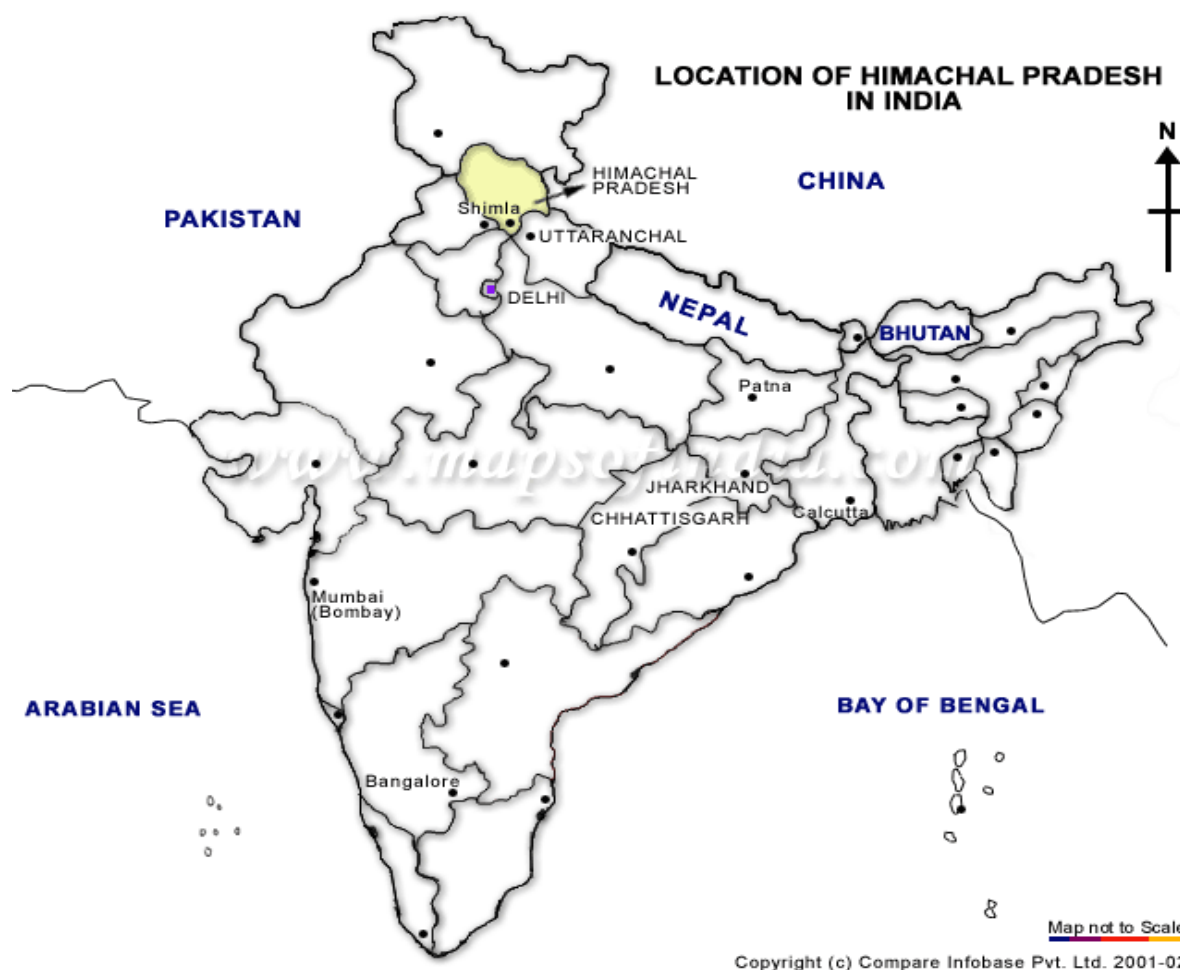
Luni-III:

Luni-III is located at a distance of 18kms from Baijnath town in Kangra district of Himachal Pradesh. The geographical co-ordinate of the project site is between longitude 76°45' E and 76°47'E and latitude 32°11' N and 32°12'N.

Luni-II:

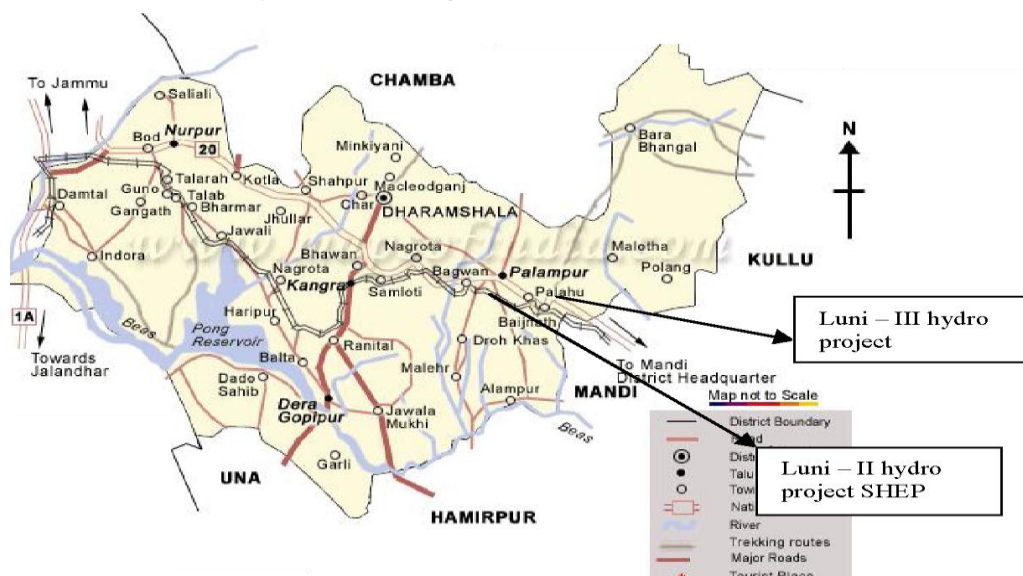
Luni-II is a downstream development of Luni-II Project The geographical co-ordinate of the project site is between longitude 76°41' E and 77°47'E and latitude 32°5' N and 32°10'N.

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



Map 1: Location of Himachal Pradesh state in India

Map 2: Location of the project sites in Kangra District of HP



A.2. Location of project activity

>> The proposed Luni – II small hydro project is a downstream development of proposed Luni-III small hydro project on Luni khad, a tributary of river Binwa in Kangra District, Himachal Pradesh. The location can be approached through Baijnath - Deol road. Deol village is at a distance of 8 kms from Baijnath town. The project site is located at a distance of 18 kms from Baijnath, which is also the nearest railhead, on Pathankot – Palampur - Baijnath National Highway. The nearest airport is at Gagal (Kangra) located at a distance of 56 kms. The geographical co-ordinates of Luni III are 76°45' to 76°47' East (Longitude) and 32°11' to 32°12' North (latitude) and that for Luni II are 76°41' to 77°47' East (Longitude) and 32°5' to 32°10' North (latitude).

A.3. Parties and project participant(s)

Party involved ((host) indicates a host Party)	Private and/or public entity(ies) project participants (as applicable)	Indicate whether the Party involved wishes to be considered as project participant (yes/no)
India	Private Entity: Sri Sai Krishna Hydro Energies (P) Limited	No

A.4. Reference of applied methodology and standardized baseline

>> Project Category Title : Type I, Renewable Energy projects

Reference: AMS-I.D, Version 13, "Grid connected renewable electricity generation"

A.5. Crediting period of project activity

>> The Crediting period of the project Activity is fixed. The length of crediting period is 10 years. Fixed crediting period is from 12 Feb 2010 to 11 Feb 2020

A.6. Contact information of responsible persons/entities

>>

Name/ Entity	Project Participant(Yes/No)
Sri Sai Krishna Hydro energies Pvt Ltd Plot No: 1367 ;Road No:45 Hyderabad-500033 Telephone: +91-40-40301100 E-Mail: raju.m@greenkogruop.com	Yes

SECTION B. Implementation of project activity**B.1. Description of implemented registered project activity**

>> The technology for Power generation in a hydro electric plant is converting the potential energy available in water flows in to mechanical energy using Hydro turbines and then electric energy using Alternators. And the generated power will be transformed to the nearest Grid substation for Proper interconnection and smooth Evacuation of power.

The total capacity of the Turbine Generators are 10MW. Which generates electricity at 3.3 Level and evacuated at 33KV level and the project proponent does not involve in any GHG Emission's and it does not cause any Negative impact on the environment

The monitoring plan includes monitoring of energy parameters such as Gross energy, Auxiliary Consumption, energy export to the HPSEB grid system, energy import to the project activity from grid and also consumption of diesel for DG set operation. Emission reductions resulted from the project activities will be calculated using the energy fed in accordance with the calculations

The Operating hours and shut down hours during the current monitoring period are as follows

Plant Name	LUNI-II	LUNI-III
Period	12/02/2010 to 31/12/2015	12/02/2010 to 31/12/2015
Total available hours (Hrs:Min:Sec)	103104:00:00	103104:00:00
Non-running hours (Hrs:Min:Sec)	33624:29:00	38238:13:00
Running hours (Hrs:Min:Sec)	69479:31:00	64864:47:00

The Hydrology parameters and specifications of major equipment are detailed below:

Parameter	Luni-III	Luni-II
Hydrology		
Design Discharge	2Cumecs	2 Cumecs
Gross Head	362.18 m	358.40 m
Net Rated Head	352.00 m	348.20 m
Plant Equipment		
Type of Hydro Turbine	Pelton Wheel	Pelton Wheel
type of Generator	Synchronous, Brushless	Synchronous, Brushless
No of Generating Units	2	2
Capacity of Each Generating Units	2.5 M.w	2.5 M.w
Generating Voltage	3.3 K.V	3.3 K.V
Grid Interfacing Voltage	33Kv	33KV
Frequency	50Hz	50Hz
HPSEB Substation	132/11KV At Dehan	132/11KV at Dehan
Energy		
Gross Energy Generation	21900MWH	21900MWH
Auxiliary Consumption (8%)	1752 MWh	1752MWh
Annual Export to Grid	20148MWh	20148MWh

The Commercial Operation of the Project was started for Luni-II on 12/11/2009 & for Luni-III operation was started on 31/05/2009, Registered with CDM EB on 12/02/2010.

B.2. Post-registration changes**B.2.1. Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline**

>> N/A

B.2.2. Corrections

>> N/A

B.2.3. Changes to start date of crediting period

>> N/A

B.2.4. Inclusion of a monitoring plan to the registered PDD that was not included at registration

>> N/A

B.2.5. Permanent changes from registered monitoring plan, applied methodology or applied standardized baseline

>> N/A

B.2.6. Changes to project design of registered project activity

>> N/A

B.2.7. Types of changes specific to afforestation or reforestation project activity

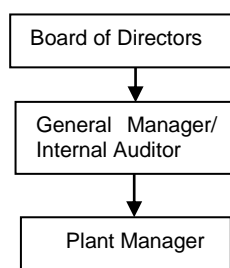
>> N/A

SECTION C. Description of monitoring system

>>

>> The monitoring plan includes monitoring of energy parameters such as Gross energy, Auxiliary consumption, energy export to the HPSEB grid system, energy import to the project activity from grid and also consumption of diesel for DG set operation. Emission reductions resulted from the project activities will be calculated using the energy fed in accordance with the calculations

A CDM team has been formed in Sri Sai Krishna Hydro Energies (P) Limited for monitoring and verification of all the monitoring parameters as per the guidelines formulated by the management. Qualified and trained people to monitor the parameters and emission reduction calculations for Sri Sai Krishna Hydro Energies are the sole agency responsible for implementation and monitoring of the project activity. The monitoring plan, which will be implemented by the project proponent describes about the monitoring organisation, parameters to be monitored, monitoring practices, quality assurance, quality control procedures, data storage and archiving. The monitoring organization structure is shown below



Roles and Responsibilities:

The authority and responsibility for registration, monitoring, measurement, reporting and reviewing of the data would rest with the Board of Directors, who might delegate the same to the General Manager or an internal

The net energy fed to the grid system by the project activities will be recorded by project proponents using either of the two meters (main meter and check meter) in the presence of the representative of HPSEB in a document whose format is acceptable to HPSEB. Representatives of both the project proponent and HPSEB will sign the document which will contain all details such as the equipment data, calibration status, previous reading, current reading, export, import, net billable units, date and time of recording etc. This document will be used as a basic document for monitoring and verification of the net energy exported to the grid. HPSEB will pay to project proponents based on this document.

Monitoring Team:

S No	Name	Responsibility
1.	Mr M Thirumala Raju	Overall project implementation
2.	S.k vali	Technical Audit, daily monitoring parameters
3.	Mr. Murali Krishnam Raju M	Monitoring Report preparation & CDM Documentation, MIS Reporting and Execution.

SECTION D. Data and parameters

D.1. Data and parameters fixed ex ante or at renewal of crediting period

Data/parameter:	EF _Y
Data Unit:	tCO ₂ /MWh
Description:	Combined Margin Approach CO ₂ emission factor for the regional grid system
Source of data used:	Central Electricity Authority (CEA), Gov. of India: "CO ₂ Baseline Database", Version 3.0, 15 December 2007. Available at www.cea.nic.in .
Value applied:	0.810465
Justification of the Choice of data or measurement methods and procedures actually applied:	Central Electricity Authority (CEA) values have been used for authenticity of the data, available publicly by Govt of India with a view to obtain uniformity of approach in the country towards a common objective.
Any comment:	---

Data/parameter:	COEF_i
Data Unit:	Kg CO ₂ /TJ
Description:	CO ₂ emission factor of Fuel type i
Source of data used:	IPCC 2006 Default values
Value applied:	Diesel :74000
Justification of the Choice of data or measurement methods and procedures actually applied:	IPCC values have been used for diesel since no country specific data is available.
Any 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.

D.2. Data and parameters monitored**For Luni-II Hydro Project**

Data/parameter:	EG _{gross,y}
Data Unit:	MWh
Description:	Electricity generated by the Luni-II hydroelectric project during the year y
Source of data to be used:	On-site measurements
Value of Data:	144921

Monitoring equipment:	Parameter	Unit-I	Unit-II
	Accuracy class (\pm %)	0.5	0.5
	S No	HAI213545	HAI213546
	Calibration Frequency	Annually	Annually
	Calibrating Agency	RELTECH Engineers	RELTECH Engineers
	Calibration Dates	16/11/2009	16/11/2009
		29/11/2010	29/11/2010
		06/11/2011	06/11/2011
		02/11/2012	02/11/2012
		07/11/2013	07/11/2013
		29/11/2014	29/11/2014
		23/11/2015	23/11/2015
Measuring/reading/recording frequency:	Measured continuously, recorded monthly and aggregated annually.		
QA/QC procedures:	Meters will be calibrated as per industry Standards		
Additional comments:			

Data/parameter:	EGAuxiliary,y														
Data Unit:	MWh														
Description:	Auxiliary electricity consumption of the Luni-II hydro electric project during the year														
Source of data to be used:	On-site measurements														
Value(s) of monitored parameter	354.97														
Monitoring equipment	<table border="1"> <tr> <td>Parameter</td><td>Luni-II</td></tr> <tr> <td>Accuracy class (\pm %)</td><td>0.5</td></tr> <tr> <td>Type</td><td>PH7700</td></tr> <tr> <td>Calibration Frequency</td><td>Annually</td></tr> <tr> <td>Serial No</td><td>HAI213543</td></tr> <tr> <td>Calibrating Agency</td><td>RELTECH</td></tr> <tr> <td>Calibration Dates</td><td>16/11/2009 29/11/2010 06/11/2011 02/11/2012 07/11/2013 29/11/2014 23/11/2015</td></tr> </table>	Parameter	Luni-II	Accuracy class (\pm %)	0.5	Type	PH7700	Calibration Frequency	Annually	Serial No	HAI213543	Calibrating Agency	RELTECH	Calibration Dates	16/11/2009 29/11/2010 06/11/2011 02/11/2012 07/11/2013 29/11/2014 23/11/2015
Parameter	Luni-II														
Accuracy class (\pm %)	0.5														
Type	PH7700														
Calibration Frequency	Annually														
Serial No	HAI213543														
Calibrating Agency	RELTECH														
Calibration Dates	16/11/2009 29/11/2010 06/11/2011 02/11/2012 07/11/2013 29/11/2014 23/11/2015														
Measuring/reading/recording frequency:	Measured Continuously														
QA/QC procedures:	As the data is calculated as difference between gross and net power export, no QA/ QC procedures are applicable, since, the both parameters are already underwent the QA/QC procedures.														
Additional comments:	N/A														

Data/parameter:	EG _{export y}												
Data Unit:	Mwh												
Description:	Electricity supplied to the grid by the Luni-II hydro electric project during the year y												
Source of data to be used:	On Site Measurements												
Value(s) of monitored parameter	138184												
Monitoring equipment	<table border="1"> <thead> <tr> <th>Parameter</th><th>Main Meter</th><th>Check Meter</th></tr> </thead> <tbody> <tr> <td>Make</td><td>Larsen & Turbo</td><td>Larsen & Turbo</td></tr> <tr> <td>Calibrating Agency</td><td>Power Grid corporation</td><td>Power Grid corporation</td></tr> <tr> <td>Calibration Dates **</td><td>Mentioned in Annexure -1</td><td>Mentioned in Annexure-1</td></tr> </tbody> </table> <p>** Calibration Dates are Provided under Annexure-1</p>	Parameter	Main Meter	Check Meter	Make	Larsen & Turbo	Larsen & Turbo	Calibrating Agency	Power Grid corporation	Power Grid corporation	Calibration Dates **	Mentioned in Annexure -1	Mentioned in Annexure-1
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Make	Larsen & Turbo	Larsen & Turbo											
Calibrating Agency	Power Grid corporation	Power Grid corporation											
Calibration Dates **	Mentioned in Annexure -1	Mentioned in Annexure-1											
Measuring/reading/recording frequency:	Measured monthly using calibrated meters and aggregated annually												
QA/QC procedures:	Meters will be calibrated as per industry standards. Sales records to the grid and other records are used to ensure consistency.												
Additional comments:	Electric power sold to the grid will be measured by main meter and check meter by HPSEB as specified in the PPA and records maintained. To be crosschecked with monthly invoices or receipts of payments.												

Data/parameter:	EG _{import,y}												
Data Unit:	MWh												
Description:	Grid electricity import to the Luni-II hydroelectric project during the year												
Source of data to be used:	On Site Measurements												
Value(s) of monitored parameter	22.400												
Monitoring equipment	<table border="1"> <thead> <tr> <th>Parameter</th><th>Main Meter</th><th>Check Meter</th></tr> </thead> <tbody> <tr> <td>Make</td><td>Larsen & Turbo</td><td>Larsen & Turbo</td></tr> <tr> <td>Calibrating Agency</td><td>Power Grid corporation</td><td>Power Grid corporation</td></tr> <tr> <td>Calibration Dates **</td><td>Mentioned in Annexure -1</td><td>Mentioned in Annexure -1</td></tr> </tbody> </table> <p>** Calibration Dates are Provided under Annexure-1</p>	Parameter	Main Meter	Check Meter	Make	Larsen & Turbo	Larsen & Turbo	Calibrating Agency	Power Grid corporation	Power Grid corporation	Calibration Dates **	Mentioned in Annexure -1	Mentioned in Annexure -1
Parameter	Main Meter	Check Meter											
Make	Larsen & Turbo	Larsen & Turbo											
Calibrating Agency	Power Grid corporation	Power Grid corporation											
Calibration Dates **	Mentioned in Annexure -1	Mentioned in Annexure -1											
Measuring/reading/recording frequency:	Measured monthly using calibrated meters and aggregated annually												
QA/QC procedures:	Meters will be calibrated as per industry Standards												
Additional comments:	N/A												

Data/parameter:	EG _y
Data Unit:	MWh

Description:	Net Electricity supplied to the grid by the Luni-II hydro electric project during the year														
Source of data to be used:	Plant records maintained of Luni-II and sales to HSEB														
Value(s) of monitored parameter	138161.847														
Monitoring equipment	<table><tr><th>Parameter</th><th>Main Meter</th><th>Check Meter</th></tr><tr><td>Make</td><td>Larsen & Turbo</td><td>Larsen & Turbo</td></tr><tr><td>Calibrating Agency</td><td>Power Grid corporation</td><td>Power Grid corporation</td></tr><tr><td>Calibration Dates **</td><td>Mentioned in Annexure -1</td><td>Mentioned in Annexure -1</td></tr></table> ** Calibration Dates are Provided under Annexure - 1			Parameter	Main Meter	Check Meter	Make	Larsen & Turbo	Larsen & Turbo	Calibrating Agency	Power Grid corporation	Power Grid corporation	Calibration Dates **	Mentioned in Annexure -1	Mentioned in Annexure -1
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Make	Larsen & Turbo	Larsen & Turbo													
Calibrating Agency	Power Grid corporation	Power Grid corporation													
Calibration Dates **	Mentioned in Annexure -1	Mentioned in Annexure -1													
Measuring/reading/recording frequency:	Measured monthly using calibrated meters and aggregated annually														
QA/QC procedures:	This Data is used for Emissions reduction Calculation's, Sales Receipts & Other Records to Ensure Consistency														
Purpose of data:	The generated electricity delivered to power grid ($EG_{Export, y}$) and electricity imported from power grid ($EG_{Import, y}$) by Luni-II Project will be measured through meters and will be recorded monthly. The difference of $EG_{Export, y}$ and $EG_{Import, y}$ is the net generated electricity by the project (EG_y).														
Additional comments:	N/A														

Data/parameter:	$F_{i,y}$
Data Unit:	Tonnes/kilo liters
Description:	Quantity of fossil fuel type i combusted in the Luni-II hydroelectric project during year y
Source of data to be used:	ON site Measurements
Value(s) of monitored parameter	1641.5
Monitoring equipment	Ruler Gauge Replaced yearly once as it is difficult to calibrate
Calculation method (if applicable):	The total number of operating hours of DG set and the corresponding quantity of diesel consumed for the purpose will be recorded in the log book maintained at the DG set room. The operating hours and the quantity of diesel consumption will be recorded.
QA/QC procedures:	The Data Recorded can be cross checked Against Fuel purchase receipts
Additional comments:	N/A

For Luni-III Hydro Project

Data/parameter:	$EG_{gross,y}$
Data Unit:	MWh
Description	Electricity generated by the Luni-III hydro electric project during the year

Source of data to be used:	On Site Measurements		
Value(s) of monitored parameter	138924		
Monitoring equipment	Parameter	Unit-I	Unit-II
	Accuracy class (\pm %)	0.5	0.5
	S No	8311PH1008 & KBA243426	8312PH1008
	Calibration Frequency	Annually	Annually
	Calibrating Agency	RELTECH Engineers	RELTECH Engineers
	Calibration Dates	13/11/2009 26/11/2010 09/11/2011 28/10/2012 03/11/2013 25/11/2014 27/11/2015	13/11/2009 26/11/2010 09/11/2011 28/10/2012 03/11/2013 25/11/2014 27/11/2015
Measuring/reading/recording frequency:	Measured continuously, recorded monthly and aggregated annually.		
QA/QC procedures:	Meter's will be calibrated as per industry Standards		
Additional comments:	N/A		

Data/parameter:	EG _{Auxiliary,y}				
Data Unit:	MWh				
Description:	Auxiliary electricity consumption of the Luni-III hydro electric project during the year y				
Source of data to be used:	On site measurements				
Value(s) of monitored parameter	585.117				
Monitoring equipment	Parameter	Luni-III			
	Accuracy class (\pm %)	0.5			
	Type	PH7700			
	SI nO	8313PH1008			
	Calibration Frequency	Annually			
	Calibrating Agency	RELTECH Engineers			
	Calibration Dates	13/11/2009 26/11/2010 09/11/2011 28/10/2012 03/11/2013 25/11/2014 27/11/2015			
Measuring/reading/recording frequency:	Measured continuously.				
QA/QC procedures:	Meters will be Calibrated as per industry Standards				
Additional comments:	N/A				

Data/parameter:	EG _{exporty}
DataUnit:	MWh

Description:	Electricity supplied to the grid by the Luni-III hydro electric project during the year														
Source of data to be used:	On Site Measurements														
Value(s) of monitored parameter	1322220.160														
Monitoring equipment	<table><tr><th>Parameter</th><th>Main Meter</th><th>Check Meter</th></tr><tr><td>Make</td><td>Larsen & Turbo</td><td>Larsen & Turbo</td></tr><tr><td>Calibrating Agency</td><td>Power Grid corporation</td><td>Power Grid corporation</td></tr><tr><td>Calibration Dates **</td><td>Mentioned in Annexure -1</td><td>Mentioned in Annexure -1</td></tr></table> ** Calibration Dates are Provided Under Annexure-1			Parameter	Main Meter	Check Meter	Make	Larsen & Turbo	Larsen & Turbo	Calibrating Agency	Power Grid corporation	Power Grid corporation	Calibration Dates **	Mentioned in Annexure -1	Mentioned in Annexure -1
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Measuring/reading/recording frequency:	Measured monthly using calibrated meters and aggregated annually														
QA/QC procedures:	Meters will be calibrated as per industry standards. Sales records to the grid and other records are used to ensure consistency.														
Additional comments:	Electric power sold to the grid will be measured by main meter and check meter by HPSEB as specified in the PPA and records maintained. To be crosschecked with monthly invoices or receipts of payments.														

Data/parameter:	EGimport,y														
Data Unit:	MWh														
Description:	Grid electricity import to the Luni-III hydroelectric project during the year														
Source of data to be used:	On Site Measurements														
Value(s) of monitored parameter	19.100														
Monitoring equipment	<table><tr><th>Parameter</th><th>Main Meter</th><th>Check Meter</th></tr><tr><td>Make</td><td>Larsen & Turbo</td><td>Larsen & Turbo</td></tr><tr><td>Calibrating Agency</td><td>Power Grid corporation</td><td>Power Grid corporation</td></tr><tr><td>Calibration Dates **</td><td>Mentioned in Annexure -1</td><td>Mentioned in Annexure-1</td></tr></table>			Parameter	Main Meter	Check Meter	Make	Larsen & Turbo	Larsen & Turbo	Calibrating Agency	Power Grid corporation	Power Grid corporation	Calibration Dates **	Mentioned in Annexure -1	Mentioned in Annexure-1
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	Calibrating Agency	Power Grid corporation	Power Grid corporation												
	Calibration Dates **	Mentioned in Annexure -1	Mentioned in Annexure-1												
** Calibration Dates are Provided under Annexure-I															
Measuring/reading/recording frequency:	Measured Monthly Using Calibrated Meters														
QA/QC procedures:	Meters will be calibrated as per industry Standards														
Purpose of data:	This Data is used to Calculate Base Line emission's														
Additional comments:	N/A														

Data/parameter:	EGy
Unit	MWh
Description	Net Electricity supplied to the grid by the Luni-III hydro electric project during the year y

Source of data to be used:	Plant records maintained of Luni-III and sales to HSEB.														
Value(s) of monitored parameter	132201.060														
Monitoring equipment	<table><tr><th>Parameter</th><th>Main Meter</th><th>Check Meter</th></tr><tr><td>Make</td><td>Larsen & Turbo</td><td>Larsen & Turbo</td></tr><tr><td>Calibrating Agency</td><td>Power Grid corporation</td><td>Power Grid corporation</td></tr><tr><td>Calibration Dates **</td><td>Mentioned in Annexure -1</td><td>Mentioned in Annexure-1</td></tr></table> <p>** Calibration Dates are Provided under Annexure-1</p>			Parameter	Main Meter	Check Meter	Make	Larsen & Turbo	Larsen & Turbo	Calibrating Agency	Power Grid corporation	Power Grid corporation	Calibration Dates **	Mentioned in Annexure -1	Mentioned in Annexure-1
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Calibrating Agency	Power Grid corporation	Power Grid corporation													
Calibration Dates **	Mentioned in Annexure -1	Mentioned in Annexure-1													
Measuring/reading/recording frequency:	Measured monthly using calibrated meters and aggregated annually.														
QA/QC procedures:	This Data is used for Emissions reduction Calculation's, Sales Receipts & Other Records to Ensure Consistency														
Purpose of data:	The generated electricity delivered to power grid ($EG_{Export, y}$) and electricity imported from power grid ($EG_{Import, y}$) by Luni-II Project will be measured through meters and will be recorded monthly. The difference of $EG_{Export, y}$ and $EG_{Import, y}$ is the net generated electricity by the project (EG_y).														
Additional comments:	N/A														

Data/parameter:	$F_{i,y}$
Data Unit:	Tonnes/kilo liters
Description:	Quantity of fossil fuel type i combusted in the Luni-III hydroelectric project during year y
Source of data to be used:	ON site Measurements
Value(s) of monitored parameter	4187
Monitoring equipment	Ruler Gauge Replaced yearly once as it is difficult to calibrate
Calculation method (if applicable):	The total number of operating hours of DG set and the corresponding quantity of diesel consumed for the purpose will be recorded in the log book maintained at the DG set room. The operating hours and the quantity of diesel consumption will be recorded.
QA/QC procedures:	The Data Recorded can be cross checked Against Fuel purchase receipts
Additional comments:	N/A

D.3. Implementation of sampling plan

>> N/A

SECTION E. Calculation of emission reductions or GHG removals by sinks

E.1. Calculation of baseline emissions or baseline net GHG removals by sinks

>> Base Line Emissions's are calculated as follows The baseline emissions are calculated based on the net electricity exported to the grid (in MWh/year), and an emission factor for the displaced grid electricity (in tCO₂ /MWh).

$$BE_y = EG_y \cdot EF_y$$

EG_y = the net electricity exported to the grid system during the year y for Luni-II & Luni-III Units.

EF_y = the emission factor of the grid to which the project exports electricity

$$BE_y = 270362 \cdot 0.810465$$

$$= 219119 \text{ tCO}_2$$

E.2. Calculation of project emissions or actual net GHG removals by sinks

>> >> The combustion of Generation of emission's from Fossil Fuels and the Project is Equipped with diesel generator capacity of 62.5kVA to Meet the emergency requirements of power house.

Emissions out of usage of fossil fuel (diesel) will be accounted as project emissions based on the following equation.

$$PE_y = FF_{i,y} \cdot COEF_i$$

Where

PE_y Project emissions from combustion of fossil fuel (DG set) in the project activity during the year y

$FF_{i,y}$ Quantity of fossil fuel type i combusted (DG set) during the year y

$COEF_i$ Carbon dioxide emission factor of the fuel type i

The CO₂ emission coefficient $COEF_i$ fuel i (tCO₂ / mass or volume unit of the fuel), is obtained as $COEF_i = NCV_i \cdot EF_{CO_2,i} \cdot OXID_i$

$$COEF_i = 43.3 \cdot 74 \cdot 1$$

Where

NCV_i the net calorific value (energy content) per mass or volume unit of a fuel i (43.3 TJ/Gg as per IPCC2006 default values)

$OXID_i$ the oxidation factor of the fuel (1 as per IPCC 2006 default Values),

$EF_{CO_2,i}$ the CO₂ emission factor per unit of energy of the fuel i (74 tCO₂/TJ as per IPCC 2006 default values).

$$\text{Therefore } PE_y = FF_{i,y} \cdot COEF_i$$

$$\begin{aligned} PE_y &= 5828.5 \text{ kg} \cdot 74 \text{ tCO}_2/\text{TJ} \cdot 1 \cdot 43.3 \text{ TJ/Gg}/10^6 \text{ tCO}_2 \\ &= 16.06 \text{ tCO}_2 \end{aligned}$$

E.3. Calculation of leakage

>> >> No Leakage Emission's are considered for the proposed project Since the Project emission reductions are equal to the Base line Emission's These are calculated based on the monitored net amount of electricity supplied to the grid, and the ex-ante determined baseline emission factor.

So L_y is Considered as 0

$$ER_y = BE_y - PE_y - L_y$$

$$ER_y = 219103.6 - 16.06 - 0 = 219103 \text{ t CO}_2\text{e}$$

E.4. Summary of calculation of emission reductions or net GHG removals by sinks

Item	Baseline emissions or baseline net GHG removals by sinks (t CO ₂ e)	Project emissions or actual net GHG removals by sinks (t CO ₂ e)	Leakage (t CO ₂ e)	GHG emission reductions or net GHG removals by sinks (t CO ₂ e) achieved in the monitoring period		
				Up to 31/12/2012	From 01/01/2013	Total amount
Total	219119.7	16.06	0	102174	116929	219103

E.5. Comparison of actual emission reductions or net GHG removals by sinks with estimates in registered PDD

Item	Values estimated in ex ante calculation of registered PDD	Actual values achieved during this monitoring period
Emission reductions or GHG removals by sinks (t CO ₂ e)	192279 tCO ₂ e (for 5 Years 10 Months 20 Days)	219103 tCO ₂ e

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

>> The Emission reductions during the reported period is 14.2% is more than the estimated in the registered PDD. The reason for the excess electricity generation compared to the estimate in the CDM PDD is that the excess rainfall and snow melting in the catchments area of river Binwa in Baijnath Tehsil, Kangra Dist. Was above normal for the region which resulted in the availability of excess water flows in the river.

Annexure – 1**Main Meter & Check meter calibration details**

Meter Serial no:	Date of calibration	Calibration Validity
07033715(Main) 00733705(check)	21-04-2009 17-02-2011 03-03-2012 09-02-2012	20-04-2010 16-02-2012 02-03-2013 08-03-2013
07360988(Main) 07360973(check)	27-04-2009 28-05-2010 14-11-2011	26-04-2010 27-05-2011 13-11-2012
07041343(Main) 07041344(check)	22-08-2012 10-07-2013 25-07-2014 25-08-2015	22-08-2013 09-07-2014 24-07-2015 24-08-2016
13191233(Main) 13191167(check)	25-11-2013 07-02-2015	24-11-2014 06-02-2016
07360973(Main) 07360988(check)	11-02-2013	10-02-2014

Appendix 1. Contact information of project participants and responsible persons/entities

Project participant and/or responsible person/ entity	<input checked="" type="checkbox"/> Project participant <input type="checkbox"/> Person/entity responsible for completing the CDM-MR-FORM
Organization name	Sri Sai Krishna Hydro Energies Private Limited
Street/P.O. Box	Plot no:1367,
Building	Road no:45; Jubilee Hills
City	Hyderabad
State/region	Telangana
Postcode	500033
Country	India
Telephone	+91-40-40301000
Fax	
E-mail	raju.m@greenkogroup.com
Website	www.greenkogruop.com
Contact person	Mr Thirumala raju
Title	AVP SPG operation's
Salutation	Mr
Last name	Raju
Middle name	Thirumala
First name	Mandapati
Department	
Mobile	
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Direct tel.	
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Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
05.1	4 May 2015	Editorial revision to correct version numbering.
05.0	1 April 2015	Revisions to: <ul style="list-style-type: none"> • Include provisions related to delayed submission of a monitoring plan; • Provisions related to the Host Party; • Remove reference to programme of activities; • Overall editorial improvement.
04.0	25 June 2014	Revisions to: <ul style="list-style-type: none"> • Include the Attachment: Instructions for filling out the monitoring report form (these instructions supersede the "Guideline: Completing the monitoring report form" (Version 04.0)); • Include provisions related to standardized baselines; • Add contact information on a responsible person(s)/ entity(ies) for completing the CDM-MR-FORM in A.6 and Appendix 1; • Change the reference number from <i>F-CDM-MR</i> to <i>CDM-MR-FORM</i>; • Editorial improvement.
03.2	5 November 2013	Editorial revision to correct table in page 1.
03.1	2 January 2013	Editorial revision to correct table in section E.5.
03.0	3 December 2012	Revision required to introduce a provision on reporting actual emission reductions or net GHG removals by sinks for the period up to 31 December 2012 and the period from 1 January 2013 onwards (EB70, Annex 11).
02.0	13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the monitoring report form" (EB 66, Annex 20).
01	28 May 2010	EB 54, Annex 34. Initial adoption.
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