



Monitoring report form
(Version 05.1)

Complete this form in accordance with the Attachment "Instructions for filling out the monitoring report form" at the end of this form.

MONITORING REPORT

| | | |
|--|---|---|
| Title of the project activity | 24 MW Dummagudem Hydel project by SLS Power Corporation Limited | |
| UNFCCC reference number of the project activity | 4818 | |
| Version number of the monitoring report | Version Number: 1 | |
| Completion date of the monitoring report | 15/05/2015 | |
| Monitoring period number and duration of this monitoring period | Monitoring Period Number: I Duration of this monitoring Period: 10/10/2013 to 31/03/2015 (first and last days included) | |
| Project participant(s) | M/s SLS Power Corporation Limited | |
| Host Party | INDIA | |
| Sectoral scope(s) | Reference: Scope 1, Energy Industries | |
| Selected methodology(ies) | Version 11 – Approved consolidated baseline and monitoring methodology ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", EB 52 | |
| 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 | 131,333 tCO ₂ | |
| 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 |
| | 0 tCO₂ | 46,724 tCO₂ |

SECTION A. Description of project activity

A.1. Purpose and general description of project activity

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(a) Purpose of the project activity and the measures taken for GHG emission reductions

The 24 MW Dummagudem hydro project of SLS Power Corporation Limited is a grid connected run-of-river hydro power project located in Telangana, (earlier was embedded and called as Andhra Pradesh), India. The proposed project is located in the Southern Power Region and has been conceived for harnessing the power potential of left flank of the branch anicut in the Godavari River in Khammam District. This project involves the installation of six Horizontal Pit type full Kaplan turbines & generating units of 4 MW each to generate 24MW of power utilizing a rated head of 4.8m and a design discharge of 601.02m³.

The project activity is a Greenfield project planned on the Godavari River. Thus, the scenario existing prior to the implementation of this project activity would be to allow the potential energy in the flowing river to go untapped. In the absence of the project activity, any existing power demand in the region would be met by the continued operation of fossil fuel based power plants in the grid. Hydropower is a clean, renewable source of energy and does not contribute to air or water pollution or the emissions of greenhouse gases. The water after powering the turbines will be discharged back into the Godavari River through a tailrace canal, located within the river course close to the left bank open channel.

The objective of the proposed project is to generate power from harnessing the water to meet the ever increasing demand for electricity in the Southern region of India. The generated power will be exported to the Southern regional grid via the sub-station at Bhadrachalam. The project is expected to export 100,300 MWh of energy per year to the grid. Hydro power plants are considered to be zero emission power sources. The project activity will displace the fossil fuel fired power generation from the grid and hence contribute to a reduction in greenhouse gases.

(b) Brief description of the installed technology and equipment

The project is a run-of-river hydro electric power plant with a design discharge of rated head of 4.8m and a design discharge of 601.02 cumecs. The hydro power plant has an installed capacity of 24 MW (6 x 4 MW each) and is capable of producing 103,400 MWh of power per year in a 90% dependable year with 95% machine availability and operating at a plant load factor of 49.18%. The catchment area at the diversion site is 307 km².

The salient features of the project are:

Table 1: Technical Parameters of Project activity

| Parameter | Value |
|----------------------|-----------------------------------|
| Net head | 4.8m |
| Type of power house | Surface |
| Design discharge | 600 Cumecs |
| Type of switchgear | 11/132kV air insulated switchgear |
| Speed of turbine | 111 rpm |
| Generation voltage | 11kV |
| Transmission voltage | 132kV |
| GSU transformer | 20MVA 3 phase, 11/132 kV |

The main components of the project are:

- A 100m wide gated weir
- An intake located at the axis of branch anicut
- One de silting basin
- A head race channel is located on the existing navigational channel
- Six (9.5 m x 10.5 m each) intake gate opening is provided for flow of water to turbines
- A surface power house to house six horizontal pit type full Kaplan units of 4MW each
- A tail race channel with a reverse slope and then with gradient up to 550 m that will discharge into the river in the direction of the river flow
- A surface switchyard 70m x 30m which shall house the generator transformer bays and an outgoing line
- 11 / 132 kV SC line from the site to Bhadrachalam to Etapaka Sub-Station (20 Kms)for evacuation of power

The turbine characteristics have been selected such that the optimum efficiency falls close to the rated output of the unit at rated head. A pumping station will be provided to supply an adequate quantity of water from the tailrace only for cooling of the turbine generator bearings, generator air coolers and selected plant services. It will then flow back into the river.

Each synchronous generator would be horizontal shaft, salient pole type, 3 phase, 50Hz directly coupled to the turbine. It would be rated for a continuous output of 4000 kW at a power factor of 0.85 and a rated voltage of 11kV with the capability of 10% intermittent overloading.

The power from the proposed project activity has been planned to be pooled at the proposed 132kV Etapaka (Bhadrachalam) sub-station. The Bhadrachalam sub-station in turn is hooked to the grid. The line length is around 20kms. Thus, the project activity will supply renewable energy to the Southern grid of India, thereby partly replacing the energy generated by other, fossil fuel based plants connected to the grid.

In the absence of the project activity the power in the grid would have been supplied by other grid connected power plants and addition of new power plants. The baseline scenario is the same as the scenario existing prior to the start of the implementation of the project activity.

(c) Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods, etc.);

| S.No. | Description | Start Date(As per DPR) | Actual Start Date | Finish(As per DPR) | Actual Finish Date |
|-------|---|------------------------|-------------------|--------------------|--------------------|
| 1 | Civil | Aug'2008 | March'2009 | May'2010 | May'2013 |
| 2 | E&M | Aug'2008 | Sep'2009 | April'2010 | Nov'2013 |
| 3 | H&M | Aug'2008 | Nov'2009 | April'2010 | March'2013 |
| 4 | Transmission Line &S/Y | Oct'2009 | Feb'2010 | July'2010 | May'2013 |
| 5 | Commissioning and Synchronization with Grid | - | - | - | 7 Dec 2013 |

The project has been operational since 7 Dec 2013. However due delay in commissioning, the project was detailed to EB to change the crediting period. And accordingly UNFCCC EB approved post registration change of crediting period, this monitoring period covers the period from 10 Oct 2013 to 31 March 2015.

(d) Total GHG emission reductions or net anthropogenic GHG removals by sinks achieved in this monitoring period

The total GHG emission reductions achieved in this monitoring period is as follows:

| Summary of the Project Activity and ERs Generated for the Monitoring Period | |
|--|-------------------------------|
| Start date of First Monitoring Period | 10/10/2013 |
| Carbon credits claimed up to | 31/03/2015 |
| Total Emission Reductions (after considering project emissions and leakage) | 46,724 tCO₂ |
| ERs generated for the period 10/10/2013 to 31/03/2015 | 46,724 tCO₂ |

A.2. Location of project activity

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(a) Host Party(ies);

India

(b) **Region/State/Province:**

Telangana, (now divided from earlier Andhra Pradesh)

(c) City/Town/Community:

Dummagudem village, Bhadrachalam Taluka ,Khammam District

(d) Physical/Geographical location:

project site from:

State Capital, Hyderabad: 378km

District headquarter, Khammam: 160km

Nearest railhead, Kottagudem: 62km

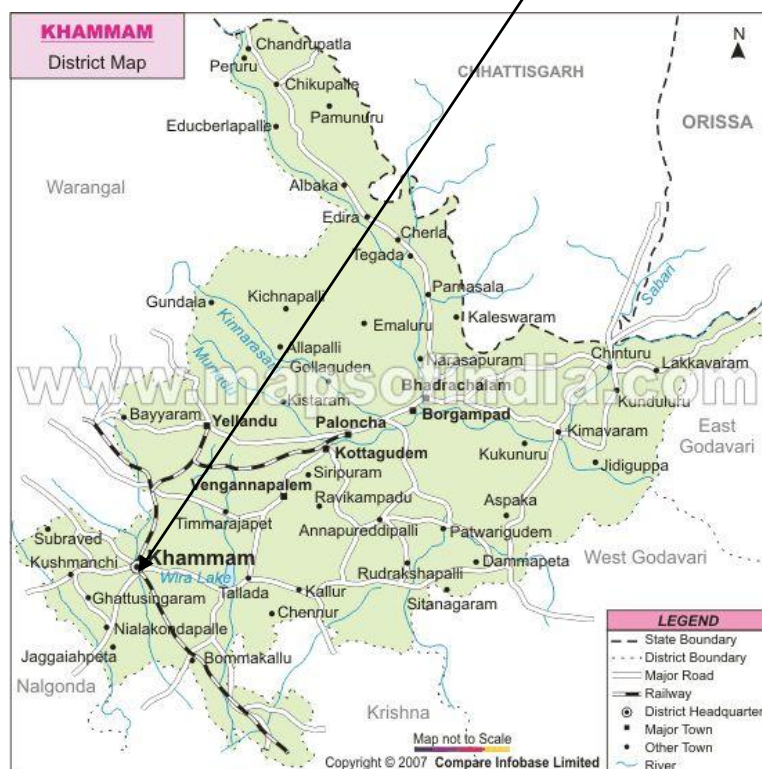
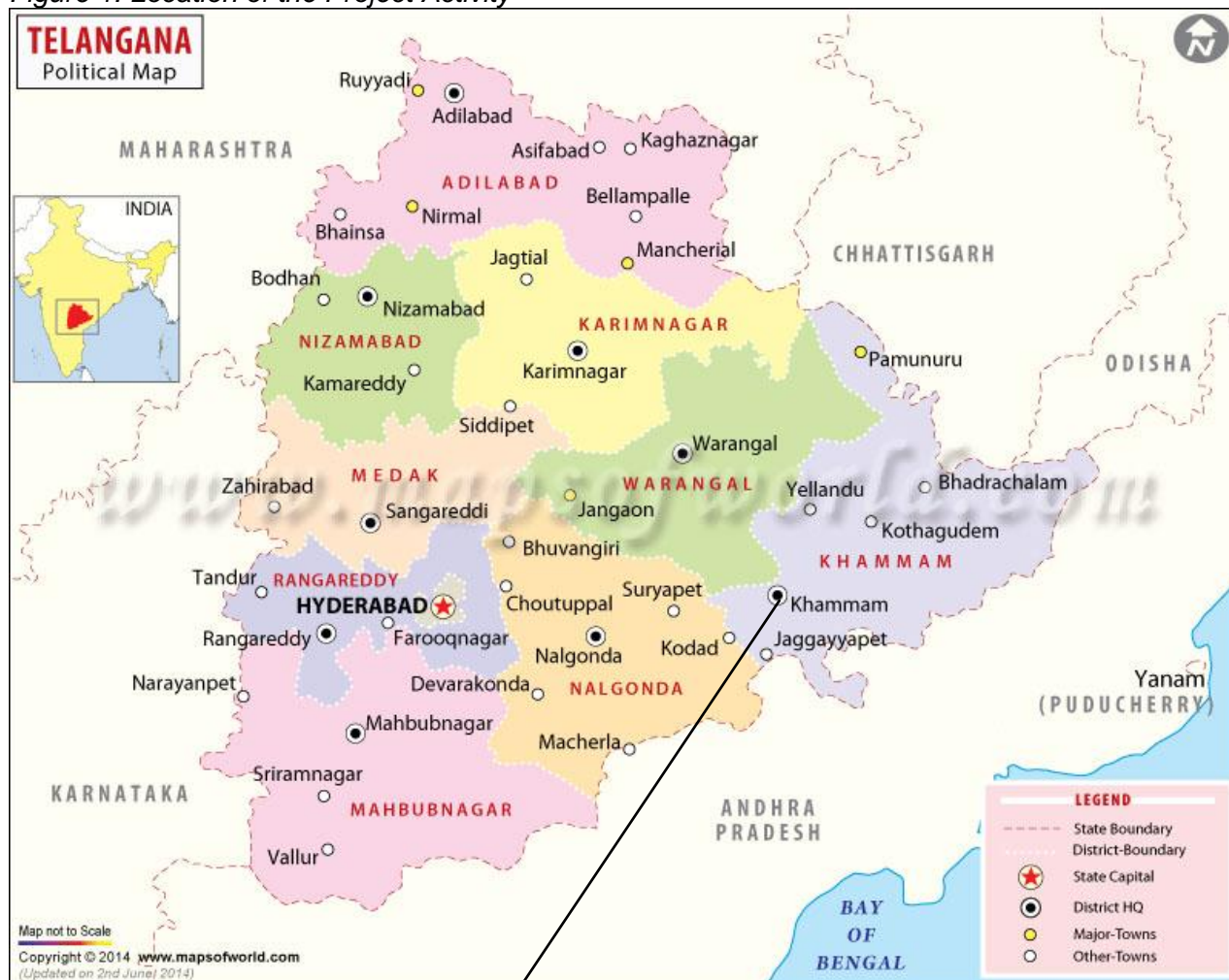
The geographical co-ordinates of the project site are:

Longitude: 80° 53' 12" E

Latitude: 17° 51' 19" N

The maps below show the exact location of the project activity in the state of Andhra Pradesh in India.

Figure 1: Location of the Project Activity



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 (host) | Private entity: M/s. SLS Power Corporation Ltd | No |

A.4. Reference of applied methodology and standardized baseline

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- (a) Applied Methodology: Sectoral Scope: 1 Energy industries (renewable - / non-renewable sources)
Version 11 – Approved consolidated baseline and monitoring methodology ACM0002
“Consolidated baseline methodology for grid-connected electricity generation from renewable sources”, EB 52
- (b) Methodological Tools:
Version 2 – Tool to calculate the emission factor for an electricity system, EB 50
Version 2 - Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion, EB 41
Version 5.2 – Tool for the demonstration and assessment of additionality, EB 39, Annex 10

A.5. Crediting period of project activity

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| | |
|---|--|
| (a) Type: | Fixed Crediting Period |
| (b) State Date of the crediting period | 10/10/2013 |
| (c) Length of the crediting period corresponding to this monitoring period: | 10 years, 0 months (10/10/2013 to 09/10/2023) |
| (d) Length of the current monitoring period | 1 years, 5 months, 20 days |

A.6. Contact information of responsible persons/entities

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Mr. Jayachandra Reddy,
Joint Managing Director,
M/s. SLS Power Corporation Ltd, Bangalore

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

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- a) Description of the installed technologies, technical process and equipment, (include diagram)

The project is a run-of-river hydro electric power plant with a design discharge of rated head of 4.8m and a design discharge of 601.02 cumecs. The hydro power plant has an installed capacity of 24 MW (6 x 4 MW each) and is capable of producing 103,400 MWh of power per year in a 90%

dependable year with 95% machine availability and operating at a plant load factor of 49.18%. The catchment area at the diversion site is 307 km².

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Each synchronous generator would be horizontal shaft, salient pole type, 3 phase, 50Hz directly coupled to the turbine. It would be rated for a continuous output of 4000 kW at a power factor of 0.85 and a rated voltage of 11kV with the capability of 10% intermittent overloading.

The power from the proposed project activity has been planned to be pooled at the proposed 132kV Etapaka (Bhadrachalam) sub-station. The Bhadrachalam sub-station in turn is hooked to the grid. The line length is around 20kms. Thus, the project activity will supply renewable energy to the Southern grid of India, thereby partly replacing the energy generated by other, fossil fuel based plants connected to the grid.

a) Implementation status of the project activity during this monitoring period

The project has been commissioned and synchronized to the grid from 7/12/2013. This monitoring period covers from the date 10/10/2013 to 31/03/2015. The project got delayed and the crediting period was changed and approved by EB for the post registration changes.

b) Type of monitoring report

This is a single monitoring report for the monitoring period 10/10/2013 to 31/03/2015 for registered project no. 4818.

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

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There are no temporary deviations from the registered monitoring plan or applied methodology.

B.2.2. Corrections

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There are no corrections to project information or parameters fixed at validation.

B.2.3. Changes to start date of crediting period

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The project had been delayed and the project proponent had requested for a change in start date of the crediting period from 11/10/2011 to 10/10/2013. This change of the crediting period was accepted by EB on 20 Aug 2014 (PRC Ref No. 4818-001).

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

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There is no inclusion of a monitoring plan to the registered PDD that was not included at registration.

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

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There are no permanent changes from the registered monitoring plan and applied methodology.

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

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There are no changes to project design of registered project activity.

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

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Not applicable.

SECTION C. Description of monitoring system

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Monitoring consists of metering the net electricity supplied to the grid ($EG_{\text{facility},y}$), turbine gross generation (EG_{gross}) and any auxiliary consumption (EG_{aux}) of electricity due to the internal loads

present in the project activity. An internal audit is also carried out every year at the power plant to ensure that these parameters are being monitored in accordance with the project PDD.

The certified emission reductions (CERs) will be determined annually based on the monthly JMRs undertaken by representatives of M/s. SLS Power Corporation Ltd & the Tata Power/grid. The PP will then raise monthly electricity sales invoices to the grid/Tata Power (the end user of the generated energy) based on these JMRs. The same figure will be reported to CDM Team/Consultant in order to estimate the monthly emission reductions.

In order to cross check the accuracy of this figure, the PP will also monitor Total/gross electricity generation from the turbine/s and any auxiliary consumption due to the internal loads. There will be three 8 hour shifts and the readings from energy meter/s will be taken on an hourly basis by the shift supervisor and recorded in logbooks. This hourly data will be signed off at the end of every shift by the engineer in charge of the shift and again at the end of each day by the power plant manager. The power plant manager will analyze the data every month and report to the head office. The data will be archived electronically every month and invoices of electricity sales will be maintained.

In line with the monitoring requirements of the methodology and the tools referred to in the methodology, the PP will also monitor the following parameters in order to estimate project emissions:

- The quantity of fossil fuel/diesel (FC_y) used in the backup DG present at the site, which will be determined using ruler gauges in the diesel tank available for the DG set
- The Net Calorific Value (NCV_y) of the fossil fuel/diesel used in the project activity, which will be determined using either supplier's receipts or IPCC default data
- The CO_2 emission factor of the fossil fuel/diesel used in the project activity ($E_{FCO_2,y}$), which will be determined using either supplier's receipts or IPCC default data

The suppliers of the equipments will train the staff in- charge during erection, to operate and maintain the equipments efficiently. Apart from this, the equipment supplier will provide complete manuals and documentation providing details for the maintenance schedule and the required activities associated with the project. All the meters used in the project activity will be calibrated on an annual basis.

The monitored data will be reported by the PP to CDM Team/the CDM consultant on a monthly basis for the calculation and estimation of emission reductions. This data will be checked against initial estimates and a summary report will be provided quarterly. If the project is not performing as expected or if there are any negative impacts on the volume of emission reductions obtained, on the basis of the monthly data being monitored.

Data storage and Archiving

In accordance with the methodology all the data collected during the crediting period will be archived electronically and kept for at least two years after the end of crediting period. 100% of the data is monitored and the meters owned by grid/project owners is calibrated at regular intervals to ensure low uncertainty in the monitored data.

Training of Operators- Since there are no major changes in the production technology, no extensive initial training is required. The operator's team is trained on CDM concepts. Operators are also trained on monitoring of data and record keeping.

Emergency Preparedness Plan: The PP has prepared an emergency preparedness plan and also a plan on unforeseen predictions as per the discussion in the Environmental Assessment.

Monitoring of Sustainable Development (SD) indicator: The SD indicators of the project is monitored as per the requirements of the Andhra Pradesh Pollution Control Board (PCB), and as described in the Environmental Monitoring Plan. The PCB has also given the consent to operate. This is also renewed at regular intervals by the PCB.

SECTION D. Data and parameters

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

(Copy this table for each piece of data and parameter)

| | |
|--------------------------|---|
| Data / Parameter: | EF_{grid,CM,y} |
| Unit: | t CO ₂ /MWh |
| Description: | CO ₂ emission factor for the regional grid system |
| Source of data: | CEA published grid emission factors data |
| Value(s) applied: | 0.890 |
| Purpose of data: | This data is used to calculate baseline emissions |
| Additional comment: | The value applied is the arithmetic mean of the Operating Margin (OM, adjusted for imports) and the Build Margin (BM) |

D.2. Data and parameters monitored

(Copy this table for each piece of data and parameter.)

| | |
|---------------------------------------|--|
| Data / Parameter: | EG_{facility, y} |
| Unit: | MWh/yr |
| Description: | Quantity of net electricity supplied by the project plant/unit to the grid in year y both generation and auxiliary consumption |
| Measured/ Calculated / Default: | Measured |
| Source of data: | From the Plant records and Joint Meter Reading (JMR) |
| Value(s) of monitored parameter: | 52511 |

| | |
|--|---|
| Monitoring equipment: | <p>Main Meter: Make: M/s Secure Apex 100, Type: R3E, Year: 2014, Class: 0.2S, Sl. No: APZ00001</p> <p>Check Meter: Make: M/s Secure Apex 100, Type: R3E, Year: 2014, Class: 0.2S, Sl. No: APZ00002.</p> <p>Standby Meter: Make: M/s Secure Apex 100, Type: R3E, Year: 2014, Class: 0.2S, Sl. No: APZ00003</p> <p>Calibration Frequency: Annually Date of last Calibration: 13/09/2014 Validity of last Calibration Report: Not Applicable</p> |
| Measuring/ Reading/ Recording frequency: | <p>Measuring Frequency: Hourly Continuous Frequency of Recording: Monthly</p> |
| Calculation method (if applicable): | Not Applicable |
| QA/QC procedures: | <p>The data is accurately measured by high quality and high accuracy meters installed. Every month these readings are recorded by plant personnel and Tata Power/Grid Transmission Company, which are archived for cross-checking. These meter readings are used to determine the electricity supplied to the grid by the project activity and are used to raise invoice. The meters are calibrated at least once a year.</p> |
| Purpose of data: | Calculation baseline emissions |
| Additional comment: | |

| | |
|---------------------------------------|--|
| Data / Parameter: | EG facility, import, y |
| Unit: | MWh/yr |
| Description: | Quantity of electricity imported by the project plant/unit from the grid in year y |
| Measured/ Calculated / Default: | Measured |
| Source of data: | From the Plant Record of Joint Meter Reading |
| Value(s) of monitored parameter: | 19.5 |

| | |
|--|---|
| Monitoring equipment: | <p>Main Meter: Make: M/s Secure Apex 100, Type: R3E, Year: 2014, Class: 0.2S, Sl. No: APZ00001</p> <p>Check Meter: Make: M/s Secure Apex 100, Type: R3E, Year: 2014, Class: 0.2S, Sl. No: APZ00002.</p> <p>Standby Meter: Make: M/s Secure Apex 100, Type: R3E, Year: 2014, Class: 0.2S, Sl. No: APZ00003</p> <p>Calibration Frequency: Annually Date of last Calibration: 13/09/2014 Validity of last Calibration Report: Not Applicable</p> |
| Measuring/ Reading/ Recording frequency: | <p>Measuring Frequency: Continuous Frequency of Recording: Monthly</p> |
| Calculation method (if applicable): | Not Applicable |
| QA/QC procedures: | <p>The data is accurately measured by high quality and high accuracy meters installed. Every month these readings are recorded by plant personnel and Tata Power/Grid Transmission Company, which are archived for cross-checking. These meter readings are used to determine the electricity supplied to the grid by the project activity and are used to raise invoice. The meters are calibrated at least once a year.</p> |
| Purpose of data: | Calculation baseline emissions |
| Additional comment: | |

| | |
|---------------------------------------|---|
| Data / Parameter: | EG_{Gross} |
| Unit: | MWh/yr |
| Description: | Quantity of electricity produced by the project plant/unit from the grid in year y including electricity supplied to grid and electricity utilized by internal load |
| Measured/ Calculated / Default: | Measured |
| Source of data: | From the Plant Record of Joint Meter Reading |
| Value(s) of monitored parameter: | 55742 |

| | |
|--|---|
| Monitoring equipment: | <p>Main Meter: Make: M/s Secure Apex 100, Type: R3E, Year: 2014, Class: 0.2S, Sl. No: APZ00001</p> <p>Check Meter: Make: M/s Secure Apex 100, Type: R3E, Year: 2014, Class: 0.2S, Sl. No: APZ00002.</p> <p>Standby Meter: Make: M/s Secure Apex 100, Type: R3E, Year: 2014, Class: 0.2S, Sl. No: APZ00003</p> <p>Calibration Frequency: Annually Date of last Calibration: 13/09/2014 Validity of last Calibration Report: Not Applicable</p> |
| Measuring/ Reading/ Recording frequency: | <p>Measuring Frequency: Continuous Frequency of Recording: Monthly</p> |
| Calculation method (if applicable): | Not Applicable |
| QA/QC procedures: | <p>The data is accurately measured by high quality and high accuracy meters installed. Every month these readings are recorded by plant personnel and Tata Power/Grid Transmission Company, which are archived for cross-checking. These meter readings are used to determine the electricity supplied to the grid by the project activity and are used to raise invoice. The meters are calibrated at least once a year.</p> |
| Purpose of data: | Calculation baseline emissions |
| Additional comment: | |

| | |
|---------------------------------------|---|
| Data / Parameter: | EG_{aux} |
| Unit: | MWh/yr |
| Description: | Total auxiliary electricity used for internal loads in year y |
| Measured/ Calculated / Default: | Measured |
| Source of data: | From the Plant Record of Log Book |
| Value(s) of monitored parameter: | 1606 |

| | |
|--|---|
| Monitoring equipment: | <p>Auxiliary Meter Details:</p> <p>HT -11 KV Side Make: Wasion group limited Model: DSSD331, 3Ph 3wire Electronic multifunction meter Inputs : 3x110V,3x0.3(1.2)A Class:0.5 SI.NO : 1) 09100180340005 2) 09100180340006</p> <p>LT- 415V side Make: Conzerv Model: ELF3234 Inputs :3Ph 4wire Ain - 50mA to 6A Vin - 80 to 500VAC Class:0.5 SI.NO : 1) 201383/3204-1710 2) 201383/3208-1710</p> |
| Measuring/ Reading/ Recording frequency: | <p>Measuring Frequency: Continuous Frequency of Recording: Hourly and cumulated to monthly</p> |
| Calculation method (if applicable): | Not Applicable |
| QA/QC procedures: | The data is accurately measured by high quality and high accuracy meters installed. The electricity supplied to internal loads is monitored shift wise on hourly basis and recorded in the plant log book. |
| Purpose of data: | Calculation baseline emissions |
| Additional comment: | |

| | |
|--|---|
| Data / Parameter: | EF_{CO₂,v} |
| Unit: | tCO ₂ /GJ |
| Description: | CO ₂ emission factor for diesel |
| Measured/ Calculated / Default: | Default |
| Source of data: | http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf |
| Value(s) of monitored parameter: | 74.8 t CO ₂ /TJ |
| Monitoring equipment: | IPCC Default Value |
| Measuring/ Reading/ Recording frequency: | |
| Calculation method (if applicable): | IPCC default values at the upper limit of the uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories. |
| QA/QC procedures: | |
| Purpose of data: | Calculation of Project Emissions |
| Additional comment: | -- |

| | |
|--|---|
| Data / Parameter: | NCV_J |
| Unit: | GJ/Gg |
| Description: | Average net calorific value of diesel in year y |
| Measured/ Calculated / Default: | Default |
| Source of data: | |
| Value(s) of monitored parameter: | 43.3 TJ/Gg |
| Monitoring equipment: | IPCC Default Value |
| Measuring/ Reading/ Recording frequency: | |
| Calculation method (if applicable): | IPCC default values at the upper limit of the uncertainty at a 95% confidence interval as provided in Table 1.2 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories. (http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf) |
| QA/QC procedures: | This parameter is a fixed value for a hydro power plant and has to be checked every year to be consistent |
| Purpose of data: | -- |
| Additional comment: | -- |

| | |
|---------------------------------------|--|
| Data / Parameter: | FC_{diesel, y} |
| Unit: | Volume unit per year (Kilo Litres) |
| Description: | Quantity of diesel combusted in the project activity during year y |
| Measured/ Calculated / Default: | Measured |
| Source of data: | Plant Log Book |
| Value(s) of monitored parameter: | 0.204 |

| | |
|--|--|
| Monitoring equipment: | <p>Metering system consists of measurement of diesel used with the mass volume approach by ruler guage. Before pouring the diesel into the DG set, Shift in Charge shall measure the amount of diesel with ruler guage and enter into the log book. The difference between the reading before and after use of DG set provides information about the usage of diesel.</p> <p>Usage of diesel is further verified from the total number of operating hours of DG set.</p> <p>Both operating hours and diesel measurements are recorded in the log book and maintained at the DG Set room.</p> <p>Monitoring Frequency: Continuously Measurement Frequency: Daily Recording Frequency: Monthly, Summarized Annually Calibration Frequency: Not required. Done only if damaged. Archiving Policy: Paper & / Electronic Accuracy of the Measurement Method: To confirm the accuracy on measurement of quantity of diesel consumed in the project activity can be cross checked against the fuel purchase receipts. Responsibility: Log book sheet would be maintained by the shift in charge and same would be crossed checked by the Plant Manager of the project activity.</p> |
| Measuring/ Reading/ Recording frequency: | <p>Measuring Frequency: Continuous Frequency of Recording: Monthly</p> |
| Calculation method (if applicable): | Not Applicable |
| QA/QC procedures: | The data recorded can be cross checked against the fuel purchase receipts/invoices |
| Purpose of data: | Calculation of project emissions |
| Additional comment: | -- |

D.3. Implementation of sampling plan

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No sampling process is involved, hence not applicable.

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

As per the methodology, Emission reductions are calculated as the difference between the baseline emission from displaced electricity and the sum of the project emissions (PE_y) and leakage (LE_y).

$$ER_y = BE_y - (PE_y + LE_y)$$

In which:

| Symbol | Description | Unit |
|--------|---|-------------------------|
| ER_y | Emission reductions by the project activity during a given year y | tCO ₂ e/year |
| BE_y | Baseline emissions of the project activity during the year y | tCO ₂ e/year |
| PE_y | Project emissions of the project activity during the year y | tCO ₂ e/year |
| LE_y | Leakage emissions in the year y | tCO ₂ e/year |

However, LE_y has been neglected as per the guidelines of the methodology. A separate spreadsheet is provided for the details of emission reductions calculations.

Hence $ER_y = BE_y - PE_y$

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

>>

The Baseline emission calculation is based on ex-ante option chosen and as per the registered PDD the value i.e. $EF_y = 0.89$ tons CO₂/MWh.

The baseline is the MWh produced by the project activity multiplied by an emission coefficient (measured in tonnes CO₂/MWh) calculated in a transparent and conservative manner as the weighted average emissions (in tonnes CO₂/MWh) as described in the registered PDD.

$$BE_y = EG_y \times EF_y$$

Where,

BE_y is baseline emissions in year y, tCO₂e

EG_y is the net electricity supplied to the grid in year y and is applied directly from JMR certified by state utility. This value can also be cross checked from the invoice.

EF_y is the CO₂ emission factor of the grid (0.89 tCO₂e/MWh fixed ex-ante).

Baseline Emission for the period (10/10/2013 to 31/03/2015)

$$= 52,510 \text{ (MWh)} \times 0.89 \text{ (tCO}_2\text{/MWh)}$$

$$= 46,733 \text{ tCO}_2\text{/MWh (rounded down)}$$

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

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This section shall include all formulae used and description to calculate the project emissions applying actual values. A table may be used and included in this monitoring report or include references to spread sheet

Step 3: Project Emissions:

As per the ACM0002 there are no project related emissions.

However, as the project is equipped with diesel generator of suitable capacity to meet the emergency requirements of power house etc., emissions out of usage of fossil fuel (diesel) are accounted for as project emissions. Diesel generator is utilized to supply the emergency requirement for the project activity, diesel consumption shall be monitored in plant log records. Emissions resulting from usage of diesel in the backup diesel generator is accounted as project emissions based on the following equation as provided in the "Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion" version 2.

The project emissions for the proposed project activity can be calculated as follows:

$$PE_{\text{diesel, } y} = FC_{\text{diesel, } j, y} \times NCV_{\text{diesel, } y} \times EF_{\text{CO}_2, \text{ diesel, } y}$$

Where,

$FC_{\text{diesel, } y}$ = quantity of diesel used during the year

$NCV_{\text{diesel, } y}$ = weighted average net calorific value of diesel in year y (43.3 TJ/Gg)

$EF_{\text{CO}_2, \text{ diesel, } y}$ = weighted average CO₂ emission factor of fuel type diesel in year y

In case the parameter for quantity of diesel used during year y “FC_{diesel, j, y}” has been measured in volume, it will be converted to mass of diesel:

$$FC_{\text{diesel, j, y}} = F_{\text{d, y}} * \text{Density}$$

Where:

F_{d,y} is the quantity of diesel used during the year (Kilo Litres)

Density of diesel (0.82 kg/Ltr. as per Society of Indian Automobile Mfgs. <http://www.siamindia.com/scripts/Diesel.aspx>)

NCV_{diesel, y} = 43.3 TJ/Gg

IPCC default values at the upper limit of the uncertainty at a 95% confidence interval as provided in Table 1.2 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories.

(http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf)

EF_{CO₂, diesel, y} = 74.8 t CO₂/TJ

IPCC default values at the upper limit of the uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories.

(http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf)

Project Emission for the period (10/10/2013 to 31/03/2015)

$$= (204/10^6) \times 0.82 \times 43.3 \times 74.8 = 9$$

= 9 tCO₂ (rounded up).

E.3. Calculation of leakage

>>

As per ACM0002 the main emissions potentially giving rise to leakage in the context of electric sector projects are emissions arising due to activities such as power plant construction, fuel handling (extraction, processing, and transport), and land inundation (for hydroelectric projects – see applicability conditions above). Project participants do not need to consider these emission sources as leakage in applying this methodology.

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 | 46,733 | 9 | 0 | 0 | 46,724 | 46,724 |

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) | 131,333 | 46,724 |

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

>>

The Emission Reduction (ER) value in the monitoring period is very much Lower as compared to the value estimated in the registered PDD. The reason being because of removal of Upstream Cofferdam which was there since 5 years during construction period. Due to removal of cofferdam heavy silt has accumulated in the canal and it has caused for less generation. After completion of the silt removal work / dredging work, unit generation is expected to improve.

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 checked="" type="checkbox"/> Responsible person/ entity for completing the CDM-MR-FORM |
| Organization name | SLS Power Corporation Ltd |
| Street/P.O. Box | 121/1 12th Cross, 2nd Stage, West Of Chord Road |
| Building | Mahalakshmi Puram, (Near G D NAIDU HALL) |
| City | Bangalore |
| State/region | Karnataka |
| Postcode | 560086 |
| Country | India |
| Telephone | +91-80 23195162/63 |
| Fax | +91-80 23195164 |
| E-mail | slspowercorporation@gmail.com |
| Website | |
| Contact person | |
| Title | Joint Managing Director |
| Salutation | Mr. |
| Last name | Reddy |
| Middle name | Chandra |
| First name | Jayachandra |
| Department | - |
| Mobile | - |
| Direct fax | - |
| Direct tel. | +91-80 23195162/63 |
| Personal e-mail | slspowercorporation@gmail.com |

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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. |

| <i>Version</i> | <i>Date</i> | <i>Description</i> |
|---|-----------------|--|
| 04.0 | 25 June 2014 | <p>Revisions to:</p> <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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