First Monitoring Report Version3.0

1MW Jiwa Small Hydel Project in Kullu, Himachal Pradesh.

Chevron Hydel (P) Ltd., INDIA

Project Site:

Siundh Village, Sainj Town,

Kullu District, Himachal Pradesh.

First Monitoring report:

Period: 4th Jan 2007 to 3rd Jan 2009

Version3: 19.03.2010

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Monitoring Report of 1MW Jiwa Small Hydel Project in Kullu, Himachal Pradesh

1. Introduction

Jiwa small hydel project is a 1000 KW run - of - the river development by Chevron Hydel Pvt. Ltd. for power generation on Jiwa Khad, a tributary of river Sainj in the Beas Basin. Project is located near Sainj town of Kullu district of Himachal Pradesh. The project envisages utilizing the available gross head of 105.6 meter in the lower reach of Jiwa Khad between Sharan and Jiwa village just before its confluence with Sainj River and power generated will be exported to grid.

The project will be able to export around 6.47 GWH of electricity per year to the Himachal Pradesh State Electricity Board.

This project will help to mitigate climate change and lead to green house gas emission reductions of 44,840 tCO_2e during the crediting period of 10 years.

This monitoring report is prepared for verification of the emission reductions generated by the project activity.

2. Project Reference

Title of the small scale project activity:

1 MW Jiwa Small Hydel Project in Kullu, Himachal Pradesh.

Version of the monitoring report: 03

Date of the report: 18/03/2010

3. Location of the project activity

The small scale project activity is located in Siundh village near Sainj town of Kullu district in Himachal Pradesh.

Host Party	: India
Region	: Northern Region of India
State	: Himachal Pradesh.
City (District)	: Kullu

Town : Sainj
Community (Village) : Siundh

Project is located near Sainj town of Kullu district in Himachal Pradesh.

Access to project site:

Road : Chandigarh–Mandi–Aut–Sainj Road (245 Kms. From Chandigarh)
Rail : Kirat Pur Sahib (215 Kms.)
Airport : Bhuntur, Kullu (45 Kms.)

Geographical Coordinates:

Latitude : $31^0 47'29"$ North
Longitude : $77^0 19'22"$ East

4. Brief Process description

The project activity is construction and commissioning of a 1MW hydro electric project at Siundh village in Kullu, Himachal Pradesh. The project envisages utilizing the available head of 105.6 meter of water in the lower reach of Jiwa Khad between Sharan and Jiwa village just before its confluence with Sainj River and power generated will be exported to HPSEB grid.

Detailed Technical specifications of the project are given in the table below:

Table 1:

Hydrology	
Type of Catchment Area	Rugged and Hilly
Annual Flow (In 75% dependable year)	1.23cumecs (Cubic metre per second)
Diversion Structure	
Type of structure	Trench type weir (20 m. & 2.5 m.)
Intake Structure	
Shape and Size	Well type (3.0 m. X 2.5 m. X 5.10 m.)
De-silting Chamber	
Type	Settling tank
Size	28 m. X 5 m.
Discharge	1.75 cumecs
Penstock	
Number	One

Diameter and thickness	800 mm and 8 mm
Length	190 m
Power House	
Type	Surface
Designed Head	102.07 m
Design Discharge	1.28 cumecs
Installed Capacity	1000 KW
Turbines	Francis type
Generator	A C Synchonous
Switchyard	
Voltage	11/33 KV

5. Type of Project

Title of the project category:

Main Category: Type I – Renewable Energy Project

Sub Category : I.D. Grid Connected Renewable Electricity Generation

The reference has been taken from the indicative simplified baseline and monitoring methodologies for small-scale CDM project activities – (Version 13).

Also "Tool to calculate the emission factor for an electricity system" – version 01.1 has been used for emission factor calculation.

6. Period of verification

Period of verification of emission reductions**:** **04/01/2007 - 03/01/2009.**

7. Energy meter identification, calibration and accuracy details

Measures to ensure the Results / uncertainty analysis of the monitoring procedure:

- As per the **Power Purchase Agreement (PPA),** for measuring the delivery/import of Energy by the company at the interconnection point, one set of Main Meter (part of Interconnection facilities) and Check Meter shall be provided by the Company and the Board respectively at the interconnection point.

  The calibration of monitoring equipment is being maintained as per the requirement of HPSEB.

Current scenario

The Check meter was not installed by the Board at the time of commissioning of the project and neither has it been installed till now.

And inspite of reminders[1] from the project proponent the check meter has not been re-installed by the Board till now. The reading of main meter is being used for billing.

Details of Reminder to HPSEB for Check Meter:
The responsibility of installing Check meter solely lies upon the HPSEB. Therefore the PP is continuously reminding HPSEB with a note contained in every month's Joint Meter Reading Report[2], which is jointly signed with the concerned HPSEB officials and sent along with the monthly bill(s) raised on HPSEB, the payment of which is released by HPSEB every month. Apart from these monthly reminders, the PP has reminded HPSEB for the installation of the Check Meter on dated – 4th Jun 2008[3] & 4th May 2009[4]. (All the necessary evidences are being submitted to the DOE along with this MR).

- ***Meter Replacement:***

During the proposed crediting period, the PP had to replace the main meter as per the clause assigned under the Article 7 of the PPA signed with HPSEB.

The serial number for the earlier main meter was **06606097**, which was used from 6th Oct 2006 till 4th Jun 2008 after which the same was replaced on 4th Jun 2008[5] by another meter with serial number **08030221.** This meter (bearing serial no. 08030221) was used till 4th May 2009 and thereafter replaced by a New main meter bearing the serial no. 06606097[6].

The need for replacement and the procedures adopted is in line with the clauses detailed under Article - 7 of the provisions of the PPA, which has been submitted to the DOE during validation. On replacement, the old meter is sent for recalibration and testing and the fresh meter is installed after having it tested.

Calibration is being done regularly for all the monitoring equipments.

[1] The Evidences of the reminder to the Board for installing the Check meter is being submitted to the DOE along with this MR as follows:
[2] A sample of JMR is being submitted herewith which clearly displays the 'note reminder' for check meter.
[3] Letter to the Chief Engineer, HPSEB from Project proponent, where there was a clear reminder request for Check meter installation (being submitted along with)
[4] Letter to the Chief Engineer, HPSEB from Project proponent, there was again a clearly reminder request to the Board for Check meter installation. (being submitted along with)
[5] The JMR of the month of May 2008 displays this meter replacement with the new meter serial no. The same has been submitted to the DOE.
[6] Minutes of Meeting held on 4th May 2009 is being submitted to the DOE as evidence.

The details of the meters replaced are given below:

Table 2: (Status of the Main Meter during the crediting period):

Specifications	**Main Meter 1**	**Remarks**	**Main Meter 2**	**Remarks**
Serial no.	**06606097**	**-**	**08030221**	-
Date of Calibration	06-10-2006	-	03-06-2008	-
Date of Installation	06-10-2006	-	04-06-2008	[7]On this date, this meter has been installed & sealed after proper test checked on 03-06-2008.
Next due date of calibration	05-10-2007	The calibration could not happen on the due date since it requires a service request reference from HPSEB and inspite of reminders sent by the PP, response was not received from them. But the performance of the main meter can be assumed to be fine since at the time of replacement of the meter (on 4th Jun 2008) calibration was done and the meters were	02-06-2009	This meter was being used till 4th May 2009. And on 4th May 2009 it was replaced with the spare meter (06606097, calibrated on 29-01-2009). The calibration is due for this meter and it would be calibrated as per the direction of HPSEB whenever required, and before re-installation.

[7] The JMR of the month of May 2008 displays this meter replacement with the new meter serial no. The same has been submitted to the DOE.

		certified to be working under specified limits.		
Re-Installation date of the meter	04-05-2009	This meter (06606097) was calibrated on 29-01-2009 and it replaced the meter 0803022 on 4th May 2009.	This meter (08030221) is in standby mode for future replacement.	
Model no.	AC – 3 Phase 3 wire/ Type – ER 300 P (3 phase 3 wire Electronic Tri vector Meter, Bidirectional)	-	AC – 3 Phase 3 wire/ Type – ER 300 P (3 phase 3 wire Electronic Tri vector Meter, Bidirectional)	-
Manufacturing year	2006	-	2008	-

Following points to be noted with regard to energy meter identification, calibration and accuracy details:

- The Main meter installed at the Interconnection Point is jointly inspected and sealed on behalf of the Parties and was not interfered with by either Party except in the presence of the other Party or its accredited representative(s).

- The Main Meter was tested and checked for accuracy at least fifteen (15) days before Synchronization of the first Unit. Calibration of the meters is done at least once in a year.

- The details of reference standards and the calibration status of the meter are as given in the table 2. Also the supporting certificates/documents have been provided at the time of validation.

- The readings given in the Table 3A & 3B are as per the main meter.

8. Monitoring plan

As per monitoring plan in the PD, the data to be monitored for estimation of the emission reductions are the following:

(i.) Electricity generated by the project activity in kWh
(ii.) Net electricity exported to the grid in kWh.
(iii.) Electricity imported from the grid in kWh

The export and import of electricity to the grid is directly measured from the tri-vector meter and reported in joint metering report every month. The same data are used for the calculation of net export of power to grid and consequently emission reductions from the proposed project activity. The export and import of electricity from the project activity is described for the monitoring period in **Table 3** in the subsequent section.

The net electricity exported to the grid is measured monthly and a Joint metering report is made which gives the net electricity exported to the grid by the project activity in kWh. The net electricity exported to the grid, the baseline emission factor of the grid and therefore the emission reductions for the monitoring period is given in **Table 3** in the subsequent section.

9. Emission Reductions of the small scale project activity

The emission reduction of the small scale project activity is the net electricity exported to the grid (TPExp) in kWh multiplied by the baseline emission factor in kg CO2/kWh.

- Baseline emission factor

CEA published Grid emission factors have been applied for the project baseline. The emission factor chosen is fixed for the entire crediting period. The emission factor used to calculate emission reductions is determined ex-ante. As per Para 9(a) of AMS I. D. Version 13, combined margin (CM), would consist of the combination of operating margin(OM) and build margin (BM) according to the procedures prescribed in the 'Tool to calculate the emission factor for an electricity system'.

The value thus obtained from CEA database as combined margin emission factor is **0.803 tCO2/MWh.** *(the reference calculation sheet is being also provided in excel format along with).*

- **Details of Baseline data:**

Data of Operating and Build Margin for the three financial years from 2004 to 2007 has been obtained from – **'The CO2 Baseline Database for the Indian Power Sector'** Ministry of Power: Central Electricity Authority (CEA) Version 4.0, dated-sep 2008.[8]

[1] http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm

Table 3 – Emission reductions of the small project activity

Table 3.A: Emission reduction for the period 04.01.2007 to 03.01.2008

SL No.	Year	Month of Generation[9]	Electricity exported to grid	Electricity imported	Net Electricity Exported	Grid Emission Factor	Baseline Emissions	Project Emissions from import of Electricity	Emission Reductions
			kWH	kWH	kWH	tCO2/GWH	tCO2	tCO2	tCO2
1	**2007**	**Jan**	51700	1800	49900	803	41.5151	1.4454	40
2		**Feb**	95800	1800	94000	803	76.9274	1.4454	75
3		**Mar**	130100	1400	128700	803	104.4703	1.1242	103
4		**Apr**	608400	200	608200	803	488.5452	0.1606	488
5		**May**	651400	200	651200	803	523.0742	0.1606	522
6		**Jun**	654200	200	654000	803	525.3226	0.1606	525
7		**Jul**	524700	300	524400	803	421.3341	0.2409	421
8		**Aug**	539500	100	539400	803	433.2185	0.0803	433
9		**Sep**	699600	100	699500	803	561.7788	0.0803	561
10		**Oct**	545200	700	544500	803	437.7956	0.5621	437
11		**Nov**	874000	200	873800	803	701.822	0.1606	701
12		**Dec**	690300	400	689900	803	554.3109	0.3212	553
		Total	**6064900**	**7400**	**6057500**		**4870.1147**	**5.9422**	**4859**

[9] In general, Billing for the particular month is done on 3rd/4th date of every next moth. Thus every 'Month of Generation' mentioned in the above table indicates the crediting of that particular month which bill is raised on the next month. The billing periods and dates of the billing are tabulated below in annex1.

Table 3.B: Emission Reduction calculation for the period 04.01.2008 to 03.01.2009

S.No.	Year	Month of generation	Electricity exported to grid	Electricity imported	Net Electricity Exported	Grid Emission Factor	Baseline Emissions	Project Emissions from import of Electricity	Emission Reductions
			kWH	kWH	kWH	tCO2/GWH	tCO2	tCO2	tCO2
1	**2008**	**Jan**	659000	200	658800	803	529.177	0.1606	529
2		**Feb**	750000	400	749600	803	602.250	0.3212	601
3		**Mar**	628900	900	628000	803	504.284	0.7227	504
4		**Apr**	415000	900	414100	803	333.245	0.7227	332
5		**May**	729600	700	728900	803	585.869	0.5621	585
6		**Jun**	302300	0	302300	803	242.747	0.0000	242
7		**Jul**	582200	0	582200	803	467.507	0.0000	467
8		**Aug**	439700	0	439700	803	353.079	0.0000	353
9		**Sep**	274800	0	274800	803	220.664	0.0000	220
10		**Oct**	797600	0	797600	803	640.473	0.0000	640
11		**Nov**	880700	0	880700	803	707.202	0.0000	707
12		**Dec**	622800	0	622800	803	500.108	0.0000	500
		Total	**7081700**	**2200**	**7079500**		**5686.605**	**2.4893**	**5680**

The total Emission Reductions (4th Jan 2007 to 3rd Jan 2009) = 10539 tCO_2 *

(Please refer to the Emission Reduction Excel sheet (Ver 03) for the detailed calculations)

** The Volume of VER as calculated here above has got increased from the value obtained in previous calculations (Ver 02). This is because in the previous calculations (Ver 02), the Export Value for the month of May 2008 was entered wrongly (i.e. 545200 kWh). Now the correct value (i.e. 729600 kWh as per the JMR) is being used which increases the VER volume.*

Annex 1

Details of the Billing Period and Billing Dates: (in Consistent with the JMR & Invoices)

For the Month	Initial Reading Date	Final Reading Date	Billing Date
Year 2007			
January	04.01.2007	05.02.2007	05.02.2007
February	05.02.2007	02.03.2007	03.03.2007
March	02.03.2007	04.04.2007	04.04.2007
April	04.04.2007	04.05.2007	04.05.2007
May	04.05.2007	02.06.2007	02.06.2007
June	02.06.2007	03.07.2007	03.07.2007
July	03.07.2007	03.08.2007	03.08.2007
August	03.08.2007	03.09.2007	03.09.2007
September	03.09.2007	03.10.2007	03.10.2007
October	03.10.2007	03.11.2007	03.11.2007
November	03.11.2007	04.12.2007	04.12.2007
December	04.12.2007	03.01.2008	03.01.2008
Year 2008			
January	03.01.2008	02.02.2008	02.02.2008
February	02.02.2008	03.03.2008	03.03.2008
March	03.03.2008	04.04.2008	04.04.2008
April	04.04.2008	03.05.2008	03.05.2008
May	03.05.2008	04.06.2008	04.06.2008
June	04.06.2008	03.07.2008	03.07.2008
July	03.07.2008	04.08.2008	04.08.2008
August	04.08.2008	03.09.2008	04.09.2008
September	03.09.2008	03.10.2008	03.10.2008
October	03.10.2008	03.11.2008	03.11.2008
November	03.11.2008	03.12.2008	03.12.2008
December	03.12.2008	03.01.2009	03.01.2009

Annex 2

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

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