

THIRD MONITORING REPORT

DATED 7th AUGUST, 2008

FOR THE PERIOD

01ST MAY 2007 TO 30th JUNE 2008

“Dolowal, Salar and Bhanubhura Mini Hydroelectric Projects”

Punjab Hydro Power Private Limited

Reference No.UNFCCC00000328 - CDMP

Project Location:

**Kotla Branch Canal, District Sangrur,
Punjab, India**

Punjab Hydro Power Private Limited

B-37, Sector-1, Noida – 201301

Uttar Pradesh, India

Fax No. 91-0120-4621333

Current Status of the Project

Three Mini Hydroelectric Power projects aggregating to 4.2 MW at Dolowal, Salar and Bhanubhura on the Kotla Branch canal, District Sangrur, Punjab, India were commissioned in April 2003 and are operating successfully. The projects were completed with major equipment supplied by the suppliers as under:

Table 1: Project Details

S.No.	MHP	Equipment	Qty	Supplier
1	Dolowal	Turbine & its accessories	2	Triveni Engineering & Industries Ltd., New Delhi
		Induction Generator	2	
2	Salar	Turbine & its accessories	2	Triveni Engineering & Industries Ltd., New Delhi
		Induction Generator	2	
3	Bhanubhura	Turbine & its accessories	2	Boving Fouress Limited, Bangalore
		Induction Generator	2	

The promoters to the Company provided the entire equity and loan was funded by Indian Renewable Energy Development Agency Limited (IREDA).

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

During the present monitoring period i.e. 01st May 2007 to 30th June 2008, all the three (3) Plants exported net energy of 24.70 Million kWh.

Statement to What Extent the Project has been Implemented as Planned

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

All the three schemes are in operation continuously (with outages – forced & planned) since commissioning. Commercial Operation was declared on April 26, 2003.

The purpose of the projects is to generate electricity by utilizing water flowing through the existing canal system.

Monitoring Period

This is the third monitoring report associated with the project activity. The first monitoring report covered the period from 26th April 2003 to 31st March 2006 (Both days included) and the second monitoring report covered the period from 1st April 2006 to 30th April 2007 (Both days included) and the CERs for the same have already been issued.

The period covered in this monitoring report is from 1st May 2007 to 30th June 2008 (Both days included). This monitoring report does not cover any period of time covered by the previous monitoring report.

Sustainability – Economic and Social Well-being

The project activity has resulted in sustainable development in the region as follows:

1. Generating clean power by utilizing water has helped in eliminating an equivalent carbon dioxide, sulphur dioxide, nitrogen oxides, SPM *etc.* which would have been otherwise generated to produce electricity.
2. Power generation from a renewable source like water has helped to substitute & conserve considerable amount of finite, non-renewable energy resource (coal & natural gas).
3. Project activity has resulted in creation of direct and in-direct employment in the vicinity.
4. Additional economic benefits have accrued by creation of business opportunity for local stakeholders such as villagers, local shop owners, small contractors, schools, hospitals, etc.
5. Project Area has been lighted with road reflectors and flash lights 24 hours a day which has provided security for the local people commuting in odd hours.
6. Project activity has contributed its share in reducing the demand-supply gap in the power deficit state of Punjab.
7. Helped in Up-gradation of old rural grids and strengthening of country's rural electrification coverage.
8. Helped in strengthening of existing irrigation canals, bridges and roads by up-gradation of these structures.
9. Mechanical Trash racks and trash cleaning machines helped remove trash in the canal resulting in flow of clean water in the canal for irrigation and drinking purposes.
10. Project activity serves a small demonstrative project for clean renewable energy generation in the state. (As these projects are being the first private sector small hydropower projects in the state)
11. Project activity would also contribute to the state exchequer.

Obtained Parameters According to Monitoring Plan

For the project, following parameters were monitored on a continuous basis.

Energy:

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

The month-wise data on gross energy generated is given in Table 2 below:

Table 2: Gross Energy Generation (kWh)

Billing Month	Year	Dolowal	Salar	Bhanu bhura	Total
May	2007	887276	876784	829055	2593115
Jun	2007	538995	547815	581753	1668563
Jul	2007	819405	811660	817571	2448636
Aug	2007	921105	921791	890274	2733170
Sep	2007	836594	832615	817872	2487081
Oct	2007	731089	733226	786202	2250517
Nov	2007	563367	486910	608647	1658924
Dec	2007	626578	640420	661236	1928234
Jan	2008	143440	244933	181041	569414
Feb	2008	181306	98327	191574	471207
Mar	2008	860380	886892	882177	2629449
Apr	2008	290223	323390	342429	956042
May	2008	790237	753930	800834	2345001
June	2008	233097	342575	270977	846649
Total		8423092	8501268	8661337	25585697

The month-wise data on auxiliary energy consumption is given in Table 3 below:

Table 3: Auxiliary Energy Consumption

Billing Month	Year	Dolowal	Salar	Bhanu bhura	Total
May	2007	26776	26194	32505	85475
Jun	2007	17685	17925	22703	58313
Jul	2007	25915	25120	31471	82506
Aug	2007	28085	28711	34834	91630
Sep	2007	25004	24735	31752	81491
Oct	2007	22429	21446	27442	71317
Nov	2007	17097	12940	20287	50324
Dec	2007	17188	17940	22766	57894
Jan	2008	4890	7013	6851	18754
Feb	2008	5156	2847	6634	14637
Mar	2008	22870	23462	31397	77729
Apr	2008	11223	12040	14279	37542
May	2008	22277	22000	30804	75081
June	2008	7397	11245	10467	29109
Total		253992	253618	323887	831497

The gross energy generation data and auxiliary energy consumption data is not used for calculation of emission reductions since energy exported and energy imported data is available for the project activity.

Power Generation:

Month-wise data on Net Energy Exported for the monitoring period is given in Table 4 below:

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

Table 4: Net Energy Exported (kWh)

Billing Month	Year	Energy Exported to Grid				Energy Imported from Grid				Net Energy Exported
		Dolowal	Salar	Bhanu bhura	Total	Dolowal	Salar	Bhanu bhura	Total	
May	2007	860500	850590	796550	2507640	190	210	200	600	2507040
Jun	2007	521310	529890	559050	1610250	2110	1670	1600	5380	1604870
Jul	2007	793490	786540	786100	2366130	160	200	130	490	2365640
Aug	2007	893020	893080	855440	2641540	390	320	250	960	2640580
Sep	2007	811590	807880	786120	2405590	380	360	270	1010	2404580
Oct	2007	708660	711780	758760	2179200	340	220	130	690	2178510
Nov	2007	546270	473970	588360	1608600	1160	780	1050	2990	1605610
Dec	2007	609390	622480	638470	1870340	750	650	820	2220	1868120
Jan	2008	138550	237920	174190	550660	4030	2640	4550	11220	539440
Feb	2008	176150	95480	184940	456570	4520	4640	4300	13460	443110
Mar	2008	837510	863430	850780	2551720	150	90	170	410	2551310
Apr	2008	279000	311350	328150	918500	1500	1390	1120	4010	914490
May	2008	767960	731930	770030	2269920	140	200	380	720	2269200
June	2008	225700	331330	260510	817540	3180	2920	3030	9130	808410
Total		8169100	8247650	8337450	24754200	19000	16290	18000	53290	24700910

Emission Reductions

Baseline Emissions:

Sn	Description	Formula	Unit	Value
A	Energy exported to the Grid		kWh	24754200.00
B	Energy imported from the Grid		kWh	53290.00
C	Net Energy Exported based	C=A-B	kWh	24700910.00
D	Carbon Emission Factor as per the baseline adopted		kg CO ₂ /kWh	0.94
E	Baseline Emissions	$E = (C * D) / 1000$	ton CO₂	23268.26

Baseline Emissions : 23268.26

Project Emissions : NIL

Emission Reductions : Baseline emissions – Project emissions
= 23268.26 - NIL
= 23268 tCO₂

Measures to Ensure the Results/Uncertainty Analysis

As per the Power Purchase Agreement (PPA), the energy exported to Punjab State Electricity Board (PSEB) is recorded from two independent set of meters – Main Meters and Check Meters. Reading of Main Meter is used for arriving at the figures of power exported after deducting auxiliary power.

In the event, the Main Meter is not in operation then reading from Check Meter installed at the grid substation of PSEB is used for billing. Till date the Main Meter only has been used for billing purposes.

Gross power generation, auxiliary consumption, energy exported and energy imported are being recorded daily and the same is being verified by Plant In charge. Since the hourly data logging is carried out along with daily reporting, the uncertainty level of the monitored data used for calculating emission reductions is low. The accuracy of the meters gets further automatically checked at the time of joint meter reading which is being taken every month by PSEB.

The following table indicates the details of Main Meter including their accuracy levels and calibration dates, Gross energy generation meter and Auxiliary energy meter for all three plants:

Table 5: Details of Trivector Meter, Generator Panel Meter and Auxiliary Meter

Description	Dolowal	Salar	Bhanubhura
Trivector Meter			
Type	Electronic bidirectional Trivector Meter	Electronic bidirectional Trivector Meter	Electronic bidirectional Trivector Meter
S.No.	3123065	3123066	3174966

Capacity; C.T. Ratio	150/5 A; 150/5 A; M.F - 1	150/5 A; 150/5 A; M.F - 1	150/5 A; 150/5 A; M.F - 1
Accuracy level	(\pm) 0.50%	(\pm) 0.50%	(\pm) 0.50%
Make	L&T	L&T	L&T
Date of Calibration	06/05/2008	06/05/2008	06/05/2008
Calibration Authority	PSEB Meter Mobile Testing Squad (MMTS), Patiala	PSEB Meter Mobile Testing Squad (MMTS), Patiala	PSEB Meter Mobile Testing Squad (MMTS), Patiala
Accuracy Level observed during calibration	(+) 0.06%	(+) 0.26%	(+) 0.22%
Gross Energy Generation Meter			
Model	EM 3360	EM 3360	882-331
Make	Enercon	Enercon	Minsun
Serial No	Unit 1: E33/148-0702 Unit 2 : E33/149-0702	Unit 1: E33/150-0702 Unit 2 : E33/151-0702	Unit 1: 6690502 Unit 2 : 6690501
Accuracy Level observed during calibration	(\pm) 1.00%	(\pm) 1.00%	(\pm) 1.00%
Auxiliary Energy Meter			
Model	EM 6400	EM 6400	EM 6400
Make	Enercon	Enercon	Enercon
Serial No	E 64/743-0702	E 64/08-T1001	E 64/1186-0902

Accuracy Level observed during calibration	(±) 1.00%	(±) 1.00%	(±) 1.00%
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No change has taken place in the Main Meter(s) installed at Dolowal, Salar and Bhanubhura since second verification.

Installation of Meters:

The Trivector meters have been installed in a temper proof strong steel compartment sealed at every open end. These compartments are again being kept under a completely closed & locked Meter Room made of RCC. The area where the meter room is located is completely fenced and protected by a barbed wire.

Calibration of Meters:

At the time of installation of the meters, the accuracy and other parameters are checked thoroughly by the manufacturer i.e. L&T and a test report is issued by L&T. The Trivector Meters are also checked for accuracy by PSEB Metering Equipment (ME) Laboratory, Patiala before installation at the site. The Meters which are within the permissible accuracy limits are jointly sealed by 2 officers of the rank of Sr. XEN (One from Sr. Ex. Engr., ME Division, Patiala and second from Sr. Ex. Engr., MMTS, Patiala).

Calibration of the Trivector Meters already in operation is carried out at site by PSEB Meter Mobile Testing Squad (MMTS), Patiala. The MMTS officer visits the site and issue a challan in respect to the confirmation of the accuracy of the meters. The date of calibration and signature of officer is indicated on the challan. These challans are laminated by a cellophane material and pasted as a seal on to the Meter Box itself.

In the event, the officer observes any fault in the meter, then the same is being replaced by the officer and a spare tested meter is installed. The faulty meter is then sent to the

PSEB Metering Equipment (ME) Laboratory, Patiala wherein the same is tested and a test report is generated. The meter is again reinstalled by the engineer at the site.

Roles and Responsibilities

PHPPL was the sole agency responsible for implementation and monitoring plan given above.