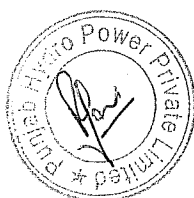


**SECOND MONITORING REPORT****DATED 4<sup>th</sup> MAY, 2007****FOR THE PERIOD****01<sup>ST</sup> APRIL 2006 TO 30<sup>TH</sup> APRIL 2007****“Dolowal, Salar and Bhanubhura Mini Hydroelectric Projects”****Punjab Hydro Power Private Limited****Reference No.UNFCCC00000328 - CDMP****Project Location:**

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

**Punjab Hydro Power Private Limited****B-37, Sector-1, Noida – 201301****Uttar Pradesh, India****Fax No. 91-0120-2443723**

## Current Status of the Project

There 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 as follows:

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 Company provided the entire equity and loan was taken from 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 request for updating the records at CDM Registry with the revised modalities of communication signed by all Project Participants has been sent.

During the present monitoring period i.e. 01st April 2006 to 30th April 2007, all the three (3) Plants achieved net energy generation of 22.77 Million kWh.

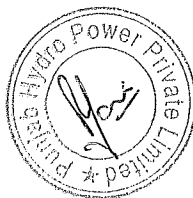


## **Statement to What Extent the Project has been Implemented as Planned**

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.

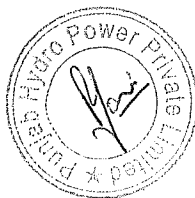
The purpose of the projects is to generate electricity by utilizing water flowing through the existing canal system.



## **Monitoring Period**

This is the second monitoring report associated with the project activity. The previous monitoring report covered the period from 26/04/2003 to 31/3/2006 (Both days included) and the CERs for the same have already been issued.

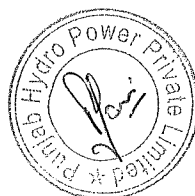
The period covered in this monitoring report is from 01/04/2006 to 30/04/2007 (Both days included). This monitoring report does not cover any period of time covered by the previous monitoring report.



## **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, 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.

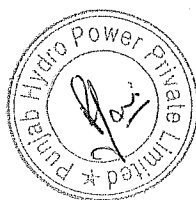


## Obtained Parameters According to Monitoring Plan

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

### Energy:

- i. Electronic energy meters installed for measuring the gross power generation (export) as well as auxiliary power consumption (import) at the grid interconnection point for all 3 schemes.
- ii. Hourly data recording of the relevant parameters and also the recording of total energy generated for every 8 (eight) hours shift.
- iii. Daily readings were aggregated to monthly readings.
- iv. Monthly reports stating the gross auxiliary and net energy exported were prepared by shift-in-charge and verified by plant managers.
- v. Monthly joint meter readings are 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).
- vi. The joint meter readings are used to raise invoice for sale of net energy to PSEB.
- vii. The finance department cross checks the data provided by plant managers.

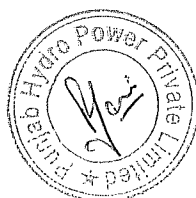


**Power Generation:**

Month-wise data on Net Power Exported and Net Emission Reductions is given below for the monitoring period:

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

Billing Month	Year	Net Power Exported (kwh)				Baseline Emission Factor (tCO <sub>2</sub> /MWh)	Baseline Emissions (tCO <sub>2</sub> )
		Dolowal	Salar	Bhanu-bhura	Total		
April	2006	307280	312930	329190	<b>949400</b>	0.942	894.33
May	2006	770810	785740	728050	<b>2284600</b>	0.942	2152.09
June	2006	838340	844510	724250	<b>2407100</b>	0.942	2267.49
July	2006	848120	869280	769350	<b>2486750</b>	0.942	2342.52
August	2006	910050	914320	812080	<b>2636450</b>	0.942	2483.54
September	2006	564940	561250	558230	<b>1684420</b>	0.942	1586.72
October	2006	361670	358850	361130	<b>1081650</b>	0.942	1018.91
November	2006	660320	659550	693580	<b>2013450</b>	0.942	1896.67
December	2006	650610	654160	700420	<b>2005190</b>	0.942	1888.89
January	2007	539080	552830	551720	<b>1643630</b>	0.942	1548.30
February	2007	237110	241840	252350	<b>731300</b>	0.942	688.88
March	2007	422310	417400	449090	<b>1288800</b>	0.942	1214.05
April	2007	503290	517580	537020	<b>1557890</b>	0.942	1467.53
<b>TOTAL</b>		<b>7613930</b>	<b>7690240</b>	<b>7466460</b>	<b>22770630</b>		<b>21449.92</b>



## Emission Reductions

### Baseline Emissions:

Carbon Emission Factor as per the baseline adopted ( $\text{kg CO}_2/\text{kWh}$ ) – 0.942

Net energy exported ( $\text{kWh}$ ) – 22770630

Baseline emissions ( $\text{ton CO}_2$ ) – 21449.92

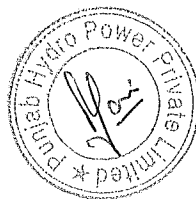
### Project Emissions: NIL

### Emission Reductions:

Baseline emissions – Project emissions

= 21449.92 - NIL

= 21449  $\text{tCO}_2$





## 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.

The calibration of monitoring equipment is being maintained as per the requirement of PSEB and the same is being done regularly. Power Generation, Export & Auxiliary Consumption are being recorded daily and the same is being verified by Plant Incharge. 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 for all three plants:

Description	Dolowal	Salar	Bhanubhura
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	(±) 0.50%	(±) 0.50%	(±) 0.50%



Make	L&T	L&T	L&T
Date of Calibration	18/07/2006	18/07/2006	18/07/2006
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%	(+) 0.07%	(+) 0.20%

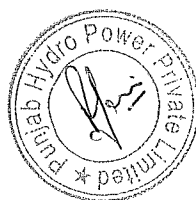
#### **Installation of Meters:**

These 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.

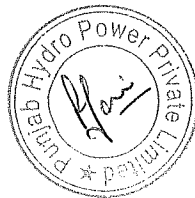
#### **Calibration of Meters:**

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 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 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.

