



VALIDATION REPORT DODSON - LINDBLOM HYDRO POWER PRIVATE LIMITED

VALIDATION OF THE
MODIFICATION AND RETROFITTING OF THE
EXISTING 34 MW HYDRO POWER PLANT AT
BHANDARDARA – 2 (PROJECT ACTIVITY) IN
MAHARASHTRA STATE IN INDIA BY DODSON –
LINDBLOM HYDRO POWER PRIVATE LIMITED
(DLHPPL)

REPORT No. INDIA-VAL/112.49/2008

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BUREAU VERITAS CERTIFICATION



VALIDATION REPORT

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Client: Dodson –Lindblom Hydro Power Private Limited	Client ref.: Prem S Paunikar

Summary:

Bureau Veritas Certification has made the validation of the Modification and retrofitting of the existing 34 MW hydropower plant at Bhandardara -2 (project activity) in Maharashtra state in India by Dodson – Lindblom Hydro Power Private Limited (DLHPLL) located in Bhandardara, Akola Taluk, Ahmednagar district, Maharashtra state, India on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

The validation scope is defined as an independent and objective review of the project design document, the project's baseline study, monitoring plan and other relevant documents, and consisted of the following three phases: i) desk review of the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final validation report and opinion. The overall validation, from Contract Review to Validation Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

The first output of the validation process is a list of Clarification and Corrective Actions Requests (CL and CAR), presented in Appendix A. Taking into account this output, the project proponent revised its project design document.

In summary, it is Bureau Veritas Certification's opinion that the project correctly applies the baseline and monitoring methodology ACM 0002, Version 6 and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria.

Report No.: INDIA-val/112.49/2008	Subject Group: CDM
Project title: Modification and retrofitting of the existing 34 MW hydropower plant at Bhandardara -2 (project activity) in Maharashtra state in India by Dodson – Lindblom Hydro Power Private Limited (DLHPLL)	
Work carried out by: R Sankaranarayanan – Team Leader Sandeep Lele – Team Member R Reghukumar – Team Member Sushil Budhia – Chartered Accountant	
Work verified by: H B Muralidhar	
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Indexing terms

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Abbreviations

BSE	Bombay Stock Exchange
BH -2	Bhandardara Power House No.2
CAPM	Capital Asset Pricing Model
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reductions
CL	Clarification Request
CO2	Carbon Dioxide
DLHPPL	Dodson Lindblom Hydro Power Private Limited
DOE	Designated Operational Entity
GHG	Green House Gas (es)
GOMWRD	Government of Maharashtra Water Resources Department
GPIL	GVK Power & Infrastructure Ltd
I	Interview
IETA	International Emissions Trading Association
IFC	International Finance Corporation
JHPL	Jaiprakash Hydro Power Ltd
MERC	Maharashtra Electricity Regulatory Commission
MoV	Means of Verification
MP	Monitoring Plan
NGO	Non Government Organization
PCF	Prototype Carbon Fund
PDD	Project Design Document
TPCL	Tata Power Company Limited
UNFCCC	United Nations Framework Convention for Climate Change
WRPC	Western Regional Power Committee



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1 INTRODUCTION

Dodson – Lindblom Hydro Power Private Limited has commissioned Bureau Veritas Certification to validate its CDM project Modification and retrofitting of the existing 34 MW hydropower plant at Bhandardara -2 (project activity) in Maharashtra state in India by Dodson – Lindblom Hydro Power Private Limited (DLHPPL) (hereafter called “the project”) at Bhandardara, Akola Taluk, Ahmednagar district, Maharashtra state, India.

This report summarizes the findings of the validation of the project, performed on the basis of UNFCCC criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

1.1 Objective

The validation serves as project design verification and is a requirement of all projects. The validation is an independent third party assessment of the project design. In particular, the project's baseline, the monitoring plan (MP), and the project's compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the project design, as documented, is sound and reasonable, and meets the stated requirements and identified criteria. Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs).

UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

1.2 Scope

The validation scope is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations.

The validation is not meant to provide any consulting towards the Client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

1.3 GHG Project Description

The project activity is categorised as a modernization and retrofitting of the existing 34 MW run of river hydro power plant.



The Bhandardara Power House No.2 (BH-2) is part of the Upper Pravara River Basin Water Management System. River Pravara is a tributary of river Godavari. It is located at a latitude of 19°33'15"N and longitude of 73°45'0"E. The Bhandardara Power House No.2 (BH-2) was operated and maintained by Government of Maharashtra Water Resources Department (GOMWRD). BH-2 draws its water from a small reservoir formed by Randha Weir and has been operating intermittently since 1999. BH-2 was designed to operate as a peaking station, but has essentially been operating as a base-load station at approximately 50% of its rated capacity. Severe limitations resulting from irrigation release criteria, lack of availability of a balancing storage mechanism, technical limitations and financial constraints affected normal operations of this facility as originally envisioned by GOMWRD and have significantly impaired the operation of BH-2. Hence the Government of Maharashtra decided to privatise the operation of the BH-2 plant on a lease, own, operate and transfer basis to Dodson Lindblom Hydro Power Private Limited (DLHPPL).

The existing BH-2 project uses a 34 MW vertical Francis type turbine, which was previously damaged and is currently operating through temporary repairs. DLHPPL as a project activity will completely overhaul, rehabilitate and modernise the plant. The rehabilitation measures will include complete automation of the plant. The rehabilitation and automation of BH-2 would result in increased generation.

1.4 Validation team

The validation team consists of the following personnel:

R Sankaranarayanan
Bureau Veritas Certification Team Leader, Climate Change Verifier

Sandeep Lele
Bureau Veritas Certification Climate Change Verifier

R Reghukumar
Bureau Veritas Certification Climate Change Verifier

Sushil Budhia – Chartered Accountant

H B Muralidhar
Bureau Veritas Certification, Internal reviewer

2 METHODOLOGY

The overall validation, from Contract Review to Validation Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.



In order to ensure transparency, a validation protocol was customized for the project, according to the Validation and Verification Manual (IETA/PCF). The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organizes, details and clarifies the requirements a CDM project is expected to meet;
- It ensures a transparent validation process where the validator will document how a particular requirement has been validated and the result of the validation.

The validation protocol consists of five tables. The different columns in these tables are described in Figure 1.

The completed validation protocol is enclosed in Appendix A to this report.



Validation Protocol Table 1: Mandatory Requirements			
Requirement	Reference	Conclusion	Cross reference
The requirements the project must meet.	Gives reference to the legislation or agreement where the requirement is found.	This is either acceptable based on evidence provided (OK), a Corrective Action Request (CAR) or a Clarification Request (CL) of risk or non-compliance with stated requirements. The CAR's and CL's are numbered and presented to the client in the Validation Report.	Used to refer to the relevant protocol questions in Tables 2, 3 and 4 to show how the specific requirement is validated. This is to ensure a transparent validation process.

Validation Protocol Table 2: Requirements checklist				
Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organized in several sections. Each section is then further subdivided. The lowest level constitutes a checklist question.	Gives reference to documents where the answer to the checklist question or item is found.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) due to non-compliance with the checklist question. (See below). Clarification Request (CL) is used when the validation team has identified a need for further clarification.

Validation Protocol Table 3: Baseline and Monitoring Methodologies				
Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
The various requirements of baseline and monitoring methodologies should be met. The checklist is organized in several sections. Each section is then further subdivided. The lowest level constitutes a checklist question.	Gives reference to documents where the answer to the checklist question or item is found.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) due to non-compliance with the checklist question. (See below). Clarification Request (CL) is used when the validation team has identified a need for further clarification.



Validation Protocol Table 4: Legal requirements				
Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
The national legal requirements the project must meet.	Gives reference to documents where the answer to the checklist question or item is found.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) due to non-compliance with the checklist question. (See below). Clarification Request (CL) is used when the validation team has identified a need for further clarification.

Validation Protocol Table 5: Resolution of Corrective Action and Clarification Requests			
Report clarifications and corrective action requests	Ref. to checklist question in tables 2/3/4	Summary of project owner response	Validation conclusion
If the conclusions from the Validation are either a Corrective Action Request or a Clarification Request, these should be listed in this section.	Reference to the checklist question number in Tables 2, 3 and 4 where the Corrective Action Request or Clarification Request is explained.	The responses given by the Client or other project participants during the communications with the validation team should be summarized in this section.	This section should summarize the validation team's responses and final conclusions. The conclusions should also be included in Tables 2, 3 and 4, under "Final Conclusion".

Figure 1 Validation protocol tables

2.1 Review of Documents

The Project Design Document (PDD) submitted by Dodson – Lindblom Hydro Power Private Limited and additional background documents related to the project design and baseline, i.e. country Law, Guidelines for Completing the Project Design Document (CDM-PDD), Approved methodology, Kyoto Protocol, Clarifications on Validation Requirements to be Checked by a Designated Operational Entity were reviewed.

To address Bureau Veritas Certification corrective action and clarification requests Dodson – Lindblom Hydro Power Private Limited revised the PDD and resubmitted it on 08/2008.

The validation findings presented in this report relate to the project as described in the PDD Version 03 Dated 02/03/2009.



The validation report was also initially submitted to EB, which came under request for review and the response from PP and DOE was submitted to the EB.

The EB under para 43 (bh) in its 45th meeting agreed to register the project, “Modification and retrofitting of the existing 34 MW hydropower plant at Bhandardara –2 (project activity) in Maharashtra state in India by Dodson – Lindblom Hydro Power Private Limited (DLHPPL)” (2173) if the project participants and the DOE (BVC) submit a revised PDD and corresponding validation report which incorporate the information submitted in response to the request for review regarding the calculation and validation of the benchmark.

The validation findings presented in this report relate to the project as described in the latest PDD, and corrected as directed by the EB under para 43 (bh) in its 45th meeting.

2.2 Follow-up Interviews

On 12/06/2007 & 13/06/2007 Bureau Veritas Certification performed site visit and interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of Dodson – Lindblom Hydro Power Private Limited were interviewed (see References). The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
DLHPPL	<ul style="list-style-type: none"> ➤ Project description ➤ Contribution of Project towards Sustainable Development ➤ Operational aspects ➤ Monitoring plans and Procedures. ➤ QA/ QC Procedures ➤ Internal review / verification mechanism ➤ Competency Management ➤ Approach towards understanding the issues pertaining to interested parties ➤ Base line & Additionality – Justification and Application ➤ Monitoring plans
LOCAL Stakeholder at Bhandardara Village	<ul style="list-style-type: none"> ➤ Social and economical benefits due to Project
Bunge India	<ul style="list-style-type: none"> ➤ Project Category, design ➤ Base line & Additionality – Justification and Application



2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation is to raise the requests for corrective actions and clarification and any other outstanding issues that needed to be clarified for Bureau Veritas Certification positive conclusion on the project design.

To guarantee the transparency of the validation process, the concerns raised are documented in more detail in the validation protocol in Appendix A.

3 VALIDATION FINDINGS

In the following sections, the findings of the validation are stated. The validation findings for each validation subject are presented as follows:

- 1) The findings from the desk review of the original project design documents and the findings from interviews during the follow up visit are summarized. A more detailed record of these findings can be found in the Validation Protocol in Appendix A.
- 2) Where Bureau Veritas Certification had identified issues that needed clarification or that represented a risk to the fulfillment of the project objectives, a Clarification or Corrective Action Request, respectively, have been issued. The Clarification and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in the Validation Protocol in Appendix A. The validation of the Project resulted in 08 Corrective Action Requests and 05 Clarification Requests.
- 3) The conclusions for validation subject are presented.

3.1 Project Design

Bureau Veritas Certification recognizes that Modification and retrofitting of the existing 34 MW hydropower plant at Bhandardara -2 (project activity) in Maharashtra state in India by Dodson – Lindblom Hydro Power Private Limited (DLHPPL) is helping the country fulfill its goals of promoting sustainable development. The project is expected to be in line with host-country specific CDM requirements because it -

- Will completely overhaul, rehabilitate and modernise the plant. The anticipated rehabilitation measures will include complete automation of the plant. In addition, the project activity will provide the ancillary benefit of improving the water management system in the region.
- The rehabilitation and automation of BH-2 would result in increased generation and Contributes to meeting the electricity supply deficit in the state of Maharashtra.
- The project facilitates partially the construction of the Nilwande Dam, which would result in the improvement and optimal implementation of the water management system in the region, which in turn would



facilitate more water for the people in the vicinity for irrigation and potable use.

- Eliminates the use of fossil fuels for generation of power thereby CO₂ abatement and reduction of green house gas emissions
- Direct and indirect employment to local public due to the project implementation.

The project participants involved in this project are Dodson – Lindblom Hydro Power Private Limited (DLHPPL) and IFC-Netherlands Carbon Facility (INCaF). The participation for the project participants are approved through the approval from the Ministry of Environment and Forests, Government of India and Ministry of VROM, Environment and Spatial Planning, Netherlands (listed as 2&3 of category 1 documents). The project participants submitted the approvals to the validation team and the validation team verified this letter from the website of the Ministry of Environment and Forests, Government of India and Ministry of VROM, Environment and Spatial Planning, Netherlands and considers this as valid.

The project design is sound and the geographical (Bhandardara, Aklola Taluka, Ahmednagar District. Maharashtra State. India) and temporal (25 years) boundaries of the project are clearly defined. The operational lifetime of 25 years is considered based on the third party inspection report of Erskine.L.Flook, P.E, Canada and the contract with GOMWRD.

The management of Dodson – Lindblom Hydro Power Private Limited in its Board Resolution dated 9th February, 2004 evidently discuss about consideration of CDM revenue for the project activity. DLHPPL has also executed Green House Gas Emission Reduction Purchase Agreement with International Finance Corporation (IFC) on 27th September, 2006 which is prior to the project activity start date. The start date of the project activity is 19/12/2006 which is the date on which the assets are handed over to DLHPPL for modernization and retrofitting. As described in the PDD, the project participant preferred to chose the fixed crediting period of 10 years starting from 01/10/2008 or from the date of registration whichever is later and hence the same is accepted by the validation team.

CARs 1 –3 and CLs 1 - 4 were issued applicable to project design, which have been satisfactorily resolved. Refer Table 5 of Appendix A

CARs

- The header of the PDD mentions Version 03. It is not as per Version 03.1
- It is not clear from the PDD whether the specific CDM requirements like Host country approval, environmental clearances have been obtained.
- The latitude and longitudes and unique identification of the location are not mentioned

Resolution

- PDD Version 03 has been prepared as per the template version 03.1



- DLHPPL has obtained the HCA and has been provided to the DOE. No EIA was required for the upgradation / modification of the hydropower plant (Reference: Letter from Hydro project's Design Circle that no Forest clearance / Pollution Clearance is required for BH-II (1X34 MW)).
- Latitude / Longitude Included accordingly in the revised PDD version 03

Conclusion

It is verified from the latest corrected PDD that the correct template is used now. HCA approval and the consent of the state PCB submitted and the latitude and longitude included in the corrected PDD. Hence the CARs are closed.

3.2 Baseline and Additionality

The Modification and retrofitting of the existing 34 MW hydropower plant at Bhandardara -2 (project activity) in Maharashtra state in India uses the approved consolidated baseline methodology ACM 0002 ("Consolidated baseline methodology for grid-connected electricity generation from renewable sources", Version 06).

The Bhandardara Power House No.2 (BH-2) is part of the Upper Pravara River Basin Water Management System and was operated and maintained by Government of Maharashtra Water Resources Department (GOMWRD). BH-2 draws its water from a small reservoir formed by Randha Weir and has been operating intermittently since 1999. BH-2 was designed to operate as a peaking station, but has essentially been operating as a base-load station at approximately 50% of its rated capacity. Severe limitations resulting from irrigation release criteria, lack of availability of a balancing storage mechanism, technical limitations and financial constraints affected normal operations of this facility as originally envisioned by GOMWRD and have significantly impaired the operation of BH-2. Hence the Government of Maharashtra decided to privatise the operation of the BH-2 plant on a lease, own, operate and transfer basis to Dodson Lindblom Hydro Power Private Limited (DLHPPL).

The existing BH-2 project uses a 34 MW vertical Francis type turbine, which was previously damaged and is currently operating through temporary repairs. DLHPPL as a project activity will completely overhaul, rehabilitate and modernise the plant. The rehabilitation measures will include complete automation of the plant. The rehabilitation and automation of BH-2 would result in increased generation.

It has been estimated that due to phased retrofitting, modernization and efficient operation and maintenance of the plant the project activity will generate additional about 15.14 GWh during first year and 21.14 GWh from the second year onwards, more than the average historic generation of 29.86 GWh.

Since the project activity is a run of river hydropower project with existing reservoir where the volume of the river is not increased and is proposed for retrofitting and refurbishment, therefore satisfies the applicable



condition of the approved consolidated baseline methodology ACM0002 Version 06, and this methodology has been chosen for the project activity.

Alternatives to the project activity include:

- Operation of the project activity without CDM funds
- Continuation of the existing hydropower plant without retrofit and refurbishment

The most plausible baseline scenario identified for the project activity is continuation of current practice i.e. operation of the existing hydel power plant without modification. This would result in additional power generation from the grid connected power sources, which include coal, gas & renewable energy.

The baseline options considered do not include those options that:

- do not comply with legal and regulatory requirements; or
- depend on key resources such as fuels, materials or technology that are not available at the project site.

The historic generation of BH-2 for the past 5 years has been evaluated and the average of the 5 years data (29.86 GWh) has been considered as the baseline generation. Records of which were available to the validation team for verification.

The additionality of the project is demonstrated through the step-by-step approach as per the additionality tool, Version 4. DLHPPL demonstrated additionality of the project activity through investment analysis and existence of investment barrier, institutional barrier, hydrological barrier and common practice analysis.

The project is conceived as a CDM project and the same is evident in the minutes of the meeting of the Board of Directors of M/s. Dodson Lindblom Hydro Power Projects Private Limited held on 9th February 2006 and Green House Gas Emission Reduction Purchase Agreement with International Finance Corporation (IFC) on 27th September, 2006. The validation team verified the minutes of the Board meeting, the Board minutes register and the agreement with IFC to note that the CDM benefits are duly considered in the decision making process.

The validation team verified the supporting evidences for the chronology of events that had taken place (as described in the PDD) between the Board decision and the validation to ascertain the justification given by the PP for the delay in making the application for registration and confirmed that the project participant had seriously considered CDM and is pursuing the matter since the Board decision. Further, DLHPPL has registered another small-scale hydropower project viz. "12 MW



hydropower plant in Bhandardara in Maharashtra, India.” (Project reference number: 0430) on 30th September 2006 i.e. prior to the starting date of this present project activity.

Investment analysis

The project activity will sell the electricity to the local state utility and will generate financial or economic benefits by means of sale of electricity other than the expected CDM revenue. Hence simple cost analysis cannot be considered for this project. DLHPPL used the benchmark analysis to evaluate the economic attractiveness of the project activity.

Benchmark:

The project IRR (Post -tax) of the project activity has been computed over a period of 20 years and then compared against the benchmark return of 14.63%, which has been established based upon the Weighted Average Cost of Capital (WACC) of the project activity.

The validation team has validated the benchmark calculation with the help of the financial expert with due consideration of:

1. Tool for demonstration and assessment of additionality, version 04 [Additionality Tool] and
2. Guidance on assessment of investment analysis, Annexure 45 of EB 41

The validation was done in the following manner:

- Assessment whether the benchmark is derived as per Option III of Sub-step 2b of the additionality tool:

Project participant has derived the benchmark according to clause 4b [PDD incorrectly states clause 6b] viz. ‘Estimates of cost of financing and required rate of return’.

- Assessment whether the cost of financing is calculated in line with the additionality tool [e.g. commercial lending rates and guarantees required for the country and the type of project activity concerned]:

The cost of financing is calculated as weighted average of cost of equity and cost of debt for the project. Cost of equity is calculated using Capital Asset Pricing Model [CAPM] using the publicly available data of private equity investors as explained below. Thus it follows the requirement of:

- use of publicly available data as per clause 12 of the investment analysis guidance; and



- not [being] linked to subjective profitability expectations or risk profile of a particular of the particular project developer.

Cost of debt is calculated using interest rate charged by financial institutions. Thus it follows the requirement of use of banker's views. The validation team ascertained the cost of debt by verifying the interest rate charged by the Financial Institutions viz., State Bank of India (SBI), International Finance Corporation (IFC) and DEG-DEUTSCHE INVESTITIONS (DEG), who have term loan exposure in the present project activity.

In the context of this project activity YTM (Yield to Maturity) at primary issues over a period of 10 years has been considered to represent the rate of risk free investment (R_f). The project participant has taken this value (of $R_f = 7.34$) from the annual report of the Reserve Bank of India. The validation team accepted this value as it is taken directly from the RBI report, which is authentic and reliable.

The project participant took the geometric mean of the opening index as per SENSEX taken from BSE website for the most conservative CAGR of 33.64%, compared to BSE 100, BSE 200 and BSE 500. Being conservative, the validation team accepted the same. Thus the expected market rate of return R_m being 33.64%, the market risk premium works out to 26.3% ie., $[(R_m - R_f) = 33.64 - 7.34]$.

- Assessment whether the benchmark represents the standard returns in the market considering the specific risk of project type:

Since the project activity is a hydropower project, it is necessary that the derived benchmark relates to the hydropower project. The project participant considered the power companies - Jaiprakash Hydro Power Ltd (JHPL), GVK Power & Infrastructure Ltd (GPIL) and Tata Power Company Limited (TPCL), which are listed in the Bombay stock exchange, (BSE). The beta values of these power companies as considered by the project participant and taken from the weblink: <http://cdm.unfccc.int/Projects/DB/RWTUV1190101228.6/ReviewInitialComments/6USZ3WQZ5259KXKF5CYLILNL8YA8GL>, which is cross-referenced to Bloomberg data. This shows beta values of 1.078 for JHPL, 1.101 for GPIL and 0.964 for TPCL. The validation team also verified the adjusted beta values of TPCL from Bloomberg for a two-year period prior to decision-making date. Validation team noted that considering SENSEX as relative index the adjusted beta value is 1.138 and considering BSE 100 index it is 1.102. However the project participant has taken a value of 0.6 as the beta value, which is conservative.

Validation team agrees with this selection for the following reasons:



- There is no other private investor in hydropower whose rate of return could be derived based on publicly available information.
- At the point of decision-making, of the companies said above, only TPCL was listed, but TPCL is only partially into hydropower generation.
- JHPL was not listed at the time of decision for the project implementation,
- The value of 0.6 taken by the project participant is conservative and almost half that of the beta value of JHPL.

The validation team hereby confirms that the calculation of the benchmark is correct and in line with the requirements stated above.

The validation team, as described under verified the following assumptions made by the project participant in the IRR calculations:

- Project cost – 665 Million INR, GOMID Bid document and assumption of DLFPPL
- Gross generation - 36000 MWh (Pre Nilwande) & 43560 MWh (Post Nilwande)- The BID Document of Government of Maharashtra Irrigation Department (GOMID).
- Auxillary consumption 2% - based on the experience of DLHPPL –Records of auxillary consumption of BH1 (the earlier CDM project of DLHPPL)
- Tariff - INR 3.05 per unit and 3% escalation after every 10 years - Power Purchase Agreement (PPA), dated 21.1.1999 entered into between the MSEB, Irrigation Department of Government of Maharashtra and the Dodson-Lindblom Hydro Power Private Limited, for Bhandardara Hydro Power Project Phase-1
- Operation and maintenance expenses - 2.5% of the project cost in the first year and 4% annual escalation every year from the 2nd year onwards - based on the experience of DLHPPL in BH1and escalation has been considered in line with the rate of annual inflation in India during 2003-04.
- Balance lease amount which is to be paid to GOMID - INR 2627 Million- BID Document of Government of Maharashtra Irrigation Department (GOMID)
- GOMID charges- (INR 1,000 per MW) + (INR 0.05 water cess per unit + INR 0.06 maintenance cess per unit) and 10 %annual escalation – As per the BID Document of Government of Maharashtra Irrigation Department (GOMID)

All assumptions taken for IRR computation have been observed to be factual, reasonable and conservative and hence the validation team accepted these assumptions.

As detailed in the PDD, the project IRRs (Post - tax) have been computed over a period of 20 years based upon the project cash flow up to 20 years. However, the project activity also involves balance lease payment to GOMID aggregating to INR 2627 million which has been distributed over the entire lease period of 30 years. In the present context since the project IRR (Post - tax) computation has been limited only up to 20 years a major share of the Balance lease payment (INR 1942 million i.e. 74% of the Balance lease payment of INR 2627 million) which is to be projected



as expenses from 21st year to 30th year has not been reflected in the project cash flow that determines the project IRR (Post - tax). The validation team accepted the same, as it is as per the guidelines for IRR and also since it is conservative to limit the project IRR (Post - tax) to a period of 20 years.

The validation team has gone through the financial analysis of the project and it is evident that the IRR for the project activity without and with CDM revenues works out to 11.78% and 13.14% respectively. The sensitivity analysis presented in the PDD also corroborates the same. Sensitivity analysis done for $\pm 10\%$ of the generation also reveals that at +10% generation, without the CDM revenue, the IRR works out to only 14.45%. The validation team confirms that the project IRR [11.78% with base PLF] and 14.45% with sensitivity is below the benchmark [14.63%], establishing the dependence of CDM revenue for the project to be economically viable.

Institutional and Investment Barriers:

There has been considerable delay in determination of tariff by MERC at which energy is to be purchased by MSEDCL, and the absence of the peaking tariff resulted in delay in signing the PPA and lease agreement by the GOMWRD. Though the award for lease, own, operate and transfer was effected on December 31, 2004, the lease agreement was signed only on 25th July 2006. With the Indian national banks not willing to evaluate their application for finance in the absence of a signed PPA and lease deed, DLHPPL had to approach foreign financial institutions and procure debt on project finance basis by consolidating its assets and providing cross-collateralisation from other affiliates. Validation team could access the relevant documents concerning project finance. Further, DLHPPL was forced to sign an interim PPA on the normal tariff of INR 2.84 per kWh with an annual escalation of INR 0.03, as proposed by MERC till the peaking tariff policies are established. The validation team confirmed this by reviewing the PPA signed between DLHPPL and Maharashtra State Electricity Distribution Company Limited. This reduced tariff has led to the increased project cost and created uncertainty since the same is not envisaged during conceptualisation of this project activity. The validation team recognised this as a barrier.

Hydrological Barrier:

The Bhandardara reservoir is rain fed and is the only source of water for irrigation of the region down stream. With the delay in the completion of construction of the Nilwande dam, the release control for irrigation is now at the Bhandardara dam itself. BH-2 has been designed to operate as a peaking station i.e. 3 hours in the morning and 3 hours in the evening. The Randha Weir, which is the pick-up weir, has a small reservoir having a live storage capacity of 0.87 MCM, built to supply water to the powerhouse. In order for the plant to operate at its full load capacity of 34



MW, the turbine needs water at the rate of 77 Cumecs. The BH-2 station operated by DLHPPL is the first peaking station to be operated by an Independent Power Producer (IPP). BH-2 is solely dependent on the water released from the Bhandardara dam and it will not be able to operate if the discharge is less than 40 Cumecs. GOMWRD have to release water at constant rate from Bhandardara dam for irrigation purpose, which is less than the design discharge of BH-2 and this has severely affected the operations of BH-2. The validation team recognised this as a barrier.

Common Practice analysis:

The project participant compared the project activity with that of the other hydropower projects in the state of Maharashtra to demonstrate the common practice. It is noted that out of the total installed generation capacity of 16,089.84 MW as on 31.03.2006 in the State of Maharashtra, hydro power constituted to only 3224.66 MW (owned by State, Private and Central sectors) which is around 20.04% of the total installed capacity in the State. Of these hydro power plants, only 447 MW was owned by the Private sector and this capacity of 447 MW (Private sector owned hydro power project in the state of Maharashtra as on 31.03.2006) belong to M/s Tata Power Company Limited (TPCL), which are operational since pre-independence era.

The split up of the 447 MW hydropower projects owned by TPCL as verified from Annex VI of Western Regional Power Committee (WRPC) Annual Report 2005-06 are as follows:

Project	capacity
Bhira	6 x 25 MW
Bhivpuri	3 x 24 + 2 x 1.5 MW
Khopoli	3 x 12 + 2 x 24 MW
Bhira PSU	1 x 150 MW

It is verified from the links provided in the PDD and noted that all the above said private sector owned hydro power plants (447 MW) of TPCL are operational since pre-independence, Whereas this project activity is modernisation and retrofitting of an existing sick public sector facility by a private entity. Hence the project activity is not a common practice in the State of Maharashtra. The background survey conducted by the validation team revealed that the only other project of similar nature "12 MW hydropower plant in Bhandardara in Maharashtra, India", is that of the same management (DLHPPL) which is already registered as a CDM project (Project reference number: 0430). Thus it is established that the project activity is not a common practice in the region.

The Project Scenario is considered additional in comparison to the baseline scenario, and therefore eligible to receive Certified Emissions



Reductions (CERs) under the CDM, based on an analysis, presented by the PDD, of investment, institutional and hydrological barriers, and prevailing practice.

CARs 4 – 6 were issued applicable to baseline and additionality, which have been satisfactorily resolved. Refer Table 5 of Appendix A

CARs

- The title of section B and B 1 of PDD is not as per version 03.1 are not as per the consolidated baseline methodology for grid connected electricity generation from renewable sources ACM 0002, Version 6, dated 19 May 2006
- Project boundaries not clearly defined.
- Latest version of the additionality is not used for demonstration of additionality. The additionality has been identified by barrier analysis – investment, hydrological and institutional barriers. While Step wise analysis has not opted for Step 2, Impact CDM registration (step 5) indicates IRR consideration . Also evidences lease, PPA are not available.

Resolution

- Changed accordingly in the revised PDD version 03
- Line diagram included in the revised PDD version 03
- The latest version of the additionality tool i.e. version 04 has been used in the revised PDD version 03.

Conclusion

Changes made in the revised PDD for the title of the baseline methodology, line diagram with clear definition of project boundary included and the Additionality tool version 4 used to demonstrate additionality step by step. Hence the CARs are closed.

3.3 Monitoring Plan

The Project uses the ACM 0002 (“Consolidated monitoring methodology for grid-connected electricity generation from renewable sources”, Version 06). Refer discussions on the validity of the methodology at section 3.2 above.

The adopted monitoring methodology has been chosen based on the following reasons:

- The gross electricity generation monitored continuously.
- The baseline generation is the historical 5 year data which is recorded to be 29.86 Gwh (annual)
- Monitoring of electricity imported from Grid to account for project emissions.

The emission factor for the western regional electrical grid of India has been determined and the combined margin emission factor fixed *ex-ante* as 0.79 tCO₂/MWh from the latest published data of CEA, Version 3, which has been calculated in accordance with ACM0002. The above



monitoring indicators will give opportunity for real measurements of achieved emission reductions. Details of the data to be collected, the frequency of data recording, format and storage type are described. Algorithms and formulae used in the calculations are clearly presented. Detailed monitoring procedures, including procedures for calibration and QA/QC of monitoring reports are described.

During site visit it was verified that the meters installed are calibrated as per the plan and the metering equipments are being maintained in accordance with electricity standards. As said in the PDD, the project participant has established procedures for the periodic monitoring and review of the generation data. The validation team verified the procedures for the data adjustments and uncertainties described in the PDD and accepted the same, as it is found to be conservative.

3.4 Calculation of GHG Emissions

As required under ("Consolidated monitoring methodology for grid-connected electricity generation from renewable sources", Version 06), the baseline emissions are calculated based on the historical generation data for last 5 years. The detailed algorithms are described later under sections B 6.3 of the PDD.

The emission reductions have been calculated as per ACM 0002 and latest CEA data on CO₂ Baseline Version 3. The baseline generation is the historical 5-year data, which is recorded to be 29.86 GWh (annual). The validation team could access the generation data for the years 2002 to 2006 to verify this. The combined margin emission factor is fixed *ex-ante* as 0.79 tCO₂/MWh from the latest CEA database.

The project emission due to the import of the power within the project boundary is estimated from the power import data from June 2007 to May 2008 and is found to be 0.78 % of the net exports. The validation team verified this data from the internal records of DLHPPL and accepted the same for projections during the crediting period.

The methodology ACM 0002, Version 6 specifies in the context of electric power projects, the project participants need not consider the emission sources for emissions arising due to activities such as power plant construction, fuel handling (extraction, processing, and transport), and land inundation (for hydroelectric projects) as leakage in applying this methodology. Therefore the leakage is not considered.

The estimated annual average of approximately 15,914 tCO₂e over the crediting period of emission reduction represents a reasonable estimation using the assumptions given by the project.



CAR 7 was issued applicable to calculation of GHG emissions, which have been satisfactorily resolved. Refer Table 5 of Appendix A.

CAR

- Potential leakages/project emissions occurring due to power import during start up and other activities have not been identified.

Resolution

- Project emission on account of import of power from the state grid during the lean period has been considered in the emission reduction computation and the same has been accordingly reflected in the PDD.

Conclusion

Project emissions have been accounted for the grid imports during plant shutdown and start up and this is included in the CERs estimation and also detailed in the revised PDD. Hence this CAR is closed.

3.5 Sustainable Development Impacts

A summary of the impact of the project on land use, water quality, air quality, and local ecosystem and noise levels in the surrounding areas has been provided.

Validation team could access an environment review summary that had been prepared and it takes into account above mentioned impacts and the project.

Moreover the project is refurbishment of the existing system, the environment impact assessment have been carried during the conceptualization stage.

The project with increased power generation from the existing system, is expected provide continued job opportunities to the local population. During site visit it was noticed that the local villagers are employed for the refurbishment works and the further works like the balancing storage facility to be constructed, as part of this project activity will lead to increased employment opportunities for the local public.

The project is not likely to create any adverse environmental effect. The project does not discharge any effluent. Hence there are no trans-boundary impacts for the project. No negative impacts have been identified for the project. The project activity has got the clearance from the local state pollution control Board on 04/01/2008.

3.6 Comments by Local Stakeholders

The project proponent had invited public comments through local newspapers for reviewing the Environment review summary. This notice had been published on 21 July 2005 prior to taking over of the plant by DLHPPL. However during the site visit the validation team could interact with the local villagers who had expressed their satisfaction about the project and the increased power generation and consequent job opportunities. Subsequent to this a meeting was held on 15 June 2007 at



the local panchayat office. The minutes of meeting was provided to the validation team. All the members present in the consultation process has given their consent in favour of the project. The project participant maintains the photographic evidences and the minutes of the local stakeholders consultation meeting.

The stakeholders viewed Modification and retrofitting of the existing 34 MW hydropower plant at Bhandardara -2 (project activity) in Maharashtra state in India by Dodson-Lindblom Hydro Power Private Limited (DLHPPL) as contributing to local environmental benefits and socio-economy. Overall, there was agreement that the project activity was a beneficial project from the local sustainable development. The local stakeholders interviewed during the site visit of the validation activity endorsed these views.

CAR 8 and CL 5 was issued applicable to local stakeholder comments, which have been satisfactorily resolved. Refer Table 5 of Appendix A.

CAR

- It is not clear from the PDD whether the local stake holder consultation process has taken place.

Resolution

- As part of CDM project, an Environmental Review Summary (ERS) was prepared by DLHPPL by its consultants and this ERS was given for public scrutiny. An advertisement was given in Dainik Lokmat of Ahmednagar edition in Marathi language on 20/06/2005 (local newspapers) in vernacular language. The advertisements informed about the project activity and about the availability of ERS report and inviting public and local stakeholders to avail a copy of the document and offer their comments. ERS was kept for public inspection at the project sites. A register was maintained to make the entries of the issue of ERS. No public comments were received.
- Subsequently a local stakeholders' consultation meeting was conducted at the local Panchayat office on 15th June, 2007 and the minutes of the meeting is given in enclosure – II

Conclusion

Copy of local stakeholder meeting held on 15/06/2007 has been provided to the validation team. Moreover the validation team interacted with the stakeholders of nearby localities. The local stakeholders confirmed their participation in the meeting and expressed that the project activity is helpful for the locality. There was no adverse comment about the project from any of the local stakeholders interacted. Hence the CAR is closed.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

According to the modalities for the Validation of CDM projects, the DOE shall make publicly available the project design document and receive, within 30 days; comments from Parties, stakeholders and UNFCCC accredited non-governmental organizations and make them publicly available.



Bureau Veritas Certification published the project documents on the UNFCCC CDM website (<http://cdm.unfccc.int>) on 22/04/2007 and invited comments within 21/05/2007 by Parties, stakeholders and non-governmental organizations. No comments were received during this period.

5 VALIDATION OPINION

Bureau Veritas Certification has performed a validation of the Modification and retrofitting of the existing 34 MW hydropower plant at Bhandardara -2 (project activity) in Maharashtra state in India by Dodson-Lindblom Hydro Power Private Limited (DLHPPL). The validation was performed on the basis of UNFCCC criteria and host country criteria and also on the criteria given to provide for consistent project operations, monitoring and reporting.

The validation consisted of the following three phases: i) a desk review of the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) the resolution of outstanding issues and the issuance of the final validation report and opinion.

Project participant/s used the tool for demonstration of the additionality. In line with this tool, the PDD provides analysis of investment, hydrological, institutional barriers and common practice analysis to determine that the project activity itself is not the baseline scenario.

Modification and retrofitting of the existing 34 MW hydropower plant at Bhandardara -2 (project activity) in Maharashtra state in India by Dodson-Lindblom Hydro Power Private Limited (DLHPPL), is likely to result in reductions of GHG emissions partially. An analysis of the investment, hydrological, institutional barriers and common practice analysis demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. Given that the project is implemented and maintained as designed, the project is likely to achieve the estimated amount of emission reductions.

The review of the project design documentation (Version 02 and 03) and the subsequent follow-up interviews has provided Bureau Veritas Certification with sufficient evidence to determine the fulfillment of stated criteria. In our opinion, the project correctly applies and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria.

The validation is based on the information made available to us and the engagement conditions detailed in this report.



6 REFERENCES

Category 1 Documents:

Documents provided by Dodson – Lindblom Hydro Power Private Limited that relate directly to the GHG components of the project.

- /1/ Evidence of CDM consideration – Copy of the board resolution dated 9 February 2004
- /2/ Host country approval from Ministry of Environment and Forests – DNA for India – 4 / 8 / 2007 – CCC dated 18 June 2007 for DHPPL for this project.
- /3/ Declaration of approval from Ministry of VROM, Netherlands, Reference IZ/200082109 dated 11/08/2008
- /4/ Project Design Document Version 01 dated 07 / 02 / 2007 subsequently revised to version 02 dated 04/ 06/ 2008 and version 03 dated 02/03/2009.
- /5/ Lease deed for use of the facility between GOMWDRD and DHPPL dated 25 July 2006
- /6/ Handing over document dated 19 Dec2006 by GOMWRD to DHPPL.
- /7/ Power purchase agreement dated 28 June 2006 signed by DHPPL with Maharashtra State Electricity Distribution Company Limited
- /8/ IRR and CER calculations
- /9/ Lease deed for BH2 between Dodson Lindblom and Govt. of Maharashtra dated 25/07/2006

Category 2 Documents:

Background documents related to the design and/or methodologies employed in the design or other reference documents.

- /1/ Statement on the modalities for communicating with the Executive Board and the UNFCCC Secretariat dated 26 June 2007
- /2/ CEA data version 1.1 & Version 3 dated 15/12/2007
- /3/ Kyoto Protocol to the United Nations Framework Convention on Climate Change, United Nations 1997
- /4/ Tool for the demonstration and assessment of additionality”. Version -4
- /5/ Consolidated baseline methodology for grid-connected electricity generation from renewable energy sources. - Approved Consolidated Methodology ACM 0002 Ver 6 dated 19 May 2006 -
- /6/ Lifetime assessment note.
- /7/ Local stake holder consultation process minutes of meeting dated 15 / 06 / 2007
- /8/ Environment review summary
- /9/ HCA approval from GOI, Ministry of E&F dated 18/06/2007
- /10/ Written approval from Ministry of VROM, State of Netherlands dated 17/10/2007



- /11/ Govt of Maharashtra, Irrigation Department- bid document no: SE/IIPDC/BHEP/PII-II/1
- /12/ Consent No: BO/RO(P&P)/EIC No.NK-1080-07/E/CC-202 Dated 04/01/08
- /13/ Minutes of the Board meeting of Directors of Dodson Lindblom held on 9th February 2004.
- /14/ Letter Ref: MHB 152-A/4475 Dated 01/06/2007 from Director of Dodson – Lindblom Hydro Power Private Limited to The Chairman, National CDM Authority.
- /15/ Plant maintenance schedule
- /16/ Six monthly test certificates for the gross energy meter
- /17/ Records of the joint meter readings at the gross energy meter
- /18/ http://www.bloomberg.com/markets/index.html?Intro=intro_markets
- /19/ <http://rbidocs.rbi.org.in/rdocs/AnnualReport/PDFs/56232.pdf>
- /20/ www.bse.com
- /21/ <http://www.wrpc.nic.in/annualreport0506/annex6.pdf>
- /22/ <http://www.wrpc.nic.in/annualreport0506/annex6.pdf>
- /23/ <http://www.prdomain.com/companies/T/TataPower/newsreleases/200832554755.htm>;
- /24/ <http://www.tatapower.com/services/power-projects.aspx>;
- /25/ http://www.domain-b.com/companies/companies_v/voith_siemens/20030626_online.html
- /26/ Loan agreement between Dodson Lindblom Hydro power Pvt Ltd and State Bank of India dated 14/09/2006
- /27/ Local currency Loan agreement between Dodson Lindblom Hydro power Pvt Ltd and International Finance Corporation dated 21/12/2005
- /28/ Correspondence between International Finance Corporation and Hong Kong and Shanghai Banking Corporation dated 08/02/2007
- /29/ Loan agreement between Dodson Lindblom Hydro power Pvt Ltd and DEG-DEU'TSCHE INVESTITION dated 21/12/2005
- /30/ Fax from DEG-DEU'TSCHE to Dodson Lindblom Hydro power Pvt Ltd dated 29/11/2006
- /31/ Reserve Bank of India - Annual Report, 2004. Page no.172 ; (<http://rbidocs.rbi.org.in/rdocs/AnnualReport/PDFs/56232.pdf>)
- /32/ <http://cdm.unfccc.int/Projects/DB/RWTUV1190101228.6/ReviewInitialComments/6USZ3WQZ5259KXKF5CYLILNL8YA8GL>
- /33/ <http://www.bseindia.com/histdata/hindices.asp>



/34/ <http://cdm.unfccc.int/Projects/DB/RWTUV1190101228.6/ReviewInitialComments/6USZ3WQZ5259KXKF5CYLILNL8YA8GL>

/35/ <http://www.personalfn.com/detailb.asp?date=7/10/04&story=6>

/36/ http://www.bloomberg.com/markets/index.html?Intro=intro_markets

Persons interviewed:

List persons interviewed during the validation or persons that contributed with other information that are not included in the documents listed above.

- /1/ Mr Prem Paunikar – DHPPL
- /2/ Mr SB Desai - DHPPL
- /3/ Mr R V Jadhav - DHPPL
- /4/ Mr S Dasgupta – Bunge India Ltd., - Project Developer
- /5/ Mr Pandurang Bambre – Local stake holder
- /6/ Mr Lahu Harwande – Local stake holder
- /7/ Mr Vital Patekar – Local stake holder
- /8/ Mr Walu Bambre – Local stake holder
- /9/ Mr Budha Bande – Local stake holder

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APPENDIX A:

VALIDATION PROTOCOL

Table 1 Mandatory Requirements for Clean Development Mechanism (CDM) Project Activities

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference / Comment
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3.	Kyoto Protocol Art.12.2	OK	Table 2, Section A.3.
2. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof	Kyoto Protocol Art. 12.2, Marrakesh Accords, CDM Modalities §40a	Host Country Approval No: 4/8/2007-CCC Dated 18/06/2007 from MOEF, Government of India	Table 2, Section A.3 Host country approval obtained from MOEF, India
3. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC	Kyoto Protocol Art.12.2.	OK	Table 2, Section A.3.
4. The project shall have the written approval of voluntary participation from the designated national authorities of each party involved, including confirmation by the host party that the project activity assists it in achieving sustainable development	Kyoto Protocol Art. 12.5a, Marrakesh Accords, CDM Modalities §40a, §28, Annex 3 of the Resolução Interministerial 01/03	Host Country Approval No: 4/8/2007-CCC Dated 18/06/2007 from MOEF, Government of India and Declaration of approval from Ministry of VROM, Netherlands	Host country approval received from Ministry of Environment and Forest (MOEF), DNA, India and Declaration of approval from Ministry of VROM,

* MoV = Means of Verification, DR = Document Review, I = Interview



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REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference / Comment
		dated 11/08/2008	Netherlands dated 11/08/2008 obtained
5. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change	Kyoto Protocol Art. 12.5b	OK	Table 2, Section B.6.
6. Reduction in GHG emissions shall be additional to any that would occur in absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity	Kyoto Protocol Art. 12.5c, Marrakesh Accords, CDM Modalities §43 and 44	OK	Table 2, Section B.5.
7. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance	Marrakech Accords	OK	No public funding for the project from Annex1 parties is indicated.
8. Parties participating in the CDM shall designate a national authority for the CDM	Marrakech Accords, CDM Modalities §29	OK	Ministry of Environment and Forest has been designated national authority by the host country i.e. India.
9. The host country shall be a Party to the Kyoto Protocol	Marrakech Accords, CDM Modalities §30	OK	Host country, India is a party to the Kyoto Protocol
10. Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received	Marrakech Accords, CDM Modalities §37b	OK	Table 2, Section E.

* MoV = Means of Verification, DR = Document Review, I = Interview



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REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference / Comment
11. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.	Marrakech Accords, CDM Modalities §37c	OK	Table 2, Section D.
12. Baseline and monitoring methodology shall be previously approved by the CDM Methodology Panel	Marrakech Accords, CDM Modalities §37e	OK	Table 2, Section B.1. and B.6.
13. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP	Marrakech Accords, CDM Modalities §37f	OK	Table 2, Section B.7.
14. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available	Marrakech Accords, CDM Modalities, §40	OK	PDD was made available for public comments from 22/04/2007 to 21/05/2007
15. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances	Marrakech Accords, CDM Modalities, §45 b, c, e	OK	Table 2, Section B.4.
16. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure	Marrakech Accords, CDM Modalities, §47	OK	Table 2, Section B.4.
17. The project design document shall be in conformance with the UNFCCC CDM-PDD format and fulfilled according to the guidelines for completing CDM-PDD, CDM-NMB, and CDM-NMM	Marrakech Accords, CDM Modalities, Appendix B, EB Decisions	OK	Guideline for completing CDM PDD – Version 6.2 dated 19/12/2006

* MoV = Means of Verification, DR = Document Review, I = Interview

**Table 2 Requirements Checklist**

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
A. General Description of Project Activity <i>The project design is assessed.</i>					
A.1. Title of the project activity, version number and date of the document	1,4	DR I	Modification and retrofitting of the existing 34 MW hydropower plant at Bhandardara -2 (Project Activity) in Maharashtra state in India by Dodson – Lindblom Hydro Power Private Limited (DLHPPL). Version: 01, dated 07/02/2007. The header of the PDD mentions Version 03. It is not as per1 Version 03.1	CAR 1	Corrected in the revised PDD OK
A.2. Description of the project activity					
A.2.1. Is the purpose of the project activity included?	1,4	DR I	The purpose of the project activity is to carry out modification and retrofit the existing 34 MW power plant to augment the electricity generation from the present average annual generation of 29.86 GWh by additional 25.14 GWh This power will be exported to the Western Grid	OK	OK
A.2.2. Is the view of the project participants on the contribution of the project activity to sustainable development included?	1,4	DR I	According to project participants, the project activity contributes to sustainable development through – 1. Increased employment during modification and retrofitting. 2. Infrastructure and basic amenities development in the surrounding areas.	OK	OK
A.2.3. Is the project in line with relevant	1,4	DR	Yes. Indian legislation allows hydroelectric power	OK	OK

* MoV = Means of Verification, DR = Document Review, I = Interview



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CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
legislation and plans in the host country?		I	generation.		
A.2.4.Is the project in line with host-country specific CDM requirements?	1,4	DR I	It is not clear from the PDD whether the specific CDM requirements like Host country approval have been obtained	CAR 2	Host country approvals obtained OK
A.2.5.Is the project in line with sustainable development policies of the host country?	1,4	DR I	Yes, the project proponents view as addressed in Section A 2 of PDD is in line with sustainable development policies of India.	OK	OK
A.2.6.Will the project create other environmental or social benefits than GHG emission reductions?	1,4	DR I	The project is expected to benefit the local population by the employment opportunities, direct and indirect, apart from more reliable electric supply	OK	OK
A.3. Project participants					
A.3.1.Are Party(ies) and private and/or public entities involved in the project activity listed?	1,4	DR I	Yes, the host party is India and the private entity is Dodson – Lindblom Hydro Power Private Limited (DLHPPL) listed. Refer A.3 of PDD.	OK	OK
A.3.2.Is the contact information provided in annex 1 of the PDD?	1,4	DR	Yes, provided in Annex 1 of PDD	OK	OK
A.3.3.Is this information indicated using the tabular format?	1,4	DR I	Yes. Information is indicated in tabular format in Annex 1.	OK	OK
A.4. Technical description of the project activity					
A.4.1. Location of the project activity					
A.4.1.1. Host country Party(ies)	1,4	DR	Government of India	OK	OK
A.4.1.2. Region/State/Province etc.	1,4	DR	Akola Taluka, Ahmednagar District, Maharashtra	OK	OK

* MoV = Means of Verification, DR = Document Review, I = Interview

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CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			state.		
A.4.1.3. City/Town/Community etc.	1,4	DR	Bhandardara, Village	OK	OK
A.4.1.4. Detailed description of the physical location, including information allowing the unique identification of this project activity.	1,4	DR	The Project site is located at Village Bhandardara, in Ahmednagar district. It is approximately 140 Km from the nearest airport in Mumbai. The latitude and longitudes and unique identification of the location are not mentioned.	CAR 3	Corrected in the revised PDD. OK
A.4.2. Category of the project activity					
A.4.2.1. Is the category of the project activity specified?	1,4	DR	Yes, Project activity is categorized under sectoral Scope 01 Category 1: Energy industries (renewable - / non-renewable sources)	OK	OK
A.4.2.2. Is it justified how the proposed project activity conforms to the project category selected?	1,4	DR	Yes. A Grid connected electricity-generating project using renewable sources through modification and retrofitting of the existing 34 MW power plant.	OK	OK
A.4.3. Technology to be employed <i>Validation of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The validator should ensure that environmentally safe and sound technology and know-how is used.</i>					
A.4.3.1. Does the project design engineering reflect current good practices?	1,4	DR I	The basic technology already exists and the same is being modified and retrofitted as described in Enclosure 1 of PDD.	OK	OK
A.4.3.2. Does the project use state of the	1,4	DR	The technology is well established and the project	OK	OK

* MoV = Means of Verification, DR = Document Review, I = Interview



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CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?		I	activity envisages modification and retrofitting of the existing system to improve the present generation performance		
A.4.3.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	1,4	DR I	The project activity involves modification and retrofitting of the existing system. However the lifetime of the existing system needs to be verified	CL 1	Life time certificate produced. OK
A.4.3.4. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	1,4	DR I	It is not clear from the PDD whether the project activities described in Enclosure 1 need initial training as well as maintenance efforts during the project period	CL 2	Corrected in revised PDD. OK
A.4.3.5. Does the project make provisions for meeting training and maintenance needs?	1,4	DR I	Refer A.4.3.4.	CL 2	OK
A.4.4. Estimated amount of emission reductions over the chosen crediting period.					
A.4.4.1. Is the estimate of total anticipated reductions of tons of CO ₂ equivalent provided?	1,4	DR	Yes, the estimated emission reductions over the 10 years fixed crediting period would be 2.23.740 tCO ₂ .	OK	Ok
A.4.4.2. Is this information indicated using the tabular format?	1,4	DR	Yes, Indicted in tabular format in the PDD section A.4.4.	OK	OK

* MoV = Means of Verification, DR = Document Review, I = Interview



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
A.4.5. Public funding of the project activity					
A.4.5.1. Is it indicated whether public funding from Parties included in Annex I is involved in the proposed project activity?	1,4	DR	There is no official development assistance (ODA) funding to be used for the project activity as indicated in A 4.5 of PDD	OK	OK
A.4.5.2. If public funding is involved, is information on sources of public funding for the project activity provided in Annex 2, including an affirmation that such funding does not result on a diversion of official development assistance and is separate from and is not counted towards the financial obligations of those Parties?	1,4	DR	Not applicable.	OK	OK
B. Project Baseline <i>The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.</i>					
B.1. Baseline Methodology <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
B.1.1. Are the title and the reference of the baseline methodology applicable to the project activity defined?	1 UNF CCC web site	DR I	The title of section B and B 1 of PDD is not as per version 03.1 are not as per the consolidated baseline methodology for grid connected electricity generation from renewable sources ACM 0002, Version 6, 19 May 2006	CAR 4	Corre cted in revise d

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VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
					PDD OK
B.1.2. Is the baseline methodology previously approved by the CDM Methodology Panel?	1,4	DR	Yes. Refer B.1.1	OK	OK
B.1.3. Does the proposed project activity meet the applicability conditions of the methodology?	1,4	DR	Yes. This methodology applies to project activities that generate electricity from renewable sources. This is adequately explained in B.2 of PDD.	OK	OK
B.2. Description of how the methodology is applied in the context of the project activity					
B.2.1. Is the baseline methodology the one deemed most applicable for this project and is the appropriateness justified?	1,4	DR	The approved baseline methodology is applicable to grid-connected renewable power generation project activities Refer B.2. of PDD	OK	OK
B.3. Description of the project boundary for the project activity					
B.3.1. Are the project's spatial (geographical) boundaries clearly defined?	1,4	DR	Project boundaries not clearly defined.	CAR 5	Corre cted in revis ed PDD OK
B.3.2. Are the project's system (components and facilities used to mitigate GHGs) boundaries clearly defined?	1,4	DR	Yes,	OK	OK

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VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
B.4. Description of how the baseline scenario is identified and description of the identified baseline scenario					
B.4.1. Does the PDD explains how most plausible baseline scenario is identified?	1,4	DR	Yes. Section B 4 of PDD explains the most plausible baseline scenario is continuation of current practice of electricity generation without modification. This would result in additional power generation from power sources using fossil fuels.	OK	OK
B.5. Description of how the anthropogenic GHG emissions by sources are reduced below those that would have occurred in the absence of the proposed project activity					
B.5.1. Is the proposed project activity additional?	1,4	DR	Latest version of the additionality is not used for demonstration of additionality. The additionality has been identified by barrier analysis – investment, hydrological and institutional barriers. While Step wise analysis has not opted for Step 2, Impact CDM registration (step 5) indicates IRR consideration Also evidences for investment, PPA are not available	CAR 6	Corrected in revised PDD OK
B.5.2. Are national policies and circumstances relevant to the baseline of the proposed project activity summarised?	1,4	I	Yes, they are summarised in Step 1b of additionality check.	OK	OK

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VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
B.6. Emission Reductions Validation of baseline GHG emissions will focus on methodology transparency and completeness in emission estimations.					
B.6.1 Explanation of methodological choices <i>The validation of predicted project GHG emissions focuses on transparency and completeness of calculations.</i>					
B.6.1.1. Are all relevant methodological choices / scenarios explained?	1,4	DR I	Yes Refer A.6.1 of PDD. The methodological choices are historical emissions for 120 months which as defined in the ACM 0002 ver 6	OK	OK
B.6.1.2. Are various emissions like project emissions, Baseline emissions and Leakages considered for calculations?	1,4	DR I	Yes Refer B.6.1 of PDD. The calculations for project emissions, baseline emissions and leakages are considered.	OK	OK
B.6.2. Data and parameters that are available at validation. <i>Compilation of information on the data and parameters that are not monitored throughout the crediting period but are determined only once.</i>					
B.6.2.1. Are all data or parameters; the chosen value or, where relevant, the qualitative information, using the table provided?	1,4	DR	Refer B.6.2 of PDD It indicates Emission factor for for western grid and the baseline power generation is mentioned in the tabular format	OK	OK

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VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
B.6.3. Ex-ante calculations of emission reductions. <i>The validation of predicted project GHG emissions focuses on transparency and completeness of calculations.</i>					
B.6.3.1. Are all aspects related to direct and indirect GHG emissions, including leakage, captured in the project design?	1,4	DR	Yes.	OK	OK
B.6.3.2. Are the GHG calculations documented in a complete and transparent manner?	1,4	DR	Yes. Calculations are documented in complete and transparent manner	OK	OK
B.6.3.3. Have conservative assumptions been used to calculate project GHG emissions?	1,4	DR	Yes.	OK	OK
B.6.3.4. Have all relevant greenhouse gases and source categories listed in Kyoto Protocol Annex A been evaluated?	1,4	DR	Yes. CO ₂ .	OK	OK
B.6.3.5. Are uncertainties of external data sources for emissions reduction estimated?	1,4	DR	The CEA data base has been considered as external source	OK	OK
B.6.3.6. Are potential leakage effects beyond the chosen project boundaries properly identified?	1,4	DR	Potential leakages/project emission occurring due to power import during start up and other activities have not been identified.	CAR 7	Corrected in revised PDD

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VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
B.6.3.7. Have these leakage effects been properly accounted for in calculations?	1,4	DR	Not required	OK	OK
B.6.3.8. Does the methodology for calculating leakage comply with existing good practice?	1,4	DR	Not required.	OK	OK
B.6.3.9. Are the calculations documented in a complete and transparent manner?	1,4	DR	Not required.	OK	OK
B.6.3.10. Have conservative assumptions been used when calculating leakage?	1,4	DR	Not required.	OK	OK
B.6.3.11. Are uncertainties in the leakage estimates properly addressed?	1,4	DR	Not required.	OK	OK
B.6.4. Summary of the ex-ante calculations of emission reductions. <i>Summarize the results of emission reductions for all years of the crediting period.</i>					
B.6.4.1. Are the reductions of emissions of the project captured as per the tabular form?	1,4	DR	Yes	OK	OK
B.7. Application of the monitoring methodology and description of Monitoring Plan <i>The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed.</i>					
B.7.1. Is the monitoring methodology previously	1,4	DR	Yes. Monitoring methodology (ACM0002 version	OK	OK

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VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
approved by the CDM Methodology Panel?			6), for grid-connected electricity generation from renewable sources		
B.7.2. Is the monitoring methodology applicable for this project and is the appropriateness justified?	1,4	DR	The reasons for choosing this monitoring methodology are appropriately justified in B.6.1 of the PDD.	OK	OK
B.7.3. Does the monitoring methodology reflect good monitoring and reporting practices?	1,4	DR	Yes. Refer B.7.2 of PDD	OK	OK
B.7.4. Is the discussion and selection of the monitoring methodology transparent?	1,4	DR	Yes. Refer B.7.2 of PDD.	OK	OK
B.7.5. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?	1,4	DR	The archiving procedure are not indicated	CL 3	Corrected in revised PDD OK
B.7.6. Are the choices of project GHG indicators reasonable?	1,4	DR	Yes.	OK	OK
B.7.7. Will it be possible to monitor / measure the specified project GHG indicators?	1,4	DR	Yes.	OK	OK
B.7.8. Will the indicators give opportunity for real measurements of achieved emission reductions?	1,4	DR	Yes.	OK	OK
B.7.9. Will the indicators enable comparison of project data and performance over time?	1,4	DR	Yes.	OK	OK
B.8. Details of the baseline and its development					
B.8.1. Is the date of completion provided?	1,4	DR I	The date of completion of the baseline study is 07.02.2007. Refer B.8.	OK	OK
B.8.2. Is contact information provided?	1,4	DR	Yes. The contact details provided in Annex 1 of	OK	OK

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VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			PDD.		
C. Duration of the Project activity / Crediting Period <i>It is assessed whether the temporary boundaries of the project are clearly defined.</i>					
C.1. Are the project's starting date and operational lifetime clearly defined and reasonable?	1,4	DR I	The PDD mentions the starting date as 19/12/2006 Operational lifetime not indicated in the PDD	CL 4	Corre cted in revise d PDD OK
C.2. Is the assumed crediting time clearly defined and reasonable (renewable crediting period of max. two x 7 years or fixed crediting period of max. 10 years)?	1,4	DR I	Fixed crediting period of 10 years from 01/06/2007 is chosen. This needs to be changed, as the PDD is web hosted from 22/04/2007 to 21/05/2007.	CL 5	Corre cted in revise d PDD OK
D. Environmental and Social Impacts <i>Documentation on the analysis of the environmental and social impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.</i>					
D.1.1. Has an analysis of the environmental and social impacts of the project activity been sufficiently described?	1,4	I	Section D of PDD indicates – MoEF has exempted small runoff the river hydropower projects with project cost less than Rs 500 Million from environmental clearances. PDD is silent about the	CL 6	Corre cted in the revise

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VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			project cost.		d PDD OK
D.1.2.Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	1,4	I	As per D 1 of PDD, EIA is not required as per MoEF notification for small run of river hydropower projects. However the Project proponent has conducted an Environment Review Summary (ERS) has been carried out 21/06/2005	CL 6	Cons ent of PCB obtain ed. OK
D.1.3.Will the project create any adverse environmental or social effects?	1,4	I	No, project is not creating any adverse environmental and social impacts.	OK	OK
D.1.4.Are transboundary environmental and social impacts considered in the analysis?	1,4	I	No adverse trans boundary impacts envisaged.	OK	OK
D.1.5.Have identified environmental and social impacts been addressed in the project design?	1,4	I	Section D.1 of PDD addresses these in ERS	OK	OK
D.1.6.Does the project comply with environmental legislation in the host country?	1,4	I	Though the PDD mentions that EIA assessment is not required, there is no mention of compliance with environmental legislation in the host country.	CL 6	Cons ent of state PCB obtain ed for the projec t OK

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VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
E. Stakeholder Comments <i>The validator should ensure that a stakeholder comments have been invited and that due account has been taken of any comments received.</i>					
E.1.1. Have relevant stakeholders been consulted?	1,4	DR	It is not clear whether the local stake holder consultation process has taken place.	CAR 8	Corrected in the revised PDD OK
E.1.2. Have appropriate media been used to invite comments by local stakeholders?	1,4	DR	Refer E 1.1	CAR 8	OK
E.1.3. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	1,4	I	To obtain environmental clearance such consultation is required.	CAR 8	OK
E.1.4. Is a summary of the stakeholder comments received provided?	1,4	DR	Refer E 1.1.	CAR 8	OK
E.1.5. Has due account been taken of any stakeholder comments received?	1,4	DR	Refer E.1.4	CAR 8	OK

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VALIDATION REPORT

Table 3 Baseline and Monitoring Methodologies: ACM 0002 Ver 6

CHECKLIST QUESTION	Ref.	MoV ^a	COMMENTS	Draft Concl	Final Concl
1. Baseline Methodology					
1. 1. Applicability					
1.1.1. Does the project activity generate electricity as defined the chosen methodology	3	DR I	The project activity involves modification and retrofitting of the existing hydro power plant	OK	OK
1.1.2. Is the power connected to the grid?	3	DR I	Yes, the power is supplied to the Grid.	OK	OK
1.1.3 Is the baseline methodology used in conjunction with the approved monitoring methodology ACM 0002	3	DR	Yes baseline methodology is used in conjunction with approved monitoring methodology	OK	OK
1.1.4. Does the project activity relates to run of river hydro power grid-connected electricity generation plant?	3	DR I	Yes.	OK	OK
1.1.5. Does proposed project activity falls under electricity generation from renewable sources	3	DR I	Yes	OK	OK
1.1.6. Can the geographic and system boundaries for the relevant electricity grid be clearly identified?	3	DR Inter net	Yes, relevant electricity grid indicated is Western grid.	OK	OK
1.1.7. Is the information on the characteristics of the grid available?	3	DR Inter net	Yes, the characteritics of the grid are available.	OK	OK
1.1.8. Will Project activity use any fossil fuel /Natural Gas (NG) or Liquefied Natural gas (LNG)?	3	DR	No.	OK	OK
1. 2. Project boundary					
1.2.1. Did the project participant account for the CO ₂ emission from electricity generation in fossil fuel fired power that is displaced due to project activity?	3	DR	Yes	OK	OK

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VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
1.2.2. Does the spatial extent of the project boundary include the power plant at project site and all power plants connected physically to the electricity system that the CDM project power plant is connected to?	3	DR	The project boundary is not defined in PDD.	CAR 5	Corrected in revised PDD OK
1.2.3 Whether choice of inclusion/exclusion CH4 emissions in project and baseline are documented in PDD?	3	DR	The choice is documented in PDD	OK	OK
1.2.4 Is the regional project electricity system identified by the spatial extent of the power plants that can be dispatched without significant transmission constraints?	3	DR	Yes identified.	OK	OK
1.2.5. Are the assumptions made in determining the project electricity system defined and justified?	3	DR	There are no assumptions made in defining the project electricity system,	OK	OK
1.2.6 Does the application of this methodology result in a clear grid boundary?	3	DR	Yes.	OK	OK
1.2.7 Does the application of this methodology result in a given country specific variations in grid management policies?	3	DR	No	OK	OK
1.2.8 If answer to question is yes then whether DNA of the host country provides the delineation of grid boundaries.	3	DR	NA	OK	OK
1.2.9 If answer to question is no whether DNA guidance is available for defining the boundary.	3	DR	Yes	OK	OK
1.2.10 If answer to question is no whether the layered dispatch system (e.g.	3	DR	Yes, Western Region grid is considered.	OK	OK

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VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
state/provincial/regional/national) the regional grid is used?					
1.2.11 If the regional grid is not used whether the national grid is used.	3	DR	Not applicable	OK	OK
1.3. Identification of alternative baseline scenarios					
1.3.1 Are the various options for alternatives explained in PDD?	3	DR	Yes	OK	OK
1.3.2. Is the explanation of these options transparent and complete	3	DR	Yes	OK	OK
1.3.3 Are the calculations for baseline are as per latest version of ACM 0002 as required by this methodology?	2,3	DR	Yes	OK	OK
1.3.4. Where EG-historical is the average of historical electricity delivered by the existing facility to the Grid, whether spanning all data from the most recent available year (or month, week or other time period) to the time at which the facility was constructed, retrofit, or modified in a manner that significantly affected output (i.e., by 5% or more), expressed in MWh per year. A minimum of 5 years (120 months) (excluding abnormal years) of historical generation data is required in the case of hydro facilities.	2,3		120 month historical data is considered as baseline emissions	OK	OK
1.3.5. Whether a minimum of five years data is referred and used in case the project is non-hydro?	2,3		Yes	OK	OK
1.3.6. Is it required to estimate the point in time when the existing equipment would need to be replaced in the absence of project activity?	2,3		No.	OK	OK
1.3.7. If the answer to question is Yes Whether project participants have taken any of the two approaches,	2,3		Not applicable	OK	OK

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VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
indicated in the ACM0002 into account?					
1.3.8 Whether the baseline emission factor is calculated as a combined margin consisting of the combination of operating margin (OM) and build margin factors according to three steps indicated in the methodology ACM0002.	2,3	DR	Yes	OK	OK
1.3.9. Whether the weighted average applied by project participant is fixed for a crediting period.	2,3	DR	It is not clear whether it is 10 years fixed crediting period.	CL 5	Correc ted in revise d PDD OK
1.3.10. Is the most likely baseline scenario 'electricity production from other sources feeding into the grid?	2,3	DR	Yes.	OK	OK
1.3.11 Did the project participant provide evidence and supporting documents to exclude baseline options that do not comply with legal and regulatory requirements; or depend on key resources such as fuels, materials or technology that are not available at the project site?	2,3	I	Not applicable	OK	OK
1.3.12 If the project activity modifies or retrofits an existing electricity generation facility, is the guidance by EB08 taken into account?	2,3	DR I	Yes	OK	OK
1.4. Additionality					
1.4.1. Was the additionality of the project activity demonstrated and assessed using the latest version of the "Tool for demonstration and assessment of additionality"?	2,3	DR	Latest Version of additionality tool not used	CAR 6	Correc ted in revise d PDD
1.5 Project Emissions					
1.5.1. Are the project emissions considered as CO2	2,3	DR	Yes	OK	OK

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VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
emissions from on-site combustion of natural gas to generate electricity.					
1.6. Baseline Emissions					
1.6.1. Are the baseline emissions determined according to the formula $BE_y = EG_y \times EF_{BI, CO2,y}$?	2,3	DR	Yes. The formula used is $BE_y = EG_y \times EF_{BI, CO2,y}$	OK	OK
1.6.2. Were the Emissions Factor for displaced electricity calculated as in ACM0002?	2,3	DR	Yes.	OK	OK
1.7. Leakage					
1.7.1. Are the leakage considered?	2,3	DR	Potential leakages/Project emission occurring due to power import during start up and other activities have not been identified.	CAR 7	Correc ted in revise d PDD OK
1.7.2. Have any credits been claimed for the project on account of reducing the emissions due to power plant construction, fuel handling and land inundation below the level of the baseline scenario?	2,3	DR I	No credits claimed on any pre-project activity.	OK	OK
1.8. Emission Reduction					
1.8.1. Did the emissions reductions were determined according to the formula $ER_y = BE_y - PE_y - LE_y$	2,3	DR	Yes, this is explained in section B.6.4 of the PDD	OK	OK
1.8.2. Were all values chosen in a conservative manner and was the choice justified?	2,3	DR I	Yes	OK	OK
1.8.3. Whether an estimate of likely project emission reductions for the proposed crediting period is prepared as part of the PDD?	2,3	DR I	Yes.	OK	OK
1.8.4. Whether the estimate in principle employs the same methodology ACM0002?	2,3	DR I	Yes	OK	OK
1.8.5. Whether the emission factor is determined ex-post	2,3	DR	CEA data is taken for calculations.	OK	OK

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VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
during monitoring?		I			
1.8.6. If yes whether project participants have used models or other tools to estimate the emission reductions prior to validation?	2,3	DR I	Yes. Refer B.6.2 of PDD	OK	OK
2. Monitoring Methodology					
2.1. Applicability					
2.1.1. Does the project activity generate electricity from a renewable source?	2,3	DR I	Yes. Renewable source- Hydro power plant	OK	OK
2.1.2. Is the power connected to the grid?	2,3	DR I	Yes	OK	OK
2.1.3. Does the project activity relate to electricity capacity additions from renewable sources?	2,3	DR I	No	OK	OK
2.1.4. Is fuel switch done in the process?	2,3	DR	No.	OK	OK
2.1.5. Can the geographic and system boundaries for the relevant electricity grid be clearly identified?	2,3	DR I	No, the geographic and system boundaries for the relevant electricity grid not clearly identified in PDD	CAR 5	Corrected in revised PDD OK
2.1.6. Is the information on the characteristics of the grid available?	2,3	DR I	The information on the characteristics of the grid is available.	OK	OK
2.2. Monitoring Methodology					
2.2.1. Does the monitoring plan require monitoring of increased electricity generation from the proposed project activity?	2,3	DR	Yes.	OK	OK
2.2.2 Does monitoring takes in to account the lower value between (a) the net quantity of electricity generated in the new power unit that is installed as part of the project activity and (b) the difference between the	2,3	DR		OK	OK

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VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
total net electricity generation from firing the same type(s) of fuels at the project site (EG total,y) and the historical generation of the existing power unit(s), (EG historic, 3yr) based on the three most recent years.					
2.2.3. Does the methodology requires monitoring of Data needed to recalculate the operating margin emission factor, if needed, based on the choice of the method to determine the operating margin (OM), consistent with ACM0002?	2,3	DR	Not applicable as the option of 5-year average, based on the most recent statistics available is chosen.	OK	OK
2.2.4. Does the monitoring plan require monitoring of Data needed to recalculate the build margin emission factor, if needed, consistent with ACM0002?	2,3	DR	Not applicable as the option of ex ante is chosen.	OK	OK
2.2.5. Does the monitoring plan require monitoring of data needed to calculate fugitive carbon dioxide and methane emissions and carbon dioxide emissions from combustion of fossil fuels required to operate the geothermal power plant?	2,3	DR	Not applicable.	OK	OK
2.3. Quality Control (QC) and Quality Assurance (QA) Procedures					
2.3.1. Did all measurements use calibrated measurement equipment that is regularly checked for their functioning?	2,3	I	The monitoring plan in section B 7 .2 indicates half yearly checks of main and checks meters. However it is not clear whether all measurement equipments have been included in the calibration plan	CL 7	Corrected in revised PDD OK
2.3.2. Are the data double-checked against commercial data?	2,3	DR I	Provision for double check using main and check meters have been made.	OK	OK

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VALIDATION REPORT

Table 4 Legal Requirements

CHECKLIST QUESTION	Ref.	MoV ^a	COMMENTS	Draft Concl	Final Concl
1. Legal requirements					
1.1. Is the project activity environmentally licensed by the competent authority?	2,3	DR	Environmental licenses to be verified. Consent of PCB not yet obtained	CAR 2	Consent of PCB obtained OK
1.2. Are the conditions of the environmental license being met?	2,3	DR	See above	CAR 2	OK
1.3 Are the conditions of the Designated National Authority being met?	2,3	DR	DNA approval to be obtained	CAR 2	DNA approval obtained . OK

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VALIDATION REPORT

Table 5 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by validation team	Ref. To checklist question in table 2/3/4	Summary of project owner response	Validation team conclusion
CAR 1 The header of the PDD mentions Version 03. It is not as per1 Version 03.1	Table 2 A 1	PDD Version 02 has been prepared as per the template version 03.1	Verified and found that the PDD is revised. Hence this CAR is closed.
CAR 2 It is not clear from the PDD whether the specific CDM requirements like Host country approval, environmental clearances have been obtained.	Table 2 A 2.4	DLHPPL has obtained the HCA. The HCA has been provided to the DOE. No EIA was required for the upgradation / modification of the hydropower plant (Reference: Letter from Hydroproject's Design Circle that no Forest clearance / Pollution Clearance is required for BH-II (1X34 MW)). Scanned copy of the letter is enclosed	Validation team could access these documents and found to be in order. Moreover the project was already had obtained necessary clearances when it was initially planned and has been cleared by Central Electricity authority. Hence this CAR is closed
CAR 3 The latitude and longitudes and unique identification of the location are not mentioned	Table 2 A 4.1.4	Included accordingly in the revised PDD version 02	Verified and found that the PDD is revised. Hence this CAR is closed.
CAR 4 The title of section B and B 1of PDD is not as per version 03.1 are not as per the consolidated baseline methodology for grid connected electricity generation from renewable sources ACM 0002, Version 6, dated 19 May 2006	Table 2 B 1.1	Changed accordingly in the revised PDD version 02	Verified and found that the PDD is revised. Hence this CAR is closed.

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CAR 5 Project boundaries not clearly defined.	Table 2 B 3.1 Table 3 1.2.2, 2.1.5	Line diagram included in the revised PDD version 02	Verified and found that the PDD is revised. Hence this CAR is closed.
CAR 6 Latest version of the additionality is not used for demonstration of additionality. The additionality has been identified by barrier analysis – investment, hydrological and institutional barriers. While Step wise analysis has not opted for Step 2, Impact CDM registration (step 5) indicates IRR consideration Also evidences lease, PPA are not available.	Table 2 B 5.2 Table 3 1.4.1	The latest version of the additionality tool i.e. version 04 has been used in the revised PDD version 02 .	Verified and found that the PDD is revised. Also the validation team could access to lease deed and PPA which were found to be in order. Hence this CAR is closed.
CAR 7 Potential leakages/project emissions occurring due to power import during start up and other activities have not been identified.	Table 2 B 6.3.7	Project emission on account of import of power from the state grid during the lean period has been considered in the emission reduction computation and the same has been accordingly reflected in the PDD.	Project emissions have been accounted for the grid imports during plant shutdown and start up and this is included in the CERs estimation. Hence this CAR is closed.



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Draft report clarifications and corrective action requests by validation team	Ref. To checklist question in table 2/3/4	Summary of project owner response	Validation team conclusion
<p>CAR 8</p> <p>It is not clear from the PDD whether the local stake holder consultation process has taken place.</p>	<p>Table 2 E 1.1, E 1.2 E 1.3, E 1.4 E 1.5 Table 3 1.7.1</p>	<p>As part of CDM project, an Environmental Review Summary (ERS) was prepared by DLHPPL by its consultants and this ERS was given for public scrutiny. An advertisement was given in Dainik Lokmat of Ahmednagar edition in Marathi language on 20/06/2005 (local newspapers) in vernacular language. The advertisements informed about the project activity and about the availability of ERS report and inviting public and local stakeholders to avail a copy of the document and offer their comments. ERS was kept for public inspection at the project sites. A register was maintained to make the entries of the issue of ERS. No public comments were received</p> <p>Subsequently a local stakeholders' consultation meeting was conducted at the local Panchayat office on 15th June, 2007 and the minutes of the meeting is given in enclosure – II</p>	<p>Copy of local stakeholder meeting held on 15/06/2007 has been provided to the validation team. Moreover the validation team interacted with the stakeholders of nearby localities. The local stake holders expressed that the project activity is helpful for the locality. There was no adverse comment about the project from any of the local stakeholders interacted. Hence the CAR is closed.</p>



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Draft report clarifications and corrective action requests by validation team	Ref. To checklist question in table 2/3/4	Summary of project owner response	Validation team conclusion
CL 1 The project activity involves modification and retrofitting of the existing system. However the lifetime of the existing system needs to be verified	Table 2 A 4.3.3	The letter from the concerned authority endorsing the fact the project has not reached the end of its operational life time is 40 years with proper maintenance	The certificate from Mr.Erskine L Flook PE from Canada has assessed the life of the equipments and the inspection report was available to the validation team. Hence the CL is closed.
CL 2 It is not clear from the PDD whether the project activities described in Enclosure 1 need initial training as well as maintenance efforts during the project period	Table 2 A 4.3.4 A 4.3.5	Training has been provided and the details of training plan and schedule has already been submitted to the validator. Maintenance plan including the maintenance schedule has been submitted to the validator	Validation team could access the training records and found to be adequate. Maintenance plan and schedule is available. Hence the CL is closed
CL 3 The PDD mentions the starting date as 19/12/2006. Project proponent is requested to clarify which activity is considered.	Table 2 C 1	The handing over of the plant to DHPPL is considered as the starting date for the project activity	Documents related to handing over of the plant by the state government was available to the validation team, Hence the CL is closed
CL 4 Fixed crediting period of 10 years from 01/06/2007 is chosen. This needs to be changed, as the PDD is web hosted from 22/04/2007 to 21/05/2007. Host country approval is also not available	Table 2 C 2 Table 3 1.3.9	Changed accordingly in the revised PDD version 02	Verified and found that the PDD is revised. Hence this CL is closed.



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. To checklist question in table 2/3/4	Summary of project owner response	Validation team conclusion
CL 5 Section D of PDD indicates – MoEF has exempted small runoff the river hydropower projects with project cost less than Rs 500 Million from environmental clearances. PDD is silent about the project cost.	Table 2 D 1.1 D 1.2 D 1.6	Consent to operate dated 04/01/2008 is obtained from MSPCB.	Consent to operate dated 04/01/2008 is obtained from MSPCB and copy submitted. Hence this CL is closed.

References:

- 1- GUIDELINES FOR COMPLETING CDM-PDD, CDM-NMB and CDM-NMM – Version 06.2 – December 19th, 2006
- 2- APPROVED CONSOLIDATED METHODOLOGY ACM 0002 – Version 6 – 19 May 2006
- 3- TOOL FOR THE DEMONSTRATION AND ASSESSMENT OF ADDITIONALITY (Version 04)
- 4- Project Design Document Version 01 dated 07 / 02 / 2007 subsequently revised to version 02 dated 04/ 06/ 2008 and further to version 03 dated 02/03/2009 after review.



APPENDIX B

VALIDATOR CVs

Mr. R Sankaranarayanan	Bureau Veritas Certification India Private Limited	<p>GHG Lead Validator</p> <p>B Tech (Chemical) graduate with 23 years of experience in manufacturing industries and 9 years in Management system auditing. He has been involved in validation/verification of CDM projects.</p>
Mr. Sandeep Lele	Bureau Veritas Certification India Private Limited	<p>GHG Lead Validator</p> <p>Mr. Sandeep Lele hold Bachelors degree in Civil Engg and Masters degree in Environmental Engineering. He has 15 yrs of exp in the Environmental Engineering field. He has worked in system certification over last 8 yrs.</p> <p>Mr. Sandeep Lele was trained as a Lead verifier for Clean Development Mechanism and Joint Implementation in March 2003. Since then he has lead the team of CDM verifiers in the CDM assignments in India for a number of validation and verification projects.</p>

* MoV = Means of Verification, DR = Document Review, I = Interview



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		His qualification, industrial experience and experience in CDM facilitate him to assess renewable energy projects in general and hydro projects in particular to sufficient degree.
Mr. R. Reghu Kumar	Bureau Veritas Certification India Private Limited	GHG Lead Validator Post graduate in Environmental Engineering, Management and certified Project Management Professional from PMI, Pennsylvania, USA, with over 20 years of work experience, which include teaching, Environmental Management & Monitoring as part of the environmental regulatory authority and Management system auditing with exposure to variety industrial processes. He has been involved in validation / verification of CDM projects.
Mr. Sushil Budhia	Sushil Budhia & Associates, Mumbai	Chartered Accountant Extensive experience in conducting statutory and tax audits. He has experience in internal audits and taxation matters.
Mr. H.B Muralidhar	Bureau Veritas Certification India Private Limited	Internal Reviewer Graduate in Electrical Engineering with 25 years of experience power generation and distribution related fields as well as in management system auditing. He is the Lead auditor for Environmental Management System, Quality Management system and Occupational Health and Safety Management System. He has undergone intensive training on Clean Development Mechanism. He is the technical expert & conducted Validation / Verification for more than 50 CDM Projects

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