



VALIDATION REPORT

6.6 MW SHESHADRI IYER MINI HYDEL POWER PROJECT

VALIDATION OF GRID CONNECTED HYDRO
ELECTRIC PROJECT.

REPORT No. BVQI/INDIA/28.49

REVISION No. 04

BUREAU VERITAS QUALITY INTERNATIONAL

VALIDATION REPORT

Date of first issue: 23.02.2006	Project No.: BVQI-INDIA-28.49
Approved by: Dr. Ashok Mammen	Organizational unit: BVQI Holdings
Client: ATRIA HYDEL POWER LIMITED.	Client ref.: Mr. K. Nagaraju - Director

Summary:

Bureau Veritas Quality International (BVQI) has made a validation of the Grid connected Hydroelectric power generation project on the second power channel of Shiva Balancing Reservoir, which receives discharge from the Shivanasamudram anicut on the banks of Cauvery river in the state of Karnataka 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 (January 2006); ii) follow-up interviews with project stakeholders (February 2006); iii) resolution of outstanding issues and the issuance of the final validation report and opinion (June 2006). The overall validation, from Contract Review to Validation Report & Opinion, was conducted using internal procedures (BMS, September 2003), which were audited by the UN CDM Accreditation Team in December 2004.

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 BVQI's opinion that the project correctly applies the baseline and monitoring methodology under category 1D of the appendix B of the simplified modalities and procedures for small scale CDM project activities and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria.

Report No.: BVQI/INDIA/28.49	Subject Group: GHG/CDM
Report title: 6.6 MW Sheshadri Iyer Mini Hydel Power Project.	
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Work verified by: Dr. Ashok Mammen.	
Date of this revision: 12.07.2006	Rev. No.: 04
Number of pages: 38	

Indexing terms

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Abbreviations

BMS	BVQI Management System
BVQI	Bureau Veritas Quality International
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reductions
CH ₄	Methane
CL	Clarification Request
CO ₂	Carbon Dioxide
CPP	Captive Power Plant
DIS	Draft of International Standard
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
GHG	Green House Gas(es)
I	Interview
IETA	International Emissions Trading Association
IPCC	Intergovernmental Panel on Climate Change
ISO	International Organisation for Standardization
KPTCL	Karnataka Power Transmission Corporation Limited
MoV	Means of Verification
MP	Monitoring Plan
NGO	Non Government Organisation
PDD	Project Design Document
UNFCCC	United Nations Framework Convention for Climate Change
PLF	Plant Load Factor.
SIMHPP	Seshadri Iyer Mini Hydel Power Project.



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1 INTRODUCTION

Atria Hydel Power Limited. (hereafter called “the client”) has commissioned Bureau Veritas Quality International (BVQI) to validate its 6.6 MW Sheshadri Iyer Mini Hydel Power Project (hereafter called “the project”) on the second power channel of Shiva Balancing reservoir (receiving discharge from the Shivanasamudram anicut) in District Mandya of the state of Karnataka, 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 Client 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. BVQI has, based on the recommendations in the Validation and Verification Manual (IETA/PCF, v. 3.3, 2004), employed a risk-based approach in the validation, focusing on the identification of significant risks for project implementation and the generation of CERs.

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.



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1.3 GHG Project Description

The project activity utilizes the flows from the excess water in the fore bay of Shivanasamudram Generating Station and the head available in the stream for power generation. The project involves installation and commissioning of two nos. horizontal shaft francis turbine(V A Tech Escherwyss Flovel Ltd) each of 3.3 MW capacity. The Generators used are Crompton Greaves Ltd. Make and are rated for 11KV 3.3 MW output. The generated voltage at 11KV is stepped upto 66KV and fed to the state electricity grid using two nos. 11KV/66KV ONAN cooling 3.3 MW transformers.

1.4 Validation team

The validation team consists of the following personnel:

Mr. B.G.BHAT	BVQI India.	Team Leader, GHG Validator
Mr. H.B.MURALIDHAR	BVQI India	GHG Validator
Dr. ASHOK MAMMEN	BVQI India	Internal reviewer.

2 METHODOLOGY

The overall validation, from Contract Review to Validation Report & Opinion, was conducted using internal procedures (BMS, September 2003) which were audited by the CDM Accreditation Team in December 2004.

In order to ensure transparency, a validation protocol was customized for the project, according to the Validation and Verification Manual (IETA/PCF, v. 3.3, 2004). 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 three tables. The different columns in these tables are described in Figure 1.

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

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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 (CR) of risk or non-compliance with stated requirements. The CAR' s and CR' s are numbered and presented to the client in the Validation Report.	Used to refer to the relevant protocol questions in Table 2 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 sub-divided. 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: Resolution of Corrective Action and Clarification Requests			
Report clarifications and corrective action requests	Ref. to checklist question in tables 2/3	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 or 3 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, under "Final Conclusion".

Figure 1 Validation protocol tables



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2.1 Review of Documents

The Project Design Document (PDD) submitted by Atria Hydel Power Limited and additional background documents related to the project design and baseline, i.e. Indian Law, Guidelines for Completing the Project Design Document (CDM-PDD), the Proposed New Methodology: Baseline (CDM-NMB) and the Proposed New Methodology: Monitoring (CDM-NMM) , Approved methodology under category 1D of the appendix B of the simplified modalities and procedures for small scale CDM project activities, Clarifications on Validation Requirements to be Checked by a Designated Operational Entity were reviewed.

The following documents were used as references to the validation work, in addition to internal BVQI procedures: IETA/PCF – Validation and Verification Manual (v. 3.3, Mar 2004) ; ISO DIS 14064-3 - Greenhouse gases — Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions ; ISO DIS 14064-2 - Greenhouse gases — Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements .

To address BVQI corrective action and clarification requests, Atria Hydel Power Limited revised the PDD and resubmitted it on May 2006.

The validation findings presented in this report relate to the project as described in the PDD on May 2006

2.2 Follow-up Interviews

On 23rd and 24th February 2006 BVQI performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of Atria Hydel Power Limited were interviewed (see References). The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organisation	Interview topics
Atria Hydel Power Limited.	Project details.
Local Stakeholder	Local Stake holders comments.
Bungie India Private Limited.	Additionality, Baseline, Monitoring plan for the CDM Project.



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2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation was to raise the requests for corrective actions and clarification and any other outstanding issues that needed to be clarified for BVQI 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 BVQI 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 five Corrective Action Requests and five Clarification Requests.
- 3) The conclusions for validation subject are presented.

3.1 Project Design

The start of the project was discussed during the Board meeting held during the year 2000 as is evident from the records of Board resolution dated 19.03.2000 and the purchase order placed for the Hydro Turbines maintained by the project participant.

The project activity involves implementation and operation of 2x3.3 MW hydroelectric grid connected renewable energy project on the second power channel from the Shiva Balancing Reservoir. (On the power channel of the Shivanasamudram anicut on the banks of Cauvery river) in District Mandya of the State of Karnataka India. The project has installed two horizontal shaft Francis turbines each of 3.3 MW rated capacity. The turbines are connected to synchronous generators each of 3.3 MW rated capacity and the generated power is exported using the existing switchyard (two number of 3.3MW ONAN 11KV / 66 KV step up grid transformers and associated equipments).

The generated electricity is exported to the state owned power utility company Karnataka Power Transmission Corporation Ltd.



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As per the 'list of sectoral scopes and approved baseline and monitoring methodologies', the project activity falls under Scope Number 1, Sectoral Scope - Energy industries (renewable / non-renewable sources).

The project activity is undertaken by Atria Hydel Power Limited, India.

In the absence of the project activity, electricity generated by the power plant would have been generated using a fossil fuel in a captive power plant or would have been procured from the grid that is dominated by fossil fuel based thermal power plants. Thermal power plants are preferred to Hydroelectric projects in view of the cost effectiveness of thermal power plants and also the easy availability of coal.

BVQI recognizes that 6.6 MW Sheshadri Iyer Mini Hydel Power Project is helping India fulfill its goals of promoting sustainable development. Specifically, the project is in line with host-country specific CDM requirements because it -

- Contributes towards meeting the electricity supply deficit in the Southern Regional grid.
- Improves micro-economic efficiency of the power sector through improved availability and load factor.
- Avoids GHG emissions from fossil fuel burning
- Generates jobs in project maintenance

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, technological and other barriers, and prevailing practice.

The project design is sound and the geographical (the project location) and temporal (25 years) boundaries of the project are clearly defined.

3.2 Baseline

The 6.6 MW Sheshadri Iyer Mini Hydel Power Project uses the approved baseline methodology under Category 1D of the appendix B of the simplified modalities and procedures for small scale project activities. The project applies one of the simplified baseline methodologies proposed for this project activity category. Karnataka State Electricity grid is coming under Southern Regional grid and hence the baseline emission factor of the Southern Regional grid has been considered for determining the emission reductions. The baseline methodology has been correctly applied and the vintage for 2004-05 has been used while determining the baseline emission factor for the grid.



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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 possible alternative baseline scenarios are the following:

- (a) Proposed project activity without CDM;
- (b) Power from grid connected power plants

The most economically attractive alternative among the alternatives mentioned above, i.e Power from grid connected power plants has been selected as the baseline scenario, since such alternative is not expected to face any prohibitive barriers that could have prevented it from being taken up as the project activity. It has been observed from the previous years audited balance sheets and the projected financial results that the IRR for the 7 years period is likely to be in the order of –2% and the CDM revenue if available will make the project more viable with IRR around 2% for the 7 years period. Also the revisions in the power purchase tariff by the KPTCL, the project is likely to incur reduction in the revenue generation in the future years of operation. Availability of water source for the project depends on the excess water available in the forebay of Shivanasamudram Generating Station and the head available in the stream for power generation and depends on the rainfall in the region. The data on the rainfall for the previous years indicate large variations in the rainfall and hence prediction of rainfall for the coming years can not be made based on the available data for the earlier years. Based on these observations it is very much evident that the project has financial and technical barriers and the CDM revenue will assist the project participant in making the project viable.



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3.3 Monitoring Plan

The project is a grid connected hydro power plant and comprises canal drop hydro plant and thus belongs to the category “Renewable electricity generation for a grid. The Project uses the approved consolidated monitoring methodology under Category 1D of the appendix B of the simplified modalities and procedures for small scale CDM project activities i.e the electricity generated by the project is metered.

The electricity generated by the hydroelectric power plant and supplied to the southern regional grid will be monitored with the calibrated meters. The data is monitored by the project proponent along with the Karnataka State Electricity Board.

The procedures for monitoring, recording and reporting have been adequately implemented and meet the requirements.

3.4 Calculation of GHG Emissions

The project applies the simplified monitoring methodology proposed for Renewable Electricity generation for a grid connected project activities. The electricity generated by the project is metered through calibrated meter installed by the State Electricity Board. The calculations are documented and appropriate assumptions have been used to estimate future emissions reductions. The baseline emission factor of 0.830 Kg CO₂/KWH has been arrived at as per the methodology specified in the applicable project category for small scale CDM project activities contained in appendix B of the simplified modalities and procedures for small scale CDM project activities and meets the requirements .

3.5 Sustainable Development Impacts

1. The project is a canal drop based mini hydropower plant and the environmental impacts are not considered significant.
2. Project activity is located along the second power channel from the Shiva Balancing Reservoir. No major structure requiring changes in the topography was constructed.



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3. No trans-boundary impacts due to emissions from the project activity have been identified. The project activity does not produce any additional emission being canal drop based mini hydropower project. Hence trans-boundary impacts or major stress on the environment are not anticipated.

4 No impact on surface and ground water sources was anticipated;

5. No significant noise impacts was identified to areas within and outside the project boundary.

This CDM initiative would contribute towards:

- Conservation of natural resources such as coal and water, as these will not be used for power generation.
- Contribute towards regional developmental goals.
- Contribute to Southern regional grid power deficit facilitating industrial growth.
- Socio-economic development through provision of employment opportunities for local population.

In view of above positive impacts and contribution towards the country's goal of sustainable development and improvement in quality of life of local population, the clearance of this CDM initiative by Atria Hydel Power Limited would facilitate the process of sustainable energy production.

3.6 Comments by Local Stakeholders

Local stakeholder consultation meeting to discuss stakeholder concerns on the proposed Clean Development Mechanism (CDM) project was conducted on 16.07.2001

The list of participants, notice inviting participation to interested stakeholders, record of the stakeholder meeting proceedings is maintained by the project participants.



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The stakeholders viewed the 6.6 MW Sheshadri Iyer Mini Hydel Power Project 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. These views were endorsed by the local stakeholders interviewed during the site visit of the validation activity.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

According to the modalities for the Validation of CDM projects, the validator 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.

BVQI published the project documents on the UNFCCC CDM website (<http://cdm.unfccc.int>) on 29/12/2005 and invited comments within 27/01/2006 by Parties, stakeholders and non-governmental organizations. No comments were received.

5 VALIDATION OPINION

BVQI has performed a validation of the 6.6 MW Sheshadri Iyer Mini Hydel Power project in India. 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 (January 2006); ii) follow-up interviews with project stakeholders (February 2006); iii) the resolution of outstanding issues and the issuance of the final validation report and opinion (June 2006)

By generating electricity from the canal drop mini hydel scheme the project is likely to result in reductions of GHG emissions partially displacing electricity that would have otherwise been purchased from the grid. An analysis of the investment and technological barriers 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 (May 2006) and the subsequent follow-up interviews have provided BVQI with sufficient evidence to determine the fulfillment of stated criteria. In our opinion, the



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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 Atria Hydel Power Limited that relate directly to the GHG components of the project.

- /1/ Consent for operation from Karnataka State Pollution Control Board vide letter ref.No. 68KSPCB/RO-MND/APC/2002-2003/1648 dated 24.01.2003.
- /2/ Power Purchase Agreement dated 25.04.2003 between Karnataka Power Transmission Corporation Limited and Atria Hydel Power Limited.
- /3/ Project Design Document version 03 dated 10.05.2006.
- /4/ Purchase Order on M/s VA Tech Escher Wyss Flovel Ltd. For 2 X 3300 KW Hydro Turbine vide Ref. No.AHPL/BRD/006 dated 02.04.2000.

Category 2 Documents:

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

- /1/ Minutes of meeting of the Public Consultation meeting dated 16.07.2001
- /2/ Record of Power Generation .
- /3/ Calibration reports by KPTCL dated 13.07.2001 and 18.11.2005 of Main and Check Meters
- /4/ Board Resolution dated 19.03.2000 – Includes decision taken for start of the project activity.
- /5/ Board Resolution dated 18.08.2000 for the review of project activities.
- /6/ Host country approval letter from Ministry of Environment and Forest Government of India dated 15.06.2006.



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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. Sunder Raju
- /2/ Mr. K.Nagaraju
- /3/ Mr. D.Nagaraju
- /4/ Mr. Sridhar Bhat
- /5/ Mr. Navin Mathur
- /6/ Mr. Kalidas
- /7/ Mr. Srikanth V



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SMALL-SCALE CDM VALIDATION PROTOCOL**APPENDIX A: 6.6 MW SESHADRI IYER MINI HYDEL CDM PROJECT VALIDATION PROTOCOL****Table 1 Mandatory Requirements for Small Scale 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 E.4.1
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, Simplified Modalities and Procedures for Small	OK	Table 2, Section A.3



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REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference/ Comment
	Scale CDM Project Activities §23a		
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 E.4.1
4. The project shall have written approval of voluntary participation from the designated national authorities of each party involved	Kyoto Protocol Art. 12.5a, Simplified Modalities and Procedures for Small Scale CDM Project Activities §23a	OK	Letter of Approval from Govt. of India , Ministry of Environment & Forests vide letter No.F.No.4/2/2006-ccc dated 15.06.2006
5. The emission reductions should be real, measurable and give long-term benefits related to the mitigation of climate change	Kyoto Protocol Art. 12.5b	OK	Table 2, Section E.1 to E.4
6. Reduction in GHG emissions must 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. 12.5.c, Simplified Modalities and Procedures for Small Scale CDM Project Activities §26	OK	Table 2, Section B.2.1
7. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance	Marrakech Accords (Decision 17/CP.7)	OK	No public funding has been utilised for the project activity.
8. Parties participating in the CDM shall designate a national authority for the CDM	Marrakesh Accords (CDM modalities § 29)	OK	Government of India has designated Ministry of Environment & Forests as the national authority for



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REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference/ Comment
			the CDM.
9. The host country shall be a Party to the Kyoto Protocol	Marrakesh Accords (CDM modalities § 30)	OK	Government of India has ratified the Kyoto protocol in August 2002
10. The proposed project activity shall meet the eligibility criteria for small scale CDM project activities set out in § 6 (c) of the Marrakesh Accords and shall not be a debundled component of a larger project activity	Simplified Modalities and Procedures for Small Scale CDM Project Activities §12a,c	OK	Table 2, Section A.1
11. The project design document shall conform with the Small Scale CDM Project Design Document format	Simplified Modalities and Procedures for Small Scale CDM Project Activities, Appendix A	OK	The document is as per the SSC PDD format version 2
12. The proposed project activity shall confirm to one of the project categories defined for small scale CDM project activities and uses the simplified baseline and monitoring methodology for that project category	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22e	OK	Table 2, Section A.1.3 and B.1
13. Comments by local stakeholders are invited, and a summary of these provided	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22b	OK	Table 2, Section G
14. If required by the host country, an analysis of the environmental impacts of the project activity is carried out and documented	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22c	OK	Table 2, Section F



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REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference/ Comment
15. Parties, stakeholders and UNFCCC accredited NGOs have been invited to comment on the validation requirements and comments have been made publicly available	Simplified Modalities and Procedures for Small Scale CDM Project Activities §23b,c,d	OK	The PDD has been published by BVQI on website UNFCCC CDM website (http://cdm.unfccc.int) inviting comments from Stakeholders and NGOs. Comments were invited during the period 30/12/2005 to 28/01/2006.

Table 2 Requirements Checklist

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A. Project Description The project design is assessed.					
A.1. Small scale project activity It is assess whether the project qualifies as small scale CDM project activity.					
A.1.1. Does the project qualify as a small scale CDM project activity as defined in paragraph 6 (c) of decision 17/CP.7 on the modalities and procedures for the CDM?	1	DR	Yes . The project activity involves implementation and operation of 6.6 MW Small Hydroelectric grid connected renewable energy project. The project activity falls under Type1 Category D – small scale CDM project activity. The project activity qualifies as small scale CDM Project activity since the generation capacity specified is less than 15 MW.	OK	OK
A.1.2. The small scale project activity is not a de bundled component of a larger project activity?	1	DR	The project is not a de bundled component of larger project activity. The other major hydroelectric project of installed capacity 42 MW in the vicinity of the project is not under the same management .	OK	OK
A.1.3. Does proposed project activity confirm to one of the project categories defined for small scale CDM project activities?	1	DR	Yes Type 1- Category D small scale CDM project activity.	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A.2. Project Design Validation of project design focuses on the choice of technology and the design documentation of the project.					
A.2.1. Are the project's spatial (geographical) boundaries clearly defined?	1	DR	The project activity has been contemplated as canal drop based mini hydroelectric project on the second power channel of the Shiva Balancing Reservoir. It is about 100 KMs from Bangalore city , the capital of Karnataka state. Ref A .4.1.4 of PDD.	OK	OK
A.2.2. Are the project's system (components and facilities used to mitigate GHG's) boundaries clearly defined?	1	DR	The project systems are adequately identified. Ref B.4	OK	OK
A.2.3. Does the project design engineering reflect current good practices?	1	DR I	The proposed technology is similar to the technology used in the existing hydropower projects. The project has installed two nos. horizontal shaft francis turbines totalling to 6.6 MW rated capacity. However the PDD does not include details of equipments used in the project. Ref A.4.2 of PDD	CAR 1	OK The details of equipments have been provided in the revised PDD version 03 dated 10/05/2006
A.2.4. Will the project result in technology transfer to the host country?	1	DR	There is no transfer of technology to the host country.	OK	OK
A.2.5. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period? Does the project make provisions	1	DR I	The initial training for operation and maintenance of equipments and electronic controls is being provided by equipment manufacturers at site.	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
for meeting training and maintenance needs?			Chief Engineer is responsible for identification and impart of training needs as and when required in future.		
A.3. Contribution to Sustainable Development The project's contribution to sustainable development is assessed					
A.3.1. Will the project create other environmental or social benefits than GHG emission reductions?	1	DR I	The PDD has indicated that the project has added infrastructure facilities in the village. However the details pertaining to the infrastructure developments are not clear.	CL 1	OK The revised PDD dt.10/05/06 includes details pertaining to the infrastructure
A.3.2. Will the project create any adverse environmental or social effects?	1	DR I	No. There is no evidence of any adverse environmental or social effects due to the project activity.	OK	OK
A.3.3. Is the project in line with sustainable development policies of the host country?	1	DR I	There is no evidence of approval from DNA regarding participation in the CDM Project activity.	CAR 2	OK Letter of Approval from Govt. of India , Ministry of Environment & Forests vide letter No.F.No.4/2/2006-ccc dated 15.06.2006

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A.3.4. Is the project in line with relevant legislation and plans in the host country?		DR I	Ref A3.3	CAR 2	OK
B. Project Baseline The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.					
B.1. Baseline Methodology It is assessed whether the project applies an appropriate baseline methodology.					
B.1.1. Is the selected baseline methodology in line with the baseline methodologies provided for the relevant project category?	1	DR	Yes. Renewable Energy Project . Category 1 D of the simplified modalities and procedures for small scale CDM project activities. This methodology applies to project activities comprising renewable, such as photovoltaic, hydro, tidal/wave, wind, geothermal and biomass that supply electricity to an electricity distribution system that is or would have been supplied by at least one fossil fuel or non renewable biomass fired generating unit.	OK	OK
B.1.2. Is the baseline methodology applicable to the project being considered?	1	DR	Yes. Ref B.1	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.2. Baseline Determination It is assessed whether the project activity itself is not a likely baseline scenario and whether the selected baseline represents a likely baseline scenario.					
B.2.1. Is it demonstrated that the project activity itself is not a likely baseline scenario due to the existence of one or more of the following barriers: investment barriers, technology barriers, barriers due to prevailing practice or other barriers?	1	DR I	The project has been considered additional based on the Financial Barrier. The evidence regarding the detailed financial analysis and the subsequent conclusion from the project proponent on the financial barrier to the project needs to be clarified.	CL 2	OK The details have been provided in the separate sheet
B.2.2. Is the application of the baseline methodology and the discussion and determination of the chosen baseline transparent and conservative?	1	DR I	The baseline emission estimate has been derived for the State Electricity grid and not the Southern regional grid .	CL 3	OK The revised PDD version03 dt10/05/06 uses data pertaining to Southern Regional grid.
B.2.3. Are relevant national and / or sectoral policies and circumstances taken into account?	1	DR I	It has been generally described under sec B.3 of PDD regarding the generation of power through various sources. However the description does not provide clear information regarding the circumstances relevant to the baseline of the proposed project activity.	CL 4	OK
B.2.4. Is the baseline selection compatible with the available data?	1	DR	It has been generally described under sec B.3 of PDD regarding the generation of	CL 4	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			power through various sources. However the description does not provide clear information regarding the circumstances relevant to the baseline of the proposed project activity.		
B.2.5. Does the selected baseline represent the most likely scenario describing what would have occurred in absence of the project activity?	1	DR I	The baseline emission estimate has been derived for the State Electricity grid and not the Southern regional grid .	CL 3	OK Ref B.2.2
C. Duration of the Project / Crediting Period It is assessed whether the temporary boundaries of the project are clearly defined.					
C.1.1. Are the project's starting date and operational lifetime clearly defined?	1	DR	The starting date of the project has been identified as 23.07.2001 in the PDD. However as per the records of joint meter readings the date of commissioning has been indicated as 21/10/2001	CAR 3	OK
C.1.2. Is the crediting period clearly defined (seven years with two possible renewals or 10 years with no renewal)?	1	DR	The PDD indicates renewable 7 years crediting period. Ref Sec C.2.1.2	OK	OK
D. Monitoring Plan The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed.					
D.1. Monitoring Methodology It is assessed whether the project applies an appropriate monitoring methodology.					
D.1.1. Is the selected monitoring methodology	1	DR	The generated electricity is directly	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
in line with the monitoring methodologies provided for the relevant project category?			measured. As per para 31 of Appendix B of the simplified baseline and monitoring methodologies for selected small scale CDM Project activity categories.		
D.1.2. Is the monitoring methodology applicable to the project being considered?	1	DR	YES	OK	OK
D.1.3. Is the application of the monitoring methodology transparent?	1	DR	YES. Electricity generation is being metered and monitored and measurements are verified by Karnataka State Electricity Board.	OK	OK
D.1.4. Will the monitoring methodology give opportunity for real measurements of achieved emission reductions?	1	DR I	Yes. Ref D.1.3	OK	OK
D.2. Monitoring of Project Emissions It is established whether the monitoring plan provides for reliable and complete project emission data over time.					
D.2.1. Are the choices of project emission indicators reasonable?	1	DR I	Yes. Ref D.1.1	OK	OK
D.2.2. Will it be possible to monitor / measure the specified project emission indicators?	1	DR 1	Yes. Ref. D. 1. 3	OK	OK
D.2.3. Do the measuring technique and frequency comply with good monitoring practices?	1	DR I	Yes. Joint meter readings are taken and recorded along with the representative of State Electricity Board.	OK	OK
D.2.4. Are the provisions made for archiving project emission data sufficient to enable later verification?	1	DR I	The monitoring plan requires the monitored data to be maintained in the electronic form. Meter readings are taken at site and are being communicated to the office located at	CAR 4	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			Bangalore . The details pertaining to the transfer and storage of data and for archiving the same are not clearly included in the PDD.		
D.3. Monitoring of Leakage It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.					
D.3.1. If applicable, are the choices of leakage indicators reasonable?	1	DR	The project envisage leakages since the auxiliary power from the State electricity grid is being used whenever the power is not generated. The same has not been considered for determining the emission reductions due to project activity.	CAR 5	OK
D.3.2. If applicable, will it be possible to monitor / measure the specified leakage indicators?	1	DR I	Yes. Separate calibrated metering has been provided for measuring the auxiliary power consumption.	OK	OK
D.3.3. If applicable, do the measuring technique and frequency comply with good monitoring practices?	1	DR	Yes. The auxiliary meter readings are taken and recorded once in month.	OK	OK
D.3.4. If applicable, are the provisions made for archiving leakage data sufficient to enable later verification?	1	DR	The monitoring plan requires the monitored data to be maintained in the electronic form. Meter readings are taken at site and are being communicated to the office located at Bangalore . The details pertaining to the transfer and storage of data and for archiving the same are not clearly included in the PDD.	CAR 4	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D.4. Monitoring of Baseline Emissions It is established whether the monitoring plan provides for reliable and complete project emission data over time.					
D.4.1. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	1	DR I	Yes.	OK	OK
D.4.2. Will it be possible to monitor / measure the specified baseline emission indicators?	1	DR I	Electricity generation is monitored by the Karnataka State Electricity Board through the Trivector meter installed in the transformer yard.	OK	OK
D.4.3. Do the measuring technique and frequency comply with good monitoring practices?	1	DR	Yes . Ref D.4.2	OK	OK
D.4.4. Are the provisions made for archiving baseline emission data sufficient to enable later verification?	1	DR	The monitoring plan requires the monitored data to be maintained in the electronic form. Meter readings are taken at site and are being communicated to the office located at Bangalore. The details pertaining to the transfer and storage of data and for archiving the same are not clearly included in the PDD.	CAR 4	OK
D.5. Project Management Planning It is checked that project implementation is properly prepared for and that critical arrangements are addressed.					
D.5.1. Is the authority and responsibility of project management clearly described?	1	DR	Yes. The project is being looked after by full time plant engineer.	OK	OK
D.5.2. Is the authority and responsibility for registration monitoring measurement and	1	DR	Yes. The plant engineer has been identified for monitoring , measurement and	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
reporting clearly described?			reporting.		
D.5.3. Are procedures identified for training of monitoring personnel?	1	DR I	Chief Engineer has the responsibility for identifying and providing the training requirements to all the staff involved in the project.	OK	OK
D.5.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	1	DR I	Emergency situations leading to unintended emissions are not anticipated for the hydro project.	OK	OK
D.5.5. Are procedures identified for calibration of monitoring equipment?	1	DR I	Calibration of monitoring equipment is being done by Karnataka State Electricity Board.	OK	OK
D.5.6. Are procedures identified for maintenance of monitoring equipment and installations?	1	DR I	Monitoring equipments are being maintained by Karnataka State Electricity Board.	OK	OK
D.5.7. Are procedures identified for monitoring, measurements and reporting?	1	DR I	Monitoring and reporting of measurements is being done by Karnataka State Electricity Board.	OK	OK
D.5.8. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	1	DR I	Though informal record handling procedures are in practise, there is no clarity on the record storage provisions.	CL 5	OK
D.5.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	1	DR I	Power Purchase Agreement with the KPTCL includes the procedure for dealing with possible monitoring data adjustments and uncertainties.	OK	OK
D.5.10. Are procedures identified for internal audits of GHG project compliance with operational requirements as applicable?	1	DR	Chief Engineer will carry out the internal audit once in six months for verification of all the activities.	OK	OK
D.5.11. Are procedures identified for project performance reviews?	1	DR	Chief Engineer will review the performance of the project based on the internal audit	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			findings.		
D.5.12. Are procedures identified for corrective actions?	1	DR	Chief Engineer will initiate necessary corrective and preventive actions based on the internal audit findings.	OK	OK
E. Calculation of GHG emission					
It is assessed whether all material GHG emission sources are addressed and how sensitivities and data uncertainties have been addressed to arrive at conservative estimates of projected emission reductions.					
E.1. Project GHG Emissions					
The validation of predicted project GHG emissions focuses on transparency and completeness of calculations.					
E.1.1. Are all aspects related to direct and indirect project emissions captured in the project design?	1	DR I	Considering renewable energy project , indirect emissions are not likely . Emissions related to the construction activities are considered insignificant.	OK	OK
E.1.2. Have all relevant greenhouse gases and sources been evaluated?	1	DR I	Yes.	OK	OK
E.1.3. Do the methodologies for calculating project emissions comply with existing good practice?			Yes. Ref. D.4.2	OK	OK
E.1.4. Are the calculations documented in a complete and transparent manner?	1	DR	Yes.		OK
E.1.5. Have conservative assumptions been used?	1	DR I	It has been indicated that the baseline has been determined based on the state grid information.. There is no evidence of verification that the baseline chosen is	CL 3	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			conservative.		
E.1.6. Are uncertainties in the project emissions estimates properly addressed?	1	DR	Ref E 1.5	CL 3	OK
E.2. Leakage It is assessed whether there leakage effects, i.e. change of emissions which occurs outside the project boundary and which are measurable and attributable to the project, have been properly assessed.					
E.2.1. Are leakage calculation required for the selected project category and if yes, are the relevant leakage effects assessed?	1	DR I	Not Applicable.	OK	OK
E.2.2. Are potential leakage effects properly accounted for in the calculations (if applicable)?	1	DR I	.Not Applicable.	OK	OK
E.2.3. Do the methodologies for calculating leakage comply with existing good practice (if applicable)?	1	DR I	Not Applicable.	OK	OK
E.2.4. Are the calculations documented in a complete and transparent manner and (if applicable)?	1	DR I	Not Applicable	OK	OK
E.2.5. Have conservative assumptions been used (if applicable)?	1	DR I	Not Applicable.	OK	OK
E.2.6. Are uncertainties in the leakage estimates properly addressed (if applicable)?	1	DR I	Not Applicable.	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
E.3. Baseline GHG Emissions The validation of predicted baseline GHG emissions focuses on transparency and completeness of calculations.					
E.3.1. Are the baseline emission boundaries clearly defined and do they sufficiently cover sources for baseline emissions?	1	DR I	The baseline emissions are defined in accordance with the CDM Small scale methodology scheme.	OK	OK
E.3.2. Are all aspects related to direct and indirect baseline emissions captured in the project design?	1	DR I	Ref E1.1	OK	OK
E.3.3. Have all relevant greenhouse gases and sources been evaluated?	1	DR I	Canal drop hydel project. Hence no greenhouse gas emissions anticipated.	OK	OK
E.3.4. Do the methodologies for calculating baseline emissions comply with existing good practice?	1	DR I	Yes. Ref. D.1.3	OK	OK
E.3.5. Are the calculations documented in a complete and transparent manner?	1	DR I	Yes.	OK	OK
E.3.6. Have conservative assumptions been used?	1	DR I	Yes.	OK	OK
E.3.7. Are uncertainties in the baseline emissions estimates properly addressed?	1	DR I	Yes.	OK	OK
E.4. Emission Reductions Validation of baseline GHG emissions will focus on methodology transparency and completeness in emission estimations.					
E.4.1. Will the project result in fewer GHG emissions than the baseline case?	1	DR	The project replaces fossil fuel based electricity generation. The baseline	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			emissions are calculated at 0.830 kg CO ₂ /KWH . The project emissions are nil.		
F. Environmental Impacts It is assessed whether environmental impacts of the project are sufficiently addressed.					
F.1.1. Does host country legislation require an analysis of the environmental impacts of the project activity?	1	DR I	Not applicable to Small Scale Project.	OK	OK
F.1.2. Does the project comply with environmental legislation in the host country?	1	DR I	The consent order from the Karnataka State Pollution Control Board was valid till 31.12.2005. The project has applied for the renewal of the consent order from the Karnataka State Electricity Board and is under process as per the KSPCB letter No. KSPCB/RO-MND/SG/2005-06/1601 dated nil.	OK	OK
F.1.3. Will the project create any adverse environmental effects?	1	DR I	No. Ref E 3.3	OK	OK
F.1.4. Have environmental impacts been identified and addressed in the PDD?	1	DR	Yes.	OK	OK
G. Comments by Local Stakeholder Validation of the local stakeholder consultation process.					
G.1.1. Have relevant stakeholders been consulted?	1	DR I	The stake holder meeting was done on 16.07.2001 and records are maintained by the project participant.	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
G.1.2. Have appropriate media been used to invite comments by local stakeholders?		I	Local stake holders have been invited individually	OK	OK
G.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?		I	The project does not require any stakeholder consultation process as per the regulations/laws.	OK	OK
G.1.4. Is a summary of the comments received provided?		I	Yes. Ref G. 2 of PDD.	OK	OK
G.1.5. Has due account been taken of any comments received?		I	Yes. Ref G. 3	OK	OK

Table3 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
CAR 1 The proposed technology is similar to the technology used in the existing hydropower projects. The project has installed two nos. horizontal shaft francis turbines totalling to 6.6 MW rated capacity. However the PDD does not include details of equipments used in the project. Ref A.4.2 of PDD	A 2.3	The details of the turbine and the generator are included in the revised PDD version 03 dated 10.05.2006.	The details have been provided in the revised PDD version 03 dt 10.05.2006 The audit team concludes that the CAR1 has been considered closed.

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
CAR 2 There is no evidence of approval from DNA regarding participation in the CDM Project activity.	A 3.3	Host country approval has been received and a copy of the same has been sent to BVQI.	Host country approval has been obtained vide letter No. F.No.4/2/2006-CCC dated15.06.2006. from Ministry of Environment and forest Govt. of India. The CAR 2 has been considered closed.
CAR 3 The starting date of the project has been identified as 23.07.2001 in the PDD. However as per the records of joint meter readings the date of commissioning has been indicated as 21/10/2001	C 1.1	The details have been included in the revised PDD version 03 dated10.05.2006.	The starting date of the project activity has been corrected to 21/10/2001 in the revised PDD version 03 dated10.05.2006. The CAR3 has been considered closed.
CAR 4 The monitoring plan requires the monitored data to be maintained in the electronic form. Meter readings are taken at site and are being communicated to the office located at Bangalore . The details pertaining to the transfer and storage of data and for archiving the same are not clearly included in the PDD.	D 2.4	The details have been included in the revised PDD version 03 dated10.05.2006.	Monitoring plan has been modified to include data recording. The audit team has verified the records and consider that the CAR 4 has been closed.
CAR 5 The project envisage leakages since the auxiliary power from the State electricity grid is being used whenever the power is not generated. The same has not been	D 3.1	The project leakages have been accounted and have been accordingly deducted from the emission reductions. The details have been included in the revised	The project leakages have been now included in the revised PDD version 03 dated 10/05/2006. The audit team has reviewed the revised PDD for inclusion of the project

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
considered for determining the emission reductions due to project activity.		PDD version 03 dated 10.05.2006.	leakages and concludes that the CAR 5 has been closed.
CL 1 The PDD has indicated that the project has added infrastructure facilities in the village. However the details pertaining to the infrastructure developments are not clear.	A 3.1	The details have been included in the revised PDD version 03 dated 10.05.2006.	The details of infrastructure has been provided in the revised PDD version 03 dated 10/05/2006. (Ref A.2 of PDD)
CL 2 The project has been considered additional based on the Financial Barrier. The evidence regarding the detailed financial analysis and the subsequent conclusion from the project proponent on the financial barrier to the project needs to be clarified.	B 2.1	The details have been prepared and the soft copy of the financial calculations is attached herewith.	The audit team has verified the financial statements both projected and actual audited statements since inception of the project. Based on the statements the audit team concludes that the financial barriers exist for the project.
CL 3 The baseline emission estimate has been derived for the State Electricity grid and not the Southern regional grid .	B 2.2	The details pertaining to the Southern Regional grid have been included in the revised PDD version 03. dated 10.05.2006.	The audit team has gone through the details provided in the revised PDD version 03 dt. 10.05.2006 which has used data pertaining to the Southern regional grid.
CL 4	B 2.3	The details have been included in the revised PDD version 03	The audit team has gone through the additional information provided in the

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
It has been generally described under sec B.3 of PDD regarding the generation of power through various sources. However the description does not provide clear information regarding the circumstances relevant to the baseline of the proposed project activity.		dated 10.05.2006.	sec B.3 of the revised PDD version 03 dated 10/05/2006 and concludes that the information provided adequately clarifies the circumstances relevant to the baseline of the proposed project activity.
CL 5 Though informal record handling procedures are in practise, there is no clarity on the record storage provisions.	D 5.8	The details have been included in the revised PDD version 02 dated 23.03.2006.	Clarity has been provided in the handling and storage of records. The same has been included in the revised PDD.