



VALIDATION REPORT

10 MW SOMASILA HYDRO POWER PROJECT FOR A GRID SYSTEM BY BALAJI ENERGY PVT LTD

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DET NORSKE VERITAS



VALIDATION REPORT

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Summary:

Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the “10 MW Somasila Hydro Power Project for a grid system by Balaji Energy Pvt Ltd” in 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 modalities and procedures, the simplified modalities and procedures for small-scale CDM project activities and the subsequent decisions by the CDM Executive Board.

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

In summary, it is DNV's opinion that the project, as described in the project design document of 22 February 2007, meets all relevant UNFCCC requirements for the CDM, is eligible as category I.D small-scale CDM project activity and correctly applies the approved simplified baseline and monitoring methodology AMS-I.D, version 10 of 23 December 2006. Hence, DNV requests the registration of the “10 MW Somasila Hydro Power Project for a grid system by Balaji Energy Pvt Ltd” as a CDM project activity.

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**Abbreviations**

APTRANSCO	Transmission Corporation of Andhra Pradesh.
APGENCO	Andhra Pradesh Generation Corporation
APERC	Andhra Pradesh Electricity Regulatory commission.
APPCB	Andhra Pradesh Pollution Control Board.
CEF	Carbon Emission Factor
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEA	Central Electricity Authority
CER	Certified Emission Reduction
CH ₄	Methane
CL	Clarification request
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DNV	Det Norske Veritas
DNA	Designated National Authority
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
IREDA	Indian Renewable Energy Development Association
MP	Monitoring Plan
MNES	Ministry of Non-Conventional Energy Sources.
NEDCAP	Non-Conventional Energy Development Corporation of Andhra Pradesh.
N ₂ O	Nitrous oxide
NGO	Non-governmental Organisation
ODA	Official Development Assistance
PDD	Project Design Document
UNFCCC	United Nations Framework Convention on Climate Change



1 INTRODUCTION

Balaji Energy Pvt. Ltd. has commissioned Det Norske Veritas Certification Ltd. (DNV) to perform a validation of the “10 MW Somasila Hydro Power Project for a grid system by Balaji Energy Pvt Ltd” in India (hereafter called “the project”). This report summarises the findings of the validation of the project, performed on the basis of UNFCCC criteria for small-scale CDM projects, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The validation team consists of the following personnel:

Ms Anjana Sharma	DNV Certification India	Team leader, GHG auditor
Mr Astakala Vidyacharan	DNV Certification India	GHG auditor
Mr. KV Raman	DNV Certification India	CDM Validator
Mr. Michael Lehmann	DNV Certification Norway	Sector Expert
Mr. C Kumaraswamy	DNV Certification India	Technical Reviewer.

1.1 Validation Objective

The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, monitoring plan, and the project's compliance with relevant UNFCCC and host Party criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the 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).

1.2 Scope

The validation scope is defined as an independent and objective review of the project design document (PDD). The PDD is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords, the simplified modalities and procedures for small-scale CDM project activities and the relevant decisions by the CDM Executive Board, including the approved baseline and monitoring methodology AMS-I.D, version 10. The validation team has, based on the recommendations in the Validation and Verification Manual /14/ employed a risk-based approach, 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 project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

1.3 Description of Proposed CDM Project

The project activity is a 10 MW small-scale hydroelectric power project conceived with the view to harness the irrigation discharge from the existing Somasila dam in the Nellore district of Andhra Pradesh in India. The project activity envisages electricity generation and supply to the southern regional grid through APTRANSCO. The southern regional grid is dominated by fossil



fuel based generation(coal, diesel, gas etc). Hence, the generation by the proposed project activity is non-GHG source and it is expected that the proportion of fossil fuel based generation in the grid will be displaced by the project activity leading to a lower carbon intensity in the grid.

The net export of electricity to the grid is expected to be 30.69 GWh per year. Given that the project activity is implemented as stated and the conditions planned for the project occurs as planned, the project is expected to reduce the average annual emissions by 24 149 tonnes of CO₂-equivalents (tCO₂e) through the selected ten year fixed crediting period

2 METHODOLOGY

The validation consists of the following three phases:

- I a desk review of the project design documents
- II follow-up interviews with project stakeholders
- III the resolution of outstanding issues and the issuance of the final validation report and opinion.

In order to ensure transparency, a validation protocol was customised for the project, according to the Validation and Verification Manual /14/. The protocol shows in transparent manner criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organises, 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 for the “10 MW Somasila Hydro Power Project for a grid system by Balaji Energy Pvt Ltd.” is enclosed in Appendix A to this report.

Findings established during the validation can either be seen as a non-fulfilment of validation protocol criteria or where a risk to the fulfilment of project objectives is identified. Corrective action requests (CAR) are issued, where:

- i) mistakes have been made with a direct influence on project results;
- ii) validation protocol requirements have not been met; or
- iii) there is a risk that the project would not be accepted as a CDM project or that emission reductions will not be certified.

The term Clarification may be used where additional information is needed to fully clarify an issue.



Validation Protocol Table 1: Mandatory Requirements for CDM Project Activities			
Requirement	Reference	Conclusion	Cross reference
<i>The requirements the project must meet.</i>	<i>Gives reference to the legislation or agreement where the requirement is found.</i>	<i>This is either acceptable based on evidence provided (OK), a Corrective Action Request (CAR) of risk or non-compliance with stated requirements or a request for Clarification (CL) where further clarifications are needed.</i>	<i>Used to refer to the relevant checklist questions in Table 2 to show how the specific requirement is validated. This is to ensure a transparent Validation process.</i>

Validation Protocol Table 2: Requirement Checklist				
Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
<i>The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organised in seven different sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.</i>	<i>Gives reference to documents where the answer to the checklist question or item is found.</i>	<i>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.</i>	<i>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.</i>	<i>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). A request for Clarification (CL) is used when the validation team has identified a need for further clarification.</i>

Validation Protocol Table 3: Resolution of Corrective Action Requests and Requests for Clarification			
Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
<i>If the conclusions from the draft Validation are either a Corrective Action Request or a Clarification Request, these should be listed in this section.</i>	<i>Reference to the checklist question number in Table 2 where the Corrective Action Request or Clarification Request is explained.</i>	<i>The responses given by the project participants during the communications with the validation team should be summarised in this section.</i>	<i>This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".</i>

Figure 1 Validation protocol tables



2.1 Review of Documents

The PDD, version 01, dated 27 January 2007 and version 02 dated 22 February 2007 /1/, submitted by Balaji Energy Private Limited and additional background documents related to the project design and baseline were reviewed as part of this validation.

2.2 Follow-up Interviews

DNV performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of Balaji Energy Pvt Ltd., APTRANSCO and irrigation department (Government of Andhra Pradesh) were interviewed. The main topics of the interviews are summarised in Table 1

Table 1 Interview topics

Interviewed organisation	Interview topics
Balaji Energy (P) Ltd.	<ul style="list-style-type: none"> ➤ Host country approval ➤ EIA requirement and other relevant approvals/consents from state/central governments ➤ Stakeholder consultation process. ➤ Determination of project additionality. ➤ Clarifications on establishment of baseline, monitoring plan and emission reduction calculations. ➤ Resources, training needs and procedures for operation and maintenance.
APTRANSCO	<ul style="list-style-type: none"> ➤ Monitoring procedures.
Irrigation department, Government of Andhra Pradesh	<ul style="list-style-type: none"> ➤ Project design

2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation was to resolve any outstanding issues which needed to be clarified for DNV's positive conclusion on the project design. The corrective action requests and requests for clarification raised by DNV and presented to the project participants in DNV's draft validation report of 13 January 2007 (rev. 01) were resolved during communications between the client and DNV. To guarantee the transparency of the validation process, the concerns raised and responses given are documented in the validation protocol in Appendix A.

Since modifications to the project design were necessary to resolve DNV's concerns, the client decided to revise the PDD and resubmitted the PDD on 22 February 2007. After reviewing the revised PDD, DNV issued this final validation report and opinion.



2.4 Internal Quality Control

The draft validation report including the initial validation findings underwent a technical review before being submitted to the project participants. The final validation report underwent another technical review before requesting registration of the project activity. The technical review was performed by a technical reviewer qualified in accordance with DNV's qualification scheme for CDM validation and verification.

3 VALIDATION FINDINGS

The findings of the validation are stated in the following sections. The validation criteria (requirements), the means of verification and the results from validating the identified criteria are documented in more detail in the validation protocol in Appendix A.

The final validation findings relate to the project design as documented and described in the revised and resubmitted project design documentation.

3.1 Participation Requirements

The project has been proposed as a unilateral project. The sole project participant is Balaji Energy Private Limited of India. India has ratified the Kyoto Protocol and established a DNA, the National Clean Development Mechanism Authority, MoEF as per participation requirements under the Kyoto Protocol. The DNA of India approved the project on 22 February 2007. The project does not involve diversion of any official development assistance funds.

The project is expected to contribute to sustainable development through the reductions of GHG emissions into the atmosphere, increased generation of employment and betterment of the socio-economic conditions of the local populace in its vicinity. The DNA approval letter of India has confirmed that the project assists in achieving sustainable development /13/.

3.2 Project Design

The project activity is a 10 MW small scale hydroelectric power project conceived with a view to harness the irrigation discharge by utilising the head created from the existing Somasila dam in the Nellore district of Andhra Pradesh in India. A separate water conductor system for drawing the required amount of water from the Somasila reservoir through an approach channel followed by a tunnel to the intake dam has been envisaged and the water is released back into the Pennar river after the power generation.

The project activity comprises of two synchronous generators of 5 MW capacity, each coupled to two units of vertical Kaplan adjustable blade type turbines. The power generated is evacuated through two 33/11 KV substations located at Somasila and Ananthasagaram. The project is expected to export about 30.69 MWh every year generating an estimated amount of emission reductions at about 24 149 tons of CO₂e per year.

The starting date of the project activity is 1 November 2002 (with the commencement of physical construction of the activity) and the operational lifetime of the project activity is expected to be 30 years. A fixed crediting period of 10 years has been selected with the starting date from 01 August 2007.



3.3 Baseline Determination

The approved baseline methodology AMS-I.D, version 10 – “Renewable electricity generation for a grid”, has been applied for the proposed project activity. The baseline methodology chosen is applicable and justified for the project, since the maximum output capacity of the project is 10MW, which is well within the maximum output capacity of 15MW, as specified for small scale projects.

In the absence of project activity, the current practice will continue i.e. the generation of same amount of power from power plants connected to the southern regional grid. In the current situation, the Andhra Pradesh state grid (part of southern regional grid) has an energy deficit. At the end of 9th Plan of Planning Commission of India i.e. year 2002, the total energy availability in the state was 44302 MU against the requirement of 48394 MU i.e. a gap of approx 8%*. The same situation exists at the end of 10th plan of Planning Commission (2002- Feb, 2007) i.e. deficiency of approx 8.5%.

In addition to this, most of the capacity additions planned and implemented in the southern region during the 10th plan of the Planning Commission of India were fossil fuel based. Approx 7376 MW (5998 MW thermal power and 1158 MW hydropower) was planned to be added to the existing capacity of the southern regional grid during the period from 2002-2007 to meet the energy demand. These figures clearly show that the southern regional grid still has an energy deficit and also is dominated by thermal power generation. National plans also favour the fossil fuel based capacity additions. Therefore, the selection of southern regional grid as the baseline scenario is deemed justified.

The baseline is calculated as the emission reductions occurring due to electricity generation through renewable sources, derived from the electricity generated multiplied by the relevant emission factor of the selected grid. As the project activity is feeding the generated power to the Andhra Pradesh state grid, which is a part of the southern regional grid; the baseline for this project activity is the function of the generation mix of southern regional grid. The selection of the southern regional grid as the grid system boundary for the project activity is in line with the recent EB guidance for large countries such as India. The baseline scenario is identified as an equivalent amount of energy being supplied to the southern grid that is dominated by other fossil fuel based power plants.

The baseline emission factor for the southern regional grid is established based on approved methodology AMS-I.D using the “weighted average emissions (in kg CO₂e/kWh) of the current generation mix” approach. The baseline emission factor has been considered from the “CO₂ Baseline Database” published by the CEA[†]. The emission factor published by the CEA for the last year 2004-05 is 786.68 tCO₂/GWh based on weighted average approach and 861 tCO₂/GWh based on combined margin approach. As required by the methodology, the project proponent, following a conservative approach, has considered the weighted average emission factor for determining the emission reductions. Balaji Energy Private Limited has opted for the *ex-post* determination of the emission reductions based on the actual emission factors for each year.

* Power Scenario: Andhra Pradesh-

<http://www.cea.nic.in/planning/POWER%20SCENARIO%20AT%20A%20GLANCE/report.pdf>

[†] CO₂ Baseline Database, <http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm>



3.4 Additionality

The additionality of the project activity is demonstrated using the investment barrier, barriers due to prevailing practices and other barriers, discussed below.

Investment Barrier:

The project activity has faced barriers due to additional unforeseen investments. It has also been demonstrated that the benefits of CDM were considered to overcome these barriers /3/. The additional investment was incurred because of the following reasons:

- Change in the design as per the objections raised by the Central Design Organisation, Irrigation department /9/
- Safety measures to ensure the safety of the dam /6/
- Shifting of power evacuation from single substation at Somasila to two 33/11 KV substations, Somasila and Anathsagaram, due to the inability of the single substation to take full load /5/.

It has also been presented that the project was unable to procure adequate funds for implementation. It has been verified by DNV that while the project developer submitted a request to IREDA for sanction of a term loan based on the total project cost of INR 519.19 million, IREDA firmed up the cost of project at a conservative INR 396.2 million and sanctioned a term loan of INR 273.30 million only /12/. The project developer has had to spend an additional amount of INR 52.174 million as against the project cost estimated by IREDA.

It is argued that the hydro projects are highly capital intensive with low rates of return. The investment analysis for the project activity shows that the IRR without CDM revenues works out to be 13.81% while that with CDM revenues shows an improvement to 16.95%. This is just above the benchmark for the project activity which is calculated with a WACC of 16.44%. A sensitivity analysis has been carried out for variations in parameters such as:

Variations in Parameter	IRR without CDM (%)
Reduction in tariff by 10 %	10.89
Increase in generation by 20 % and reduction in tariff by 20%	12.65

The sensitivity analysis on the IRR as above indicates that the project activity is not viable without CDM revenues. DNV is of the opinion that it has been adequately demonstrated that the proposed project activity is not economically or financially attractive, given that the project proponent had to make additional investments. Furthermore, the investment analysis and all the relevant assumptions have been presented in a transparent manner.

Institutional barriers:

The project developer signed a Power Purchase Agreement with APTRANSCO in the year 2000. According to PPA, the tariff rate was decided at INR 2.25 per unit with an escalation of 5% per annum with 1994-95 as the base year, which were to be revised every year till 2003-04. Beyond 2003-04, tariff rate will be decided by Andhra Pradesh Electricity Regulatory Commission



(APEREC). Uncertainty due to the tariff rate beyond 2003-04 was a barrier for the implementation of the project activity as it would affect the financial viability of the project activity.

Prevailing Practice:

The project activity is the first dam-based small hydroelectric project in the state of Andhra Pradesh. This has been verified from the statistics of NEDCAP. All the other small hydro projects implemented are mostly canal, reservoir or run of river based projects.

National and sectoral policies:

The national and sectoral policies and future plans favour either the large scale fossil fuel fired power plants or the large scale hydroelectric plants. It has been verified from the official website of Central Electricity Authority (CEA) that in the southern region of India (including the state of Andhra Pradesh), most of the capacity additions planned for the 10th plan by the 'Planning commission of India' are thermal energy based. It has been planned to add approximately 1158.2 MW of hydro power during the 10th plan in comparison to 5998 MW of thermal power. Further, the national government has opened up the exploration of coal, oil and natural gas to the private sector. This has encouraged the development of fossil fuel based power plants. It has also been verified that the grid electricity in India is dominated by thermal generation and the overall nationwide mix of thermal to hydro-electric power is currently at 83:17.

DNV was also able to verify the fact that the benefits of CDM revenue were considered before the execution of the project activity. The minutes of meeting of the board of directors of M/s Balaji Energy Private Limited, dated 16 January 2002 was presented as an evidence for the claim./3/. Though all the relevant approvals for the project including power purchase agreement with APTRANSCO were obtained either in year 2000 or before that, it has been verified that the uncertainties due to electricity tariff (*Source: PPA – 2000*) and inadequate funds (*Source: Loan Sanction letter*) delayed the actual construction of the project. The project developers decided to avail the benefits of CER income and finally the physical construction started on 01 November 2002. This is considered acceptable given that the physical construction started only in late 2002 and even then the project activity has been facing hurdles, requiring efforts directed towards completion of the project (please refer to the response by the PP to clarification request no.3) and that the activity was anyway not eligible to generate retroactive credits.

The registration of the project as a CDM activity will present additional revenue for the project and thereby significantly alleviate the financial hurdles to the project.

In conclusion, it has been verified that the project is not financially attractive and faces different barriers and thus is not the most likely baseline scenario. Hence, the emissions reductions occurring from the project are deemed additional to those that would occur in the absence of the project activity.

3.5 Monitoring Plan

The approved small scale monitoring methodology AMS-ID, "Renewable electricity generation for a grid", has been adopted for the proposed project activity. The choice of methodology is justified as the project activity is the generation of electricity using hydro potential and supplying the same to the southern regional (SR) grid.



The project monitoring involves metering of the gross electricity generated, auxiliary electricity consumption, power import from the APTRANSCO grid and also the power export to the APTRANSCO grid. In accordance with the power purchase agreement, metering will be done using the following metering systems:

- External metering system: The main meters are installed by Balaji Energy Pvt. Ltd. at the interconnection point and check meters are installed by APTRANSCO at the same point. The main meter as well as the check meter consists of a pair of export and import meters of static type 0.2 class accuracy
- Internal metering system: Consists of meter for measuring the gross electricity generation, meter for auxiliary electricity consumption and in house meter for monitoring the import of electricity from the grid.

The main meters and the check meters are calibrated by using a standard meter. The main meters are calibrated half yearly by APTRANSCO. The standard meters are calibrated annually by Electronics Test and Development Center (ETDC), Government of India.

The internal metering system is calibrated half yearly by Balaji Energy Pvt Ltd.

The records of net energy fed to the grid system by the project activity duly signed by representatives of both APTRANSCO and project developer, will be kept for the entire crediting period plus two years. Supporting documents such as receipts of payments released by APTRANSCO will also be preserved for cross checking.

For the calculation of emission reductions, the latest grid emission factor for the southern regional grid will be taken from the “CO₂ Baseline Database” published by the CEA^{*}

The authority and responsibility for project management, monitoring, measurement, review and reporting has been clearly established. Similarly, the procedures for calibration and maintenance, performance reviews, internal auditing, corrective actions etc. have been defined in the monitoring plan.

The renewable energy technology is not transferred from any other location, therefore leakage has not been considered in this case.

3.6 Calculation of GHG Emissions

The project activity will displace a part of fossil fuel based electricity in the southern regional grid of India and will help in reduction of GHG emissions from the burning of fossil fuels in the plants linked to the regional grid. While the project emissions are zero, the emission reductions due to the project activity are calculated to be equal to the baseline emissions and have been estimated to be 24 149 tCO₂e per year, based on a baseline emission factor of 786.68 tCO₂e/GWh. The grid emission factor will be updated annually ex-post for the year in which actual project generation and associated emissions reductions occur. The baseline emission factor has been derived from the “CO₂ Baseline Database” published by the CEA[†].

^{*} CO₂ Baseline Database, <http://www.cea.nic.in/planning/c%20and%20e/Govtment%20of%20India%20website.htm>

[†] CO₂ Baseline Database, <http://www.cea.nic.in/planning/c%20and%20e/Govtment%20of%20India%20website.htm>



3.7 Environmental Impacts

The proposed project is a small scale hydropower plant and the environmental impacts of the project are not considered significant. As per the requirement of Ministry of Environment and Forests, Government of India, an EIA is not required for small hydroelectric projects. The project does not involve land submergence and resettlement issues since the proposed project site is not a notified area nor is there any threat to the fauna and flora. Consent to establish under the provisions of the Water Act 1974 and Air Act 1981 has been issued by the Andhra Pradesh Pollution Control Board for the project activity/10/.

3.8 Comments by Local Stakeholders

The project developer has identified the following stakeholders and approached them individually for their comments / approvals:

- Transmission Corporation of Andhra Pradesh Ltd. (APTRANSCO) - The project developer has signed an agreement with APTRANSCO in October 2000 and second agreement on 31st January 2005./2
- NEDCAP- has issued permission for setting up of the project /7
- Andhra Pradesh State Electricity Board (APSEB)- have given their consent for setting up the project/8/
- Irrigation department- has given their approval/9/
- Andhra Pradesh Pollution Control Board- has given its consent for establishment/10/
- Local village panchayat of Somasila- has given “No objection certificate” for the project activity./11/

The project has not received any negative comments from any of the local stakeholders.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

The initial version of the PDD was made publicly available on DNV's climate change website (www.dnv.com/certification/climatechange) and Parties, stakeholders and NGOs were through the CDM website invited to provide comments during a 30 days period from 07 November 2006 to 06 December 2006.

No comment was received.



5 VALIDATION OPINION

Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the “10 MW Somasila Hydro Power Project for a grid system by Balaji Energy Pvt. Ltd.” in India. The validation was performed on the basis of UNFCCC criteria for the Clean Development Mechanism and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The review of the project design documentation and the subsequent follow-up interviews have provided DNV with sufficient evidence to determine the fulfilment of stated criteria.

The project is proposed as a unilateral project. The host country is India. India fulfils the participation criteria. The approval of the project activity and confirmation that the project activity assists in achieving the sustainable development, from the DNA of India has been verified.

Having an installed capacity of less than 15 MW, the project is eligible as type I small-scale CDM project activity. The project correctly applies the simplified baseline and monitoring methodology AMS-ID.

By generating renewable energy which will displace grid electricity, the project results in reductions of CO₂ emissions that are real, measurable and give long-term benefits to the mitigation of climate change. It is demonstrated that the project 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.

The total emission reductions from the project are estimated to be on the average 24 149 tCO₂e per year over the selected 10 year crediting period. The emission reduction forecast has been checked and is deemed likely that the state amount is achieved given that the underlying assumptions do not change.

Adequate training and monitoring procedures have been implemented.

In summary, it is DNV's opinion that the project, as described in the project design document of 22 February 2007, meets all relevant UNFCCC requirements for the CDM, is eligible as category I D small-scale CDM project activity and correctly applies the approved simplified baseline and monitoring methodology AMS-ID, version 10. Hence, DNV requests the registration of the “10 MW Somasila Hydro Power Project for a grid system by Balaji Energy Pvt. Ltd.” as a CDM project activity.



REFERENCES

Documents provided by the project proponent that relate directly to the project:

- /1/ Project design Document, Initial version and revised version 01 dated 27 January 2007 and version 02 dated 22 February 2007.
- /2/ Power Purchase agreement with APTRANSCO, First Agreement No. 14624 dated 21/10/2000 and the new agreement No.153 dated 20 October 2005.
- /3/ Evidence of CDM consideration at the project conception time - Minutes of board meeting dated 16 January 2002.
- /4/ Copy of agreement with the civil contractor and M/s Balaji Energy Private Limited for Civil Construction- 3/BEPL/SOM/2000 dated 22 February 2002.
- /5/ Copy of agreement with the contractor for laying of second transmission line- Letter dated 16 April 2005.
- /6/ Copy of Agreement with National Institute of Rock Mechanism NIRM/TS/RB/PP/17/2002-03/510 dated 27 July 2002.
- /7/ Approval letter from NEDCAP- Letter No. NEDCAP/MHS/82/101/99-2000 dated 11 April 2000
- /8/ Consent from Andhra Pradesh State Electricity Board (APSEB) – Letter No. B.P. (Proj-IPC) Ms No. 188, dated 29 December 1994.
- /9/ Order along with the terms and conditions issued by Irrigation and command area development (TGP) Department – G.O.Ms. No. 100 dated 09.07.1999; Approval of drawings Central Drawing Organisation – CE/CDO/CD/IV/88/92 dated 03/10/2000.
- /10/ Consent of establishment from Andhra Pradesh state pollution Control Board- Order No. 190/PCB/C.Estt/RO-NEL/AEE-N/99/3622 on 02 November 1999.
- /11/ No Objection Certificate from Local Village Panchayat dated 12/ April 1999.
- /12/ Loan Sanction letter from IREDA – 221/1842/M&M/2000-IREDA/5068 dated 08 August 2000 and financial analysis sheet.
- /13/ DNA of India – Letter of approval dated 22 February 2007.

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

- /14/ International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF): *Validation and Verification Manual*. <http://www.vvmanual.info>
- /15/ Appendix B of the simplified modalities and procedures for small-scale CDM project activities: Approved Baseline methodology AMS ID, version 10, 23 December 2006.

Persons interviewed during the validation, or persons who contributed with other information that are not included in the documents listed above:

- /16/ Mr. P. Srinivas Reddy : Project Engineer - M/s Balaji Energy (P) Ltd.



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- /17/ Mr. A.Jayasunder Reddy : Technician – M/s Balaji Energy (P) Ltd
- /18/ Mr. Voyaz ; Technician - M/s Balaji Energy (P) Ltd.
- /19/ Mr. N.Prathap Kumar : Divisional Engineer – Transmission Corporation line and substation – APTRANSCO.
- /20/ Mr. V. Venkateswaralu : Divisional Engineer - APSPDCL
- /21/ Mr. M. Opiah : Incharge (substation) – APTRANSCO
- /22/ Mr. P.Prasad : Incharge (substation) - APTRANSCO
- /23/ Mr. B.V. Sharma : Deputy Executive Engineer – Irrigation department (Government of Andhra Pradesh)

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APPENDIX A

VALIDATION PROTOCOL FOR SMALL-SCALE CDM PROJECT ACTIVITIES

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	The project has been proposed as a unilateral project.	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 Scale CDM Project Activities §23a	CAR 1	Table 2, Section A.3 Host country approval has been obtained
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 the written approval of voluntary participation from the designated national authority of each party involved	Kyoto Protocol Art. 12.5a, Simplified Modalities and Procedures for Small Scale CDM Project Activities §23a	CAR 1	Host country approval has been obtained
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. In case public funding from Parties included in Annex I is used for the project activity, these Parties shall provide an affirmation that such funding does not	Decision 17/CP.7, CDM Modalities and Procedures Appendix B,	OK	The project is being proposed as a unilateral project.

Requirement	Reference	Conclusion	Cross Reference/ Comment
result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these Parties.	§ 2		
8. Parties participating in the CDM shall designate a national authority for the CDM	CDM Modalities and Procedures § 29	OK	DNA of India is the National Clean Development Mechanism Authority, Ministry of Environment and Forests.
9. The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol	CDM Modalities and Procedures § 30, 31b	OK	India ratified Kyoto Protocol on 26 August 2002
10. The participating Annex I Party's assigned amount shall have been calculated and recorded	CDM Modalities and Procedures §31b	Annex I Party has not been identified yet	The project is being proposed as a unilateral project
11. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7	CDM Modalities and Procedures §31b	Annex I Party has not been identified yet	The project is being proposed as a unilateral project
12. 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
13. 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	
14. 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, B and D

Requirement	Reference	Conclusion	Cross Reference/ Comment
15. 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 Local stake holders are consulted by the project proponent
16. 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
17. 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 was made publicly available on www.dnv.com/certification/climatechange and Parties, stakeholders and NGOs will through the CDM website be invited to provide comments during the 30 day period from 07 November 2006 to 06 December 2006. No comment was received.

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 maximum output capacity of the project activity is 10 MW which is less than the limit of 15 MW defined for type-I small scale CDM projects.		OK
A.1.2. The small scale project activity is not a debundled component of a larger project activity?	/1	DR	Project activity is not a de bundled component of a larger project activity.		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, the project activity falls under category-ID: Renewable electricity generation for a grid, defined for small scale projects, as the power generation of 10 MW is less than the 15 MW limit for AMS I D methodology and the project activity is grid connected.		OK
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, I	Yes. The project is located in Somasila village, Atmakur Taluk in Nellore district of Andhra Pradesh. It falls in between longitude 79° 15' to 79° 20'E and latitude 14° 25' to 14° 29'N.		OK

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

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Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
A.2.2. Are the project's system (components and facilities used to mitigate GHG's) boundaries clearly defined?	/1	DR	Yes, the project activity comprises of two synchronous generators of capacity 5 MW each coupled to two units of vertical Kaplan adjustable blade type turbines. Power will be evacuated through 33/11 KV sub-stations located at Somasila and Ananthasagaram. The project systems also consist of the water conductor for drawing of water from the Somasila dam through an approach channel and a tunnel up to the intake dam and system for the release of water after power generation to the Pennar river. The generation evacuation is from two points 2km away and the second 16 km away from the project location.		OK
A.2.3. Does the project design engineering reflect current good practices?	/1	DR	Yes, The project design reflects current good practices through the use of synchronous generator and vertical full Kaplan type turbine.		OK
A.2.4. Will the project result in technology transfer to the host country?	/1	DR	No technology transfer is involved as the technology is available in the host country.		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 for meeting training and maintenance needs?	/1	DR	Though not specifically addressed in the PDD, the project will require minimal additional training and maintenance efforts, as this involves setting up of a small hydro project using indigenous technologies.		OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
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	Yes, the project generates employment during the construction and operation of the project. It also acts as catalyst for further construction of roads, rural development in shape of buildings and communication system, checks rural migration, and ensures environmental well being and reliable power generation from renewable source of energy to the region.		OK
A.3.2. Will the project create any adverse environmental or social effects?	/1	DR	The project is unlikely to create any adverse environmental or social effects, as this is a small hydro electric project.		OK
A.3.3. Is the project in line with sustainable development policies of the host country?	/1	DR	The proposed project is likely to create jobs and contribute to local development, apart from environmental and social being. However, this should be further confirmed by the DNA of India, as Host country approval for the project is not evidenced.	CAR-1	OK
A.3.4. Is the project in line with relevant legislation and plans in the host country?	/1	DR	The project activity has the following relevant approvals from the state and central govt and need to be verified during the site visit: <ul style="list-style-type: none"> - Approvals from the state pollution control board dated 2 Nov 1999. - Approval from the Non-conventional energy development corporation of Andhra Pradesh dated 11 April 2000. - Approval from Andhra Pradesh state 	CL-1	OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			<p>electricity board dated 29/12/1994.</p> <ul style="list-style-type: none"> - Approval from Transmission Corporation of Andhra Pradesh Ltd dated 31 Jan 2005. - Approval from Andhra Pradesh Electricity regulatory commission. - Ministry of Non-conventional Energy sources, Govt. of India. - Irrigation department, Govt. of Andhra Pradesh dated 12 May 1999. <p>As per the PDD, most of the clearances were obtained before the year 2000, but the physical construction of the project activity has commenced only has started only in 2002. Based on this, it needs to be demonstrated how the project is eligible under the CDM and why CDM funds are required for the project activity.</p>		
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, The project applies one of the simplified baseline proposed for the small scale project category I D i.e. the baseline is the annual kWh generated by the project times an emission		OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			coefficient calculated as the weighted average emission (in kgCO ₂ /kWh) of the current generation mix.		
B.1.2. Is the baseline methodology applicable to the project being considered?	/1	DR	AMS ID is applicable to renewable energy projects and as the project is a small hydro power plant.		OK
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	<p>The additionality of the project activity has been demonstrated through the barriers of prevailing practice, investment and the institutional.</p> <p>It is stated that CDM was seriously considered prior to the project implementation start date and was discussed in the board meeting held on 16th January 2002.</p> <p>A copy of the minutes of meeting is to be presented for verification.</p> <p>Prevailing Practice – it is stated that the project activity is the first dam based small hydro power project in the state of Andhra Pradesh.</p> <p>However this is required to be substantiated with evidence.</p> <p>Investment Barrier: It has been stated that, the additional investment had to be incurred due to the change in the design due to non approval by the authorities to use the vent pipes. It is also stated that additional investment was incurred in engaging</p>	CL-2	OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			<p>of experts for the blasting works. Additional investment was also incurred due to the shifting of one evacuation point to a distance of 16 Km by APTRANSCO from the original evacuation point due to inadequate capacity.</p> <p>It is also stated that the project has not been sanctioned sufficient funds leading to postponing of some critical civil works, and non installation of the flow meter to measure the water drawn.</p> <p>While the additional investment due to shifting of one of the evacuation points is justified as APTRANSCO had originally agreed, The other additional investment is to be justified as it indicates inadequate design.</p> <p>c) Investment Analysis: It has been discussed that the project IRR of 10% without CDM revenues will improve to 13.84% on considering the CDM revenues.</p> <p>Detailed IRR calculations to be provided for verification.</p> <p>Institutional barrier: It is stated that the revision of the MNES suggested tariff to the tariff of the electricity Regulatory Committee in April 2004 has adversely affected the project viability. This requires further elaboration.</p>		
B.2.2. Is the application of the baseline methodology and the discussion and determination of the chosen baseline transparent and conservative?	/1	DR	The application of the baseline methodology and discussion is transparent. Baseline emissions, based on weighted average emission factor for the regional grid, have been estimated by using the CO ₂ emission data published by Central Electricity authority (CEA) website.		OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
B.2.3. Are relevant national and/or sectoral policies and circumstances taken into account?	/1	DR	Yes, the baseline scenario takes into consideration relevant national and/or sectoral policies and circumstances.		
B.2.4. Is the baseline selection compatible with the available data?	/1	DR	Yes.		OK
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	Yes, it is likely that India will remain dependent on fossil fuel energy for the entire duration of the crediting period.		OK
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 project starting date is 01 November 2002 and the expected operational lifetime of the project activity is 30 years. Evidence of the starting date is to be provided. It is also requested that it be clarified as to why the project proponent has chosen to submit the PDD now for validation now, given that the project activity started construction in November 2002	CL-3	OK
C.1.2. Is the assumed crediting time clearly defined (renewable crediting period of seven years with two possible renewals or fixed crediting period of 10 years with no renewal)?	/1	DR	Fixed crediting period of 10 years from the date of registration of the project has been chosen for the project.		OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
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 in line with the monitoring methodologies provided for the relevant project category?	/1	DR	Yes, the selected monitoring methodology is in line with Type I.D "Grid connected renewable electricity generation" for small-scale CDM project activities.		OK
D.1.2. Is the monitoring methodology applicable to the project being considered?	/1	DR	Yes, the monitoring methodology is applicable to the project activity.		OK
D.1.3. Is the application of the monitoring methodology transparent?	/1	DR	Yes, the application of methodology is transparent. Monitoring plan covers the monitoring of all relevant parameters like gross electricity generation, auxiliary power consumption, power imports and exports, for estimating baseline emissions. It needs to be clarified as to how the power exported to different substations is monitored separately as power is evacuated two different substations.	CL-4	OK
D.1.4. Will the monitoring methodology give opportunity for real measurements of achieved emission reductions?	/1	DR	Yes.		OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
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. 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		Since the project activity generates electricity using hydro power, there will be no project emissions.		OK
D.3. Monitoring of Leakage If applicable, it is assessed whether the monitoring plan provides for reliable and complete leakage data over time.					
D.3.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/1		Since the energy generating equipment is not transferred from another activity and no existing equipment is transferred to another activity, no leakage needs to be considered.		OK
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. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	/1		Yes, the baseline indicators have been chosen in line with the small-scale methodologies approved by the CDM EB. The monitoring plan provides for the monitoring of the total electricity exported to the grid from the project activity. The grid emission factor for the southern regional grid is calculated		OK

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

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Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			ex-post each year using weighted average of current generation mix approach..		
D.4.2. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	/1	DR	The choice of indicators is sufficient to monitor the CO ₂ emissions, the relevant GHG.		OK
D.4.3. Will it be possible to monitor / measure the specified baseline indicators?	/1	DR	Yes.		OK
D.4.4. Will the indicators give opportunity for real measurements of baseline emissions?	/1	DR	Yes.		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	The authority and responsibility has been described in the PDD to be with the board of directors. Board of directors in turn will delegate the same to a competent person, who will be the in-charge of all GHG monitoring activities.		OK
D.5.2. Is the authority and responsibility for registration monitoring measurement and reporting clearly described?	/1	DR	Available but need to be formalised.	CL-5	OK
D.5.3. Are procedures identified for training of monitoring personnel?	/1	DR	As in D.5.2	CL-5	OK
D.5.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1	DR	As the project activity is a mini-hydro project, no emergencies are foreseen.		OK
D.5.5. Are procedures identified for calibration of	/1	DR	Calibration of instruments is being done but	CL-5	OK

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

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Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
monitoring equipment?			procedures need to be formalised.		
D.5.6. Are procedures identified for maintenance of monitoring equipment and installations?	/1	DR	Available but need to be formalised.	CL-5	OK
D.5.7. Are procedures identified for monitoring, measurements and reporting?	/1	DR	Available but need to be formalised	CL-5	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	Available but need to be formalised	CL-5	OK
D.5.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	/1	DR	As in D.5.7	CL-5	OK
D.5.10. Are procedures identified for internal audits of GHG project compliance with operational requirements as applicable?	/1	DR	Procedures need to be formalized.	CL-5	OK
D.5.11. Are procedures identified for project performance reviews?	/1	DR	Procedures need to be formalized	CL-5	OK
D.5.12. Are procedures identified for corrective actions?	/1	DR	Procedures need to be formalised	CL-5	OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
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 ex-ante estimated 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	Since the project activity is a small hydro power project there will be no project emissions.		OK
E.1.2. Have all relevant greenhouse gases and sources been evaluated?	/1	DR	Same as E.1.1		OK
E.1.3. Do the methodologies for calculating project emissions comply with existing good practice?	/1	DR	Same as E.1.1		OK
E.1.4. Are the calculations documented in a complete and transparent manner?	/1	DR	Same as E.1.1.		OK
E.1.5. Have conservative assumptions been used?	/1	DR	Same as E.1.1		OK
E.1.6. Are uncertainties in the project emissions estimates properly addressed?	/1	DR	Yes.		OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
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 and estimated ex-ante.					
E.2.1. Are leakage calculation required for the selected project category and if yes, are the relevant leakage effects assessed?	/1	DR	Since the energy generating equipment is not transferred from another activity and no existing equipment is transferred to another activity, no leakage needs to be considered.		OK
E.3. Baseline GHG Emissions The validation of ex-ante estimated 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	The baseline emissions have been calculated using the grid emission factor of the southern regional grid and the electricity generated and exported to the grid.		OK
E.3.2. Are all aspects related to direct and indirect baseline emissions captured in the project design?	/1	DR	Yes.		OK
E.3.3. Have all relevant greenhouse gases and sources been evaluated?	/1	DR	CO2 emissions have been considered.		OK
E.3.4. Do the methodologies for calculating baseline emissions comply with existing good practice?	/1	DR	Yes		OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
E.3.5. Are the calculations documented in a complete and transparent manner?	/1	DR	Yes		OK
E.3.6. Have conservative assumptions been used?	/1	DR	Yes, conservative values for CO ₂ emission factor have been used.		OK
E.3.7. Are uncertainties in the baseline emissions estimates properly addressed?	/1	DR	Yes		OK
E.4. Emission Reductions Validation of ex-ante estimated emission reductions.					
E.4.1. Will the project result in fewer GHG emissions than the baseline case?	/1	DR	Yes, the estimated amount of emission reductions from the project activity will be 24 149 tCO ₂ e.		OK
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	As per the MoEF, an EIA is not required for projects costing less than USD 22 Millions, as is the case with the proposed project.		OK
F.1.2. Does the project comply with environmental legislation in the host country?	/1	DR	Yes.		OK
F.1.3. Will the project create any adverse environmental effects?	/1	DR, I	No. The no-objection certificate from irrigation department of Government of Andhra Pradesh has been obtained and verified.		OK
F.1.4. Have environmental impacts been identified and addressed in the PDD?	/1	DR	Yes.		OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
G. Comments by Local Stakeholder Validation of the local stakeholder consultation process.					
G.1.1. Have relevant stakeholders been consulted?	/1	DR, i	Yes the following relevant stakeholders have been consulted - Local community / administrative authorities comprising of village panchayat, district local administration; APTRANSCO and other regulatory authorities.		OK
G.1.2. Have appropriate media been used to invite comments by local stakeholders?	/1	DR, I	The comments from local stakeholders were invited through personal communication and notices were verified.		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?	/1	DR	Not specifically required for mini hydro projects under the Indian legislation.		OK
G.1.4. Is a summary of the comments received provided?	/1	DR	Summary of local stake holder's comments is available and was verified		OK
G.1.5. Has due account been taken of any comments received?	/1	DR	No adverse comments have been received.		OK

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

Table 3 Resolution of Corrective Action and Clarification Requests

Draft report corrective action requests and requests for clarification	Ref. to Table 2	Summary of project participants' response	Final conclusion
<p>CAR 1</p> <p>The Host country approval for the project activity shall be furnished.</p>	A.3.3	<p>The approval from the DNA of India has been furnished.</p>	<p>Letter of approval from the DNA of India has been obtained, dated 22 February 2007.</p> <p>CAR is closed</p>
<p>CL1 :</p> <p>Relevant approvals/consents from state and central Government agencies to be verified.</p> <p>As per the PDD, most of the clearances were obtained before the year 2000, but the physical construction of the project activity has commenced only in 2002. Based on this, it needs to be demonstrated how the project is eligible under the CDM and why CDM funds are required for the project activity.</p>	A.3.4	<p>The project proponent has received some permissions pertaining to Somasila mini hydel scheme before 2000 and these permissions have no impact on start date of the project activity. The details and significance of these permissions is furnished below by way of a note.</p> <p>The project is originally envisaged to be implemented by the State utility A.P State Electricity Board (Annexure-1 Consent order issued by APPCB indicates originally NOC issued to APSEB to set up Hydel power unit at Somasila Dam). But due to the size and intention of the government not to get in to small projects, the same was allotted to private developer.</p> <p>Andhra Pradesh State Electricity Board (APSEB) in B.P (Projects-IPC) MS. NO. 188 dt 29th December 1994 allotted the small hydel project at Somasila dam to the project proponent to enable him to collect relevant hydraulic data and</p>	<p>OK. Complimentary information provided has been accepted</p> <p>Following approvals have been verified:</p> <ul style="list-style-type: none"> • Transmission Corporation of Andhra Pradesh Ltd. (APTRANSCO)- The project developer has signed an agreement with APTRANSCO in October 2000 and second agreement on 31st January 2005./2 • NEDCAP- has issued permission for setting up of the project /7 • Andhra Pradesh State Electricity Board (APSEB)- have given their consent for setting up the project/8/ • Irrigation department- has given their approval/9/ • Andhra Pradesh Pollution Control Board- has given its consent for establishment/10/ • Local village panchayat of Somasila- has given "No objection

Draft report corrective action requests and requests for clarification	Ref. to Table 2	Summary of project participants' response	Final conclusion
		<p>prepare a viable detailed project report only. Therefore this allotment order does not enable the PP to start any project construction activity because the proponent him self is not sure whether the DPR will give him a techno economic scheme or not (Annexure-2)</p> <p>The Irrigation and Command Area Development Department of Government of Andhra Pradesh has issued permission on 9 the July 1999, for implementation of the project activity subject to several technical conditions imposed by them all of which have an impact on the project investment and its viability. For instance there is one condition which stipulates that the project proponent shall incorporate the technical aspects pointed out by Central Designs Organization in the designs of the power projects. There are several such conditions imposed by the Government department. (Annexure -3) The promoter could not commence any project activity, since a real analysis is required on the effect of these technical conditions on project viability.</p> <p>The letter issued by Pollution Control Board refers to the original sanction made to APSEB and that the same is</p>	<p>certificate” for the project activity./11/</p> <p>CL1 is closed.</p>

Draft report corrective action requests and requests for clarification	Ref. to Table 2	Summary of project participants' response	Final conclusion
		<p>transferred to the project proponent under its letter dated 2 nd November 1999.</p> <p>The project proponent has also received permission from Vilage Panchayat to commence the project when several changes in the scheme were being made.</p> <p>But the whole approval underwent a change with transfer of powers from APSEB to NEDCAP, the state nodal agency.</p> <p>The project proponent could take up the project activity only after obtaining clearance from the state nodal agency - Non-Conventional Energy Development Corporation of Andhra Pradesh Limited (NEDCAP), which happened only after the year 2000. NEDCAP has given approval for the detailed project report, approving the investment of the developer only in the month of April 2000 after the proposal was approved by the directors of NEDCAP.</p> <p>The project proponent has executed the PPA with AP TRANSCO only during October 2000 after the permission was obtained from NEDCAP. The PPA contained some clauses, indicating</p>	

Draft report corrective action requests and requests for clarification	Ref. to Table 2	Summary of project participants' response	Final conclusion
		<p>tariff uncertainty. For instance Article 2.2 in the PPA stipulated that "The Company shall be paid the tariff for the energy delivered at the interconnection point for sale to APTRANSCO at Rs.2.25 paise per unit with escalation at 5% per annum with 1994-95 as base year and to be revised on 1st April of every year up to the year 2003-04. Beyond the year 2003-04, the purchase price by APTRANSCO will be as decided by Andhra Pradesh Electricity Regulatory Commission". This indicated revenue uncertainty</p> <p>The project proponent has obtained sanction of financial assistance in the month of Aug.2000. IREDA has not sanctioned adequate funds required for project implementation. Even land required for the project activity could be obtained only in December 2001.</p> <p>The project proponent could not take up the project construction with all the above barriers related to tariff, insufficient funding, land availability etc. In the light of these uncertainties, it has been decided to consider the benefits under CDM as additional stream of revenue to address some of the uncertainties.</p>	

Draft report corrective action requests and requests for clarification	Ref. to Table 2	Summary of project participants' response	Final conclusion
		<p>The real action to commence the project activity was taken up only in November, 2002 when the project construction has commenced. All the above actions point out clearly that the start date of the project activity is only after the year 2000 and there is also early consideration of CDM revenue in the project design before decision is taken to commence the project activity.</p>	
<p>CL 2:</p> <p>It is stated that CDM was seriously considered prior to the project implementation start date and was discussed in the board meeting held on 16th January 2002.</p> <p>A copy of the minutes of meeting is to be presented for verification.</p> <p>Prevailing Practice – it is stated that the project activity is the first dam based small hydro power project in the state of Andhra Pradesh.</p> <p>However this is required to be substantiated with evidence.</p> <p>Investment Barrier: It has been stated that, the additional investment had to be incurred due to the change in the design due to non approval by the authorities to use the vent pipes. It is also stated that additional investment was incurred in engaging of experts for the blasting works. Additional</p>	B.2.1	<ul style="list-style-type: none"> • Copy of Minutes of Board Meeting, where CDM was considered prior to the project implementation is attached for verification. • The Somasila Hydro Power project is the first dam based project in the state of Andhra Pradesh. This is evident from the record of NEDCAP, the state nodal agency for developing non-conventional energy projects in the state of Andhra Pradesh. Copy of NEDCAP document is attached for verification. <p>The 10 MW Somasila hydro project is conceived with a view to harness the irrigation discharges from the existing Somasila Dam in Nellore district of Andhra Pradesh. Originally M/s Balaji Energy Pvt. Ltd, has envisaged to install the turbines at the downstream of the Somasila dam in the river bed itself and connecting the</p>	<ul style="list-style-type: none"> • Copy of minutes of board meeting dt 16th January 2002, has been verified • Copy of NEDCAP statistics has been verified. <p>Following documents have been verified:</p> <ul style="list-style-type: none"> • Objections raised by Irrigation department. • Contract signed with National Institute of Rock Mechanics, for the safety measures for the dam. • APTRANSCO contract for laying of second transmission line at Ananthsagaram. • IREDA letter for the sanction of term loan of INR 273.30 million. <p>- The IRR of the project activity (based on project cost of INR 519.19 million including interest during construction) is 13.84% without CDM revenue and 16.95% with CDM revenue against benchmark of</p>

Draft report corrective action requests and requests for clarification	Ref. to Table 2	Summary of project participants' response	Final conclusion
<p>investment was also incurred due to the shifting of one evacuation point to a distance of 16 Km by APTRANSCO from the original evacuation point due to inadequate capacity.</p> <p>It is also stated that the project has not been sanctioned sufficient funds leading to postponing of some critical civil works, and non installation of the flow meter to measure the water drawn.</p> <p>While the additional investment due to shifting of one of the evacuation points is justified as APTRANSCO had originally agreed, The other additional investment is to be justified as it indicates inadequate design.</p> <p>c) Investment Analysis: It has been discussed that the project IRR of 10% without CDM revenues will improve to 13.84% on considering the CDM revenues.</p> <p>Detailed IRR calculations to be provided for verification.</p> <p>Institutional barrier: It is stated that the revision of the MNES suggested tariff to the tariff of the electricity Regulatory Committee in April 2004 has adversely affected the project viability. This requires further elaboration.</p>		<p>generating machines by laying penstocks and connecting them to the river vents provided in the piers no. 17 & 18 and thus approached the Irrigation & C.A.D department for its approval. However this idea has been disapproved by the department requiring the project proponent to find out an alternate water conductor system. The final water system as proposed consisted of an intake channel from the reservoir, construction of intake structure with gates, a tunnel down stream of intake channel, intake structure at the exit of the tunnel, surge shafts etc. Further the advice of National Institute of Rock Mechanics was to be obtained in order to consider the safety aspects of the dam. It has also become necessary to shift power evacuation in respect of power generation from one of the turbines to a distance of over 16 km. All these resulted in additional investment in respect of the project activity. The result of additional investment is not due to inadequate design on the part of the project proponent but as a result of the above factors.</p> <p>The project has not been sanctioned</p>	<p>16.44%.</p> <p>CL is closed.</p>

Draft report corrective action requests and requests for clarification	Ref. to Table 2	Summary of project participants' response	Final conclusion
		<p>the required funds for implementation by the IREDA. The proponent submitted a request to IREDA for sanction of term loan based upon the total project cost of Rs. 519.19 million. However IREDA has firmed up the cost at Rs. 396.2 million and sanctioned a term loan of Rs. 273.30 million. This has caused the promoter to defer some of the essential civil works, which are required for effective operation of the project and also to maintain the envisaged head.</p> <p>Investment analysis: Investment analysis is presented by way calculation of IRR for the project activity along with assumptions underlying the preparation of IRR.</p> <p>Institutional barrier: The project activity faced institutional barrier with respect to tariff. There was uncertainty with respect to eligible tariff due to the following developments.</p> <p>The promoter has entered into a Power Purchase Agreement (PPA) with APTRANSCO on 28th October 2000, where the tariff permitted was Rs.2.25 per kWh with a yearly escalation of 5% and the base year proposed is 1994-95.</p> <p>A.P.Regulatory Commission</p>	

Draft report corrective action requests and requests for clarification	Ref. to Table 2	Summary of project participants' response	Final conclusion
		<p>subsequently banned third party sale of power and also reduced the tariff to Rs. 2.69 with progressive reduction.</p> <p>The state utility did not honour the revised PPA executed with the project proponent not withstanding a directive from the State High Court and the Appellate Tribunal for Electricity. The state utility preferred a further appeal to a higher court and the matter is still pending.</p>	
<p>CL 3:</p> <p>The project starting date is 01 November 2002 and the expected operational lifetime of the project activity is 30 years.</p> <p>Evidence of the starting date is to be provided.</p> <p>It is also requested that it be clarified as to why the project proponent has chosen to submit the PDD now for validation now, given that the project activity started construction in November 2002</p>	C.1.2	<ul style="list-style-type: none"> • Evidence on the starting date of the project activity in the form of agreement executed with the civil contractor is furnished for verification. • Please refer to attachment A below. 	<p>Balaji Energy Pvt Ltd. has signed an agreement with the civil contractor on 21 February, 2002. Copy of the agreement has been verified. The actual construction started on 01st November 2002.</p> <p>Given that the physical construction started only in late 2002 and even then the project activity has been facing hurdles, requiring efforts directed towards completion of the project and that the activity was anyway not eligible to generate retroactive credits, it is considered acceptable that the PDD has been submitted for validation only in November 2006</p> <p>CL is closed</p>
CL 4:	D.1.3	There will be separate monitoring	Complimentary information provided is

Draft report corrective action requests and requests for clarification	Ref. to Table 2	Summary of project participants' response	Final conclusion
It needs be clarified as to how the power exported to different substations is monitored separately as power is evacuated two different substations.		systems for each of the substations, to which power will be evacuated. There will be one main meter and one check meter in each substations and the bill raised by APTRANSCO will form the basis of the monitoring system.	accepted. CL is closed.
CL 5: Procedures for project management covering authority & responsibility, measurement, monitoring, reporting, calibration, maintenance & emergency preparedness to be formalised. Management system procedures related to documentation/record keeping, corrective actions, internal audits & performance reviews also to be formalised.	D.5	The issues related to management systems and monitoring is provided herewith as an attachment. (Attachment 1)	Following procedures have been verified : - Data monitoring, reporting. - Calibration of monitoring equipment. - Emergency preparedness. - Internal auditing and performance reviews. - Documentation/record keeping. CL is closed

Attachments A for CL 3.**BALAJI ENERGY PRIVATE LIMITED**

1-2-23/4/13/37 & 38, 11th Floor, Aravind Nagar Colony, Domaguda, Hyderabad - 500 029.
Tel: 27606449, 55501776, Fax: 040 - 27603280.

May 31, 2007

Mr. Chandrashekara Kumaraswamy
Manager (South Asia)
DET NORSKE VERITAS AS
103, Belview, No.7, Haudin Road,
Off. Ulsoor Road,
Bangalore.

Dear Sir,

Sub: Validation of 10MW Somasila Hydro Project - Reg.

Furnished below our response to the comments made in the validation protocol.

Though a resolution was passed by the Company in the Board Meeting held in January 2002 to consider CDM benefits, the CDM activity could not be pursued due to the following reasons:

1. Clear cut guidelines were not available for CDM process when the decision was taken to consider CDM benefits for the project activity in January 2002.
2. There was no certainty of CDM, as the Kyoto Protocol itself was ratified only in Feb. 2005. Even the first project from hydro sector in India was approved for registration only in the month of July 2005 (Dehar hydro: CDM Ref No. 0035).
3. The project proponent (PP) also came to understand that consultancy fee was as high as Rs.2 to 3 million. When the project was facing the funds constraint due to inadequate funding by the institutions, PP could not afford to spend substantial money on transaction cost. Hence, PP looked for a consultant who would work on success basis. The appointment of Consultant took place subsequently and the documents were submitted for validation.

Besides, the project also faced several hurdles in the implementation, which was threatening the very existence of the project. Of the hurdles faced, the following three typify the seriousness of the problems:

1. The project cost was estimated at Rs.519.19 million by the PP when it was submitted to IREDA seeking financial assistance. However, IREDA firmed up the project cost at Rs.396.20 million only. However, as the reduction in project cost was not justified, the PP took up the matter with IREDA. A team of engineers from Roorkee Institute visited and finalized the project cost at

Site : Somasila Dam, Somasila Village, Anantha Sagar Mandal, Nellore District, A.P.

TIN No : 285902146/4

CST No: SEC006101 06/2003-2003, Dt: 7-7

Rs.419.15 million. The PP had to bridge the gap partially through deferment of certain civil works and resort to unsecured loans (Balance sheet is furnished for proof of unsecured loans).

2. Even as the project was under implementation, the Irrigation Dept. of Government of Andhra Pradesh, directed the PP to stop the construction (Letter from Irrigation department dt 17.03.2004 is furnished as attachment) as the Irrigation Department was contemplating some design changes in their own flood bank which was running parallel to project activity's water conductor system. This brought the implementation of main civil works to a halt. After site inspection by a team of Department engineers, series of discussions and furnishing undertakings to the Department, the PP could recommence the construction activity only after 16.7.2004 (letter from irrigation department is attached) losing 6 valuable months including remobilization of work force.
3. Power Purchase Agreement (PPA) was signed with AP Transco on 28/10/2000. However, Transco was not interested to honor the agreement and directed the PP to enter into a fresh PPA in the standard format approved by the AP Electricity Regulatory Commission. The tariff rate was also reduced to Rs.2.69 per kwh as against Rs.3.48 per Kwh accepted earlier. Though the PP, left with no choice accepted the tariff, APERC did not issue the consent for reasons not known. The Company had to resort to legal course for justice along with other non-conventional energy developers. The entire energy and time of the PP was spent in fighting out the case, as without the consent, project would activity itself would have become redundant.

All these barriers delayed the commissioning of the project and the PP had to give priority towards overcoming the hurdles faced in the implementation of the project. The project was commissioned only in the month of October 2005.

Hence, it could be appreciated from the above that the delay between the decision to go ahead as CDM project and the final contract for validation was due to reasons beyond the control of the Project Proponent. The PP therefore is not claiming any retroactive credits and will be claiming the credits only from the date of registration of the project activity.

Attachments :

1. Project investment as proposed by PP
2. Project cost approved by IREDA
3. Letter from IREDA enhancing the project cost
4. Balance sheet indicating rising of resources through unsecured loans
5. Letter from Irrigation department advising the stoppage of construction
6. Letter from Irrigation department permitting the PP to recommence the project activity
7. Proof of resorting to legal recourse by the PP

-0-0

For BALAJI ENERGY (P) LTD.
[Signature]
DIRECTOR

Attachment - 1

**BALAJI ENERGY PRIVATE LIMITED**

3-6-462/3 (Upstairs), Street No.5, Himayat Nagar, Hyderabad - 500 029.

Tel : 7612191, 6501776 Fax : 040-7612191

No.1/BEPL/IREDA/2000

March 9, 2000

To
The Asst. Technical Officer(PTS)
IREDA
India Inhabitat Centre Complex,
Lodi Road,
New Delhi

Dear Sir,

Sub:- Development of 2 x 5 MW Small Hydro Power Project at the left
bank of Somasila Reservoir - availment of loan from IREDA -
Loan application submitted - Reg.

We intend to avail loan from IREDA for development of the Project. The necessary loan application duly filled in together with necessary documents is enclosed herewith along registration fee vide DD No.014543 dated 09-03-2000 drawn in your favour payable at New Delhi.

Our DPR has already been approved by the Government of Andhra Pradesh and "No Objection Certificate" was issued to take up the scheme for implementation. The site has been taken possession from the Irrigation Department. However, as the NEDCAP is the nodal agency, we have approached them too for clearance of the DPR. As the non-official members of the Board of NEDCAP are busy with the Municipal elections, the Board Meeting is not yet convened. We expect that the meeting will be convened before the end of this month and our DPR will be cleared.

Kindly register our loan application and process the same at the earliest.

In the meanwhile we also request you to depute your technical personnel to the project site for necessary inspection. The programme may kindly be intimated to us in advance so that we can also send our Consultants and Engineers to the project site to be available for technical discussions and interaction with the visiting IREDA team.

Thanking you,

Yours faithfully,
For Balaji Energy Pvt, Ltd,

(L. Venkata Rumi Reddy)
General Manager

Encl:-As above

3.3 Electro Mechanical Equipment	1892.87
4. Installation	Included in (3)
5. Engineering, Consultancy	Included in (2)
6. Technical Assistance	Included in (5)
7. Project Management	Included in (2) & (3)
8. Others	
9. Taxes & Duties (.....%)	Included in (1)
10. Contingency (.....%)	Included in (2) & (3)
Total	4486.87
IOC	705.00
Total including IOC	5191.87

3.5.2 Means of Finance (Proposed).

	Source	Amount	%
Promoter's Contribution (Please give breakup of sources in the enclosed format)	-	1557.50	30%
Subsidy (if any)	-	-	-
Term Loan (Please give details of sources)	IREDA	3634.37	70%
Others	-	-	-
Total		5191.87	

3.5.3 Loan Assistance Sought from IREDA

3634.37

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DORRIS

भारतीय जलवायु ऊर्जा विकास संस्था समित

(www.irs.gov/efile)

Indian Renewable Energy Development Agency Limited

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Speed Post

No. 221/1843/M&M/2000-IREDA/ 5068

Dated: 8th August, 2000

M/s. Balaji Energy Private Limited
3-6-40/2/3 (Upstairs)
Street No.5, Himayat Nagar
Hyderabad-500 029 (A.P.)

Sub:	Loan Assistance of Rs.2733.00 lakhs for setting-up of 10.0 MW (2 X 5000 KW each) Small Hydro Project at Left Flank of Somasila Dam, Near Somasila Village, Anantha Sagaram Mandal of Nellore District, in the State of Andhra Pradesh- (Project No. 1318).
------	--

Please refer to your application and subsequent correspondence and discussions your representatives had with us regarding financial assistance for setting-up of 10.0 MW (2 X 5000 KW each) Small Hydro Project at Left Bank of Sonnasila Dam, Near Sonnasila Village, Anantha Sagarin Mandal of Nellore District, in the State of Andhra Pradesh. Your proposal has been considered and Indian Renewable Energy Development Agency Ltd. (IREDA) is agreeable, in principle, to grant to your Company, as Borrower Term Loan of Rs.2733.00 lakhs (Rupees Two Thousand Seven Hundred and Thirty Three Lakhs Only) (comprising Loan for the Project = Rs.2426.00 Lakhs + Loan for deposit of Margin Money for obtaining Bank Guarantee/Fixed Deposit Receipts = Rs.267.00 lakhs = Rs.2733.00 lakhs).

2. The aforesaid rupee loan is subject to the General Conditions (IREDA General Conditions) copy whereof is enclosed and which are deemed to be part of this Sanction Letter, in addition to the normal terms and conditions set-out in Appendix-I. The above facility is also subject to such additional conditions as may be stipulated by IREDA.

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East Court, 1st Floor, India Habitat Centre Complex, Lodhi Road, New Delhi - 110003, Phone : 4007244,
E-mail : ANANDK@INDIAHABIT.COM

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8. Last Dates of Withdrawal of Loan:

Unless IREDA otherwise agrees and on such terms and conditions as IREDA might stipulate which may include the condition for charging higher rate of interest than what is mentioned in the Loan Agreement, the right to make withdrawal of the first instalment of loan and last instalment of loan shall cease on 07.08.2001 and on 07.08.2004, respectively and that the Borrower shall be abide by the decision of IREDA in this behalf.

9. Project: Setting up of 10.0 MW (2 X 5000 KW each) Small Hydro Project at Left Flank of Somasila Dam, Near Somasila Village, Anantha Sagaram Mandal of Nellore District, in the State of Andhra Pradesh.

A) Details of Project Cost:

Sl. No.	Description	(Rs. in lakhs)
1	Land and Site Development	32.00 ✓
2	Buildings & Civil Works	1507.00 ✓
3	Electro-Mechanical Equipment	1330.00 ✓
4	Installation & Supervision	122.00 ✓
5	Engineering & Consultancy	48.00 ✓
6	Technical Assistance	52.00 ✓
7	Project Management (including Front End fee)	78.00 ✓
8	Others (Including Transmission Lines)	63.00 ✓
9	Taxes & Duties	78.00 ✓
10	Contingencies	63.00 ✓
	Project Cost without IDC	3373.00
	Interest During Construction	312.50
	Margin Money for BG/FDRs	276.50
	Total Project Cost including IDC	3962.00
	Cost per MW	396.20



भारतीय अक्षय ऊर्जा विकास संस्था सीमित

(भारत सरकार का प्रतिष्ठान)

Indian Renewable Energy Development Agency Limited

(A Government of India Enterprise)



No. 221/1842/MM/2000/IREDA /326

Dated : 24th June, 2004

M/s Balaji Energy Private Ltd.
1-2-234/13/37 & 38
11th Floor, Aravind Nagar Colony
Domalguda
Hyderabad : 500 029

Registered
in Duplicate

Dear Sirs,

Re : **Loan sanctioned to you by IREDA (Project No. 1318).**

Please refer to the Loan Agreement dated 21.01.2002 entered into between the Company and IREDA in connection with loan of Rs. 2733.00 lakhs granted to the Company by IREDA as amended from time to time.

2. We have noted the revision in the cost of project and revised means of finance of your project no. 1318 and the Competent Authority in IREDA has taken on record the revised cost of project at Rs. 4190.50 lakhs and revised means of finance as mentioned hereunder :-

S. No.	Project Cost	Original Project Cost as appraised (Rs. in lakhs)	Revised Project Cost (Rs. in lakhs)
01.	Land	32.00	32.00
02.	Civil & Hydro Mechanical	1507.00	2013.00
03.	E & M Equipment	1330.00	1330.00
04.	Installation	122.00	122.00
05.	Engineering & Consultancy	48.00	48.00
06.	Technical Assistance	52.00	52.00
07.	Project Management (including Front End Fee)	78.00	78.00
08.	Others (including Transmission Lines)	63.00	63.00
09.	Taxes & Duties	78.00	78.00
10.	Contingency	63.00	63.00
11.	IDC	312.50	312.50
	Total (excluding BG Margin Money)	3685.50	4191.50
	Cost per MW	368.55	419.15

पंजीकृत एवं मुद्रित कार्यालय : भारत गवर्णमेन्ट बिल्डिंग-ए, ईस्ट ब्लॉक, ग्राम हाउस, ओरी संघ, नई दिल्ली-110 003. टेलीफोन : 24682214-21.
फैक्स : 011-24682202. ईमेल : info@ireda.com, ireda@ireda.com, ireda@ireda.com. वेब साइट : http://ireda.com
Regd. & Head Office : India Habitat Centre, Core-4 'A' East Court, 1st Floor, Lodi Road, New Delhi-110003. Phone : 24682214-21.
Fax : 011-24682202. E-mail : info@ireda.com, ireda@ireda.com. Website : http://ireda.com

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-2-

Revised Means of Finance :

Sl. No.	Details	Amount (Rs. in lakhs)
01.	Promoter Contribution :	
	⇒ Towards project	1665.50
	⇒ Towards BG Margin Money	69.00
		1734.50
02.	Term loan from IREDA :	
	⇒ Towards project	2526.00
	⇒ Towards BG Margin Money	207.00
		4467.50

3. Subject to above, other terms and conditions of Loan Agreement dated 21.01.2002 as amended from time to time shall remain unaltered and that this letter shall form integral part of the said Loan Agreement dated 21.01.2002 as amended from time to time.

4. We are sending this letter in duplicate with a request to return to us duplicate copy of this letter duly signed by the Managing Director of the Company and for and on behalf of the Company in token of acceptance after ensuring that rubber stamp of the Company is affixed in the letter.

Thanking you,

Yours faithfully,






(H.S. Rauth)

Deputy General Manager (SHP)

We note and accept the above
For and on behalf of M/s Balaji Energy Pvt. Ltd.

Managing Director

Attachment – 4

BALAJI ENERGY PRIVATE LIMITED				
REGD. OFFICE: 1-2-234/13/37 & 38, IIIND FLOOR, ARAVINDNAGAR COLONY DOMALAGUDA, HYDERABAD-29.				
Balance Sheet as at 31.03.2005				
	SCH	AS AT 31.03.2004	AS AT 31.03.2005	
SOURCES OF FUNDS				
1. SHAREHOLDERS FUNDS	A	136,910,500	136,910,500	
Reserves and Surplus		35,845,124	-	
2. LOAN FUNDS				
SECURED LOANS	B	293,340,889	276,647,379	
UNSECURED LOANS	C	21,050,000	-	
TOTAL		450,746,523	413,757,879	
APPLICATION OF FUNDS				
1. FIXED ASSETS less depreciation	L	442,249,619	146,368,090	341,943,484
2. CURRENT ASSETS, LOANS AND ADVANCES				
CASH AND BANK BALANCES	D	76,118	154,243	
Current Debtors		58,342,028	-	
LOANS, ADVANCES, DEPOSITS	E	5,947,000	29,809,683	
TOTAL E1		62,165,946	29,960,926	
LESS CURRENT LIABILITIES & PROVISIONS	F	14,283,442	19,013,463	
NET CURRENT ASSETS (E1-F)		47,882,504	10,947,463	
3. ADDITIONAL EXPENDITURE				
(To meet future liabilities or other adjustment)				
Provisionary expenses		14,400	18,000	
Provisionary expenses	G	-	14,400	60,871,952
TOTAL		480,746,523	60,853,952	413,757,879
NOTES ON ACCOUNTS	M			
As per report of even dated attached				
<div> <div> For Balaji & Associates Chartered Accountants Balaji & Associates Hyderabad </div> <div>  </div> <div> For and on behalf of the Board  L. Venkatarani Reddy Director </div> <div>  C. Karunakar Director </div> </div>				
Place: Hyderabad Date: 24.04.2005				

Government of Andhra Pradesh
Irrigation Department

From:
Sri.K.R. Manjaneyulu, B.E.,
Executive Engineer,
S.P. Division No. I,
Somasila 524 301,
Nellore District.

To:
The Site Incharge Engineer,
Balaji Energy Private Limited,
Project Site at Somasila,
Nellore District.

Lr. No. DB/DI/N.9/

24/6/07 Date: 17.3.2007

Gentlemen,

Sub: Alternative proposals for Tail Race Channel proposed
on the left flood bank. Regarding.

- Ref: 1) Inspection of Expert committee of Somasila Project
vide G.O.Rt. No. 1169, Irrigation dt. 17.1.2001.
2) Inspection of Somasila Dam site by the Chief -
Engineer, Central Designs Organisation, Hyderabad
dt. 29-3-2002.

//o//

I am to inform that Expert committee and team of Chief -
Engineer, Central Designs Organisation, during their inspection of
Somasila Dam after 10/2001 floods suggested to straighten the existi-
ng left flood bank. The same was referred to Director, A.P.E.R.L., to
conduct model studies / This was appraised you earlier, not to take
the tail race channel work until the alignment of left flood is
finalised.

Now it is proposed to send the detailed plan of the
existing left bank to Central Designs Organisation, Hyderabad.

Hence, I request you to furnish the Hydraulic Particulars
of the tail race channel to submit the same to Central Designs -
Organisation, Hyderabad for obtaining alternative proposal.

Yours sincerely,

Executive Engineer,
S.P. Divn. No. I, Somasila.

Rty.

Attachment -

INSPECTION REPORT OF SRI M. THEERESWARA RAO, DISTRICT ENGINEER (A/C), SOMASILA PROJECT CIRCLE, MYSORE.

Date of Inspection is 10-7-2004.

Officer's Present:

1. Sri K. Ramanjaneyulu,
Executive Engineer,
S.P. Division No. I,
Somasila.
2. Sri B.V. Sarma,
Dy. Executive Engineer,
S.P. Sub-division No. I,
Somasila.

...

Inspected the Tail Race Channel alignment of 2 x 5 M.W. Power Project being developed by M/s. Balaji Energy Private Limited at Somasila Dam from Ch. RD. 920M to end point. The alignment as initially approved by Chief Engineer (C.D.O.), Hyderabad, while according general approval to the layout of Civil Construction Drawings in Lr. No. CS/CDO/CD-1V/88/92, dated 3.10.2000. The following is observed.

- 1) The T.R.C. is running from exit of Tail Race tunnel with a starting bed level of +62.92 M, bed width of 6.60M. and F.S. Depth of 3.10M. for about 497 M length and joining the river where the existing waterpond level is + 64.40M.
- 2) The T.R.C. is running almost parallel to existing left flood bank of Spill way, on rear side of bund.
- 3) Two structures, two permanent road crossings and some live trees are coming on this alignment.
- 4) Since the river pond level at junction point is + 64.40M. and T.R.C. bed level is + 62.70M., there is every possibility for stagnation of river water to a level of + 64.40M, with no discharge in T.R.C. and during floods back water will enter into T.R.C. and maintain D/s flood discharge level.

After examining the above, and considering the item Nos. 3 & 4 of conclusion report of 3-D Model studies conducted on Somasila Project for D/s protection works, conducted by A.P.F.R.L., Hyderabad during 4/2004 and also in view of the opinion expressed by the Chief Engineer, Central Designs Organisation to take suitable action by in taking up of tail race channel by the Development of Mini Hydel Power Plant by the Superintending Engineer, the following is recommended for excavation of T.R.C.

1. The alignment may be shifted from I.P. Point at R.D. 1067.46M. towards D/s of river about 30M. from existing Tail end point as shown on ground.
2. Since there will be stagnation of water upto river pond level, the T.R.C. section may be checked to suit for 65.50 cumecs of designed discharge (2313 C/s).
3. The excavated spoil may be deposited on rear toe of existing left flood bank, in layers, duly preparing the ground for formation of bank i.e. stripping, removal of heaps etc. so as to strengthen the left flood bank, upto river edge. Sufficient berms may be given on both sides of channel. This deposition should be sectioned neatly. On left side of canal, a small bank may be formed with a top level of + 78.50 M. Layer wise consolidation of bank may be done for stability.
4. An inlet may be provided where the colony drain joins the T.R.C.
5. a) Since, the tail race channel alignment is running in colony area, two structures i.e. one permanent building and one A.C. sheet temporary building are lying on this alignment which are to be demolished. The firm is directed to pay back the amount to department, the cost of structures as valued by the department.

...3

// 3 //

b) Some live trees such as Palmyrah and neem are also to be removed for which the firm has to make compensation towards cost of trees as raised by the Department.

c) The alignment crosses one B.T.Road leading to Dam area at two points. The firm has to form a fresh B.T.Road duly connecting the two ends on left of proposed T.R.C.

d) One H.T.and one I.T. line is coming on the alignment which are to be shifted by firm at their own cost as per the guidelines of the Department.

e) Any other damages caused due to excavation of this T.R.C. has to be reimbursed to the department by the firm as and when necessiated.

CONCLUSION:

The Firm has to give an undertaking to the department in writing, duly accepting to follow the directions of department to shift the T.R.C. @ their cost if necessity arises in future as concurrence from the Expert Committee/Team of Officer is yet to obtained on the Model studies report furnished by A.P.E.R.L.,Hyderabad.

[Signature]
SUPERINTENDING ENGINEER, A/c.
SOMASILA PROJECT CIRCLE,
NELLORE.

REL
12/1

Encl.No.

226 CE

dt: 18/7/01

Copy submitted to the Chief Engineer, Telugu Ganga Project, Srikalahasti for favour of information.

Copy to the Executive Engineer, S.P.Division No.1, Somasila for information and necessary action to follow the above instructions.

[Signature]
Superintending Engineer,
Somasila Project Circle,
Nellore.

REL
12/1

Attachment – 7

Before the Appellate Tribunal for Electricity
Appellate Jurisdiction

Appeal No. 52 of 2005

M/s Balaji Energy Pvt. Ltd.

Appellant

Versus

Andhra Pradesh Electricity Regulatory Commission
& Others

Respondents

Present –

Hon'ble Justice Mr. Anil Dev Singh, Chairperson
Hon'ble Justice Mr. E. Padmanabhan, Judicial Member
Hon'ble Mr. A.A. Khan, Technical Member

Dated 5th October 2005

Counsel for the appellant: Mr. Mask D'Souza

Counsel for Commission : Mr. M.G. Ramachandran

Counsel for Respondent: Miss Saumya Sharma & Mr. V. Harmani

Order

In identical matters, namely appeal Nos. 1,2,5,6,7 of 2005 etc. batch after hearing the counsel on either side we have made the interim orders absolute. There being no difference in the subject matter of the instant appeal, and the connected batch of appeals we deem it fit to pass the same interim orders in this appeal as well.

Accordingly we direct that it will be open to respondent Nos 1 & 2 to implement the revised tariff. However, in addition to the rates payable in the revised tariff, the appellant shall also be paid 50% of the differential amount between the old and the revised tariff for the actual power supplied by the appellant. The additional payments shall be subject to the ultimate orders in the appeal.



IN THE APPELLATE TRIBUNAL FOR ELECTRICITY
AT NEW DELHI

APPELLATE JURISDICTION

APPEAL NO. 52 of 2005

In the matter of:

Balaji Energy Pvt Ltd, 1-2-234/13/37535, Aravindnagar Colony, Domalguda, Hyderabad 500029, represented by its Whole Time Director, Sri L. Venkata Rami Reddy, son of L. Venkat Reddy, aged 63 years, resident of 505 Taj Enclave, Khairatabad, Hyderabad 500004.

Appellant

And

1. Andhra Pradesh Electricity Regulatory Commission, Singareni Bhavan, Red Hills, Hyderabad
2. Transmission Corporation of Andhra Pradesh Ltd., Vidyut Seudha, Hyderabad, represented by its Chairman & Managing Director.
3. Central Power Distribution Company of Andhra Pradesh Ltd., represented by its Managing Director, 11-5-423/1/A, First Floor, Singareni Collieries Bhavan, Lakdi-ka-pul, Hyderabad 506 001
4. Southern Power Distribution Company of Andhra Pradesh Ltd., represented by its Managing Director, Upstairs, Hero Honda Showroom, Rangunta Road, Tirupati 517 501
5. Northern Power Distribution Company of Andhra Pradesh Ltd., represented by its Managing Director, 11-5-423/1/A, First Floor, 1-7-668, Postal Colony, Hanamkonda, Warangal 506 001.
6. Eastern Power Distribution Company of Andhra Pradesh Ltd., represented by its Managing Director, Sai Shakti, Opp Saraswati Park, Daba Gardens, Visakhapatnam 530 020

Respondents

APPEAL UNDER SECTION 11(1) OF THE ELECTRICITY ACT, 2003

1. Detail of Appeal

- 1.1 This appeal is filed against the order dated 20.3.2004 in R.P.No. 84/2003 in O.P. No. 1075/2000 as modified by the order dated 7.7.2004 in the Review Petition R.P. No. 5/2004 passed by the Andhra Pradesh Electricity Regulatory Commission.
- 1.2 The address for service of notices, documents, papers etc. on the Appellant is that of their counsel K. Gopal Choudary, Advocate, C - 13/2 Sainikpuri, Secunderabad 500004.
- 1.3 The Respondents 3 to 6 have been made parties to this Appeal as they are the Distribution Licensees in Andhra Pradesh, and also in view of the Third Transfer Scheme notified by the State Government by G.O.Ms. No. 58 Energy (Power-III) dated 7.8.2005 purporting to transfer to, and vest in, the Respondents 3 to 6 herein.

the rights and obligations and contracts relating to procurement and bulk supply of electricity or trading of electricity to which the 2nd respondent APTRANSCO with effect from 3.5.2005.

1.4 The addresses for service of notices, documents, papers etc. on the Respondents is as stated in the cause title above.

2 Jurisdiction of the Appellate Tribunal:

2.1 The Appellant declares that the subject matter of the aforesaid order against which the Appellant wants redressal is within the jurisdiction of the Tribunal.

3 Limitation:

3.1 As the Appellate Tribunal had not been constituted within the period of 45 days referred to in section 111(2), and in view of the provisions of Rule 10 of the Electricity Rules, 2005, this Appeal is not beyond the period of limitation in the facts and circumstances of the case. Even otherwise, the Hon'ble Tribunal may be pleased to entertain the Appeal in terms of the proviso to section 111(2) in the facts and circumstances of the case.

4 Facts of the Case:

4.1 The Appellant is a generating company having set up 2 x 5 MW small hydro-electric generating stations (mini hydel power plants) within Andhra Pradesh. The Appellant has entered into power purchase agreement with the 2nd Respondent. The project is completed in all respects and has been ready for commissioning from the last week of July 2005. The project will commence generation as soon as water is released and the power generated will be sold to the 4th respondent as per the allocation specified in G.O.Ms. No. 58 Energy (Power-III) dated 7.6.2005. The Appellant is a member of the Small Hydro Power Developers Association (hereinafter referred to as the "Association"). In the impugned proceedings before the Commission and related proceedings, the Appellant has been a party itself and has also been represented and/or joined the Association in pursuance of common interest with other small hydro power developers.

4.2 It may be pertinent to first set out briefly the background and the principles underlying the promotion of non-conventional energy (renewable sources of energy), including the small hydroelectric generating projects.

4.3 The demand for electricity has been growing by leaps and bounds over the last several years and the country has been in the grip of chronic power shortages. Concerted efforts were made to increase the generation of electricity to meet the ever-growing demand from conventional sources. The erstwhile policy was to vest the monopoly for generation of power in public sector enterprises. It was subsequently realised that State resources would be insufficient to meet the growing

APPENDIX B

CERTIFICATES OF COMPETENCE



CERTIFICATE OF COMPETENCE

Anjana Sharma

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-
CDMJ1-i1

GHG Auditor: Yes

CDM Validator: -- ***JI Validator:*** -

CDM Verifier: -- ***JI Verifier:*** -

***Industry Sector Expert for Sectoral
Scope(s):*** --

Høvik, 21 February 2007

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director



CERTIFICATE OF COMPETENCE

Astakala Vidyacharan

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-
CDMJ1-i1

<i>GHG Auditor:</i>	Yes		
<i>CDM Validator:</i>	--	<i>JI Validator:</i>	--
<i>CDM Verifier:</i>	--	<i>JI Verifier:</i>	--
<i>Industry Sector Expert for Sectoral Scope(s):</i>	--		

Høvik, 6 November 2006

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director



CERTIFICATE OF COMPETENCE

Michael Lehmann

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJ1-i1)

GHG Auditor:	Yes		
CDM Validator:	Yes	JI Validator:	--
CDM Verifier:	Yes	JI Verifier:	--
Industry Sector Expert for Sectoral Scope(s):	Sectoral scope 1, 2, 3 & 9		
Technical Reviewer for (group of) methodologies:			
ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G	Yes	AM0027	Yes
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029, AM0045	Yes	AM0028, AM0034	Yes
ACM003, ACM0005, AM0033, AM0040	Yes	AM0030	Yes
ACM0004	Yes	AM0031	Yes
ACM0006, AM0007, AM0015, AM0036, AM0042	Yes	AM0032	Yes
ACM0007	Yes	AM0035	Yes
ACM0008	Yes	AM0038	Yes
ACM0009, AM0008, AMS-III.B	Yes	AM0041	Yes
AM0006, AM0016, AMS-III.D, ACM0010	Yes	AM0034	Yes
AM0009, AM0037	Yes	AM0043	
AM0013, AM0022, AM0025, AM00379, AMS-III.H, AMS-III.I	Yes	AM0046	
AM0014	Yes	AM0047	
AM0017	Yes	AMS-II.A-F, AM0044	Yes
AM0018	Yes	AMS-III.A	Yes
AM0020	Yes	AMS-III.E, AMS-III.F	Yes
AM0021	Yes		
AM0023	Yes		
AM0024	Yes		

Høvik, 5 February 2007

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director



CERTIFICATE OF COMPETENCE

Kumaraswamy Chandrashekara

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJi-i1)

GHG Auditor:	Yes		
CDM Validator:	Yes	JI Validator:	--
CDM Verifier:	Yes	JI Verifier:	--
Industry Sector Expert for Sectoral Scope(s):	Sectoral scope 4 & 5		
Technical Reviewer for (group of) methodologies:			
ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G	Yes	AM0027	Yes
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029, AM0045	Yes	AM0028, AM0034	Yes
ACM003, ACM0005, AM0033, AM0040	Yes	AM0030	Yes
ACM0004	Yes	AM0031	Yes
ACM0006, AM0007, AM0015, AM0036, AM0042	Yes	AM0032	Yes
ACM0007	Yes	AM0035	Yes
ACM0008	Yes	AM0038	Yes
ACM0009, AM0008, AMS-III.B	Yes	AM0041	Yes
AM0006, AM0016, AMS-III.D, ACM0010	Yes	AM0034	Yes
AM0009, AM0037	Yes	AM0043	
AM0013, AM0022, AM0025, AM00379, AMS-III.H, AMS-III.I	Yes	AM0046	
AM0014	Yes	AM0047	
AM0017	Yes	AMS-II.A-F, AM0044	Yes
AM0018	Yes	AMS-III.A	Yes
AM0020	Yes	AMS-III.E, AMS-III.F	Yes
AM0021	Yes		
AM0023	Yes		
AM0024	Yes		

Høvik, 5 February 2007

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director



CERTIFICATE OF COMPETENCE

Raman Venkata Kakaraparthi

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-
CDMJ1-i1

GHG Auditor:	Yes		
CDM Validator:	Yes	JI Validator:	--
CDM Verifier:	--	JI Verifier:	--
Industry Sector Expert for Sectoral Scope(s):	Sectoral scope 5		
Technical Reviewer for (group of) methodologies:			
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029, AM0045	Yes		

Høvik, 22 December 2006

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director