NO. 1, PERSIARAN DATO' MENTERI, SECTION 2,
40700 SHAH ALAM, SELANGOR DARUL EHSAN
MALAYSIA
Tel.: 603-55446479
Fax: 603-55446787
www.sirim-sqas.com.my

Validation Report

Project Title:

Natural Gas based grid connected power project at Peddapuram, A.P. by Gautami Power Limited

Report No.: SQAS-CDM-ES12880011

Date : 9 September 2011

NO. 1, PERSIARAN DATO' MENTERI, SECTION 2,
40911 SHAH ALAM, SELANGOR DARUL EHSAN
MALAYSIA
Tel.: 603-55446479
Fax: 603-55446787
www.sirim-sqas.com.my

Date of first issue: 24 May 2010	**Project No.:** SQAS-CDM-ES12880011
Approved by: Parama Iswara Subramaniam	**Project title:** Natural Gas based grid connected power project at Peddapuram, A.P. by Gautami Power Limited
Client: GVK Gautami Power Limited	**Organization unit:** SIRIM QAS International Sdn Bhd

Summary:

SIRIM QAS International Sdn Bhd has performed a validation of the "Natural Gas based grid connected power project at Peddapuram, A.P. by Gautami Power Limited" in India, based on the Kyoto Protocol requirements, UNFCCC rules and associated interpretations. The validation exercise was not meant to provide any consulting to the project participants. However, the stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

The validation consisted of three phases; i) a document review of the project design documents and preparation of validation protocol, ii) on-site visit to the project activity and interviews with the project developer and the project consultant, and iii) resolution of outstanding issues and the issuance of final validation report and validation opinion.

The proposed CDM project activity is construction and operation of a new, green field 469 MW natural gas based combined cycle power plant near Peddapuram village, in the East Godavari District of Andhra Pradesh, India for supply to the grid. The main energy generating components of the project activity include two gas turbine generators (GTG), two heat recovery steam generators (HRSG) and one steam turbine generator (STG). The main purpose of the project activity is to generate electricity through less GHG intensive fuel, such as natural gas (NG), that displaces electricity from an electricity distribution system (Southern Grid) dominated by fossil fuel fired generating units. The project activity will displace approximately 3,387 GWh of power annually (and reduce 1,293,422 tonnes of CO_2) by means of its less carbon intensive power annually to the power deficit, carbon intensive Southern Grid.

The validation process, from contract review to the issuance of validation report and validation opinion was conducted in accordance with SIRIM QAS Intl.'s internal procedures. The first output of the validation process was a list of corrective action requests and clarification requests (CAR and CL) which is presented in Table 3 of Appendix A of this report. As a result of these findings, the PDD was revised by the client.

In summary, it is the opinion of SIRIM QAS Intl.'s that the proposed CDM project activity has correctly applied the baseline and monitoring methodology for the project activity and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria.

Report No.: SQAS-CDM-ES12880011		
Report title: Natural Gas based grid connected power project at Peddapuram, A.P. by Gautami Power Limited		
Work carried out by:		
Dr. D. Siddaramu Dr. G. Vishnu Mr. Ravishankar	: Validation team leader : Validation team member : Validation team member	
Technical Reviewer	: Syed Anuar Shah Syed Mansor	
Work verified by	: Parama Iswara Subramaniam	
Date of this revision : 9 September 2011	Rev. No.: 04	Number of pages: 36

Indexing terms
Climate Change, Kyoto Protocol Large Scale Project Validation Clean Development Mechanism

[x]	No distribution without permission from the Client or responsible organization unit
[ ]	Limited distribution
[ ]	Unrestricted distribution

Abbreviations

APDISCOM	Andhra Pradesh Distribution Company
AM	Approved Baseline Methodology
APSEB	Andhra Pradesh State Electricity Board
APTRANSCO	Andhra Pradesh Transmission Company
BCM	Billion Cubic Meters
CAR	Corrective Action Request
CCPP	Combined Cycle Power Plant
CDM	Clean Development Mechanism
CEA	Central Electricity Authority
CER	Certified Emission Reductions
CERC	Central Electricity Regulatory Commission.
CL	Clarification Request
CO_2	Carbon Dioxide
CO_2/MU	Carbon dioxide / Million Units
CO_{2e}	Carbon Dioxide Equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
DPR	Detailed Project Report
EB	Executive Board
EF	Emission Factor
EIA	Environmental Impact Assessment
EPC	Erection Procurement & Commissioning
GAIL	Gas Authority of India Limited
GHG	Greenhouse gas(ses)
GPL	GVK Gautami Power Ltd.
GSCP	Global Stakeholders Consultation Process
GSHR	Gross Station Heat Rate
HCA	Host Country Approval
JMR	Joint Mater Reading
LoA	Letter of Approval
MMCD	Million Meter Cube per Day
MoC	Modalities of Communication
MoV	Means of Verification
MP	Monitoring Plan
NCDMA	National Clean Development Mechanism Authority
NG	Natural Gas
O & M	Operation and Management
ODA	Official Development Assistance
MoEF	Ministry of Environment and Forests
PDD	Project Design Document
GOI	Government of India
PLF	Plant Load Factor

PP	Project Participant
RIL	Reliance Industries Limited
PPA	Power Purchase Agreement
QA/QC	Quality Assurance/Quality Control
SCM/day	Standard Cubic Meter / day
SIRIM QAS Intl.	SIRIM QAS International Sdn Bhd
SPV	Special Purpose Vehicle
tCH_4/PJ	Tonnes of Methane/ Peta Joules
UNFCCC	United Nations Framework Convention on Climate Change

NO. 1, PERSIARAN DATO' MENTERI, SECTION 2,
40911 SHAH ALAM, SELANGOR DARUL EHSAN
MALAYSIA
Tel.: 603-55446479
Fax: 603-55446787
www.sirim-sqas.com.my

TABLE OF CONTENTS **PAGE**

1.0	INTRODUCTION	5
1.1	Objective	5
1.2	Scope	5
1.3	GHG Project Description	5
1.4	Validation Team	5
2.0	METHODOLOGY	6
2.1	Document review of PDD and other documents	7
2.2	Follow-up Interviews	8
2.3	Resolution of Clarification and Corrective Action Requests	8
2.4	Internal Quality Control	9
3.0	VALIDATION FINDINGS	
3.1	Participation requirements	9
3.2	Project Design	9
3.3	Project Baseline	12
3.4	Additionality	18
3.5	Monitoring Plan	30
3.6	Calculation of GHG Emissions	31
3.7	Environmental Impacts	32
3.8	Comments by Local Stakeholders	33
4.0	COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS	33
5.0	VALIDATION OPINION	33
6.0	REFERENCES	35
Appendix A:	Validation Protocol	
Appendix B:	GSCP comments	
Appendix C:	Auditor's Certificates	

NO. 1, PERSIARAN DATO' MENTERI, SECTION 2,
40911 SHAH ALAM, SELANGOR DARUL EHSAN
MALAYSIA
Tel.: 603-55446479
Fax: 603-55446787
www.sirim-sqas.com.my

1.0 INTRODUCTION

GVK Gautami Power Ltd. had engaged SIRIM QAS International Sdn Bhd to perform validation of the "Natural Gas based grid connected power project at Peddapuram, A.P by Gautami Power Limited" (hereafter called as project participant) in India. This report summarises the findings of the validation of the project, performed on the basis of UNFCCC criteria for CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to the Kyoto Protocol criteria, the CDM rules and modalities as agreed in the Bonn Agreement, the Marrakech Accords and the CDM Executive Board's decisions.

1.1 Objective

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

1.2 Scope

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

SIRIM QAS Intl has based on the recommendations in the Validation and Verification Manual version 01.2[/1/] employed a risk-based approach in the validation, focusing on the identification of significant risks for project implementation and the generation of CERs.

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

1.3 GHG Project Description

The project activity is electricity generation using natural gas, which involves the installation of a combined cycle power plant (CCPP) by GVK Gautami Power Ltd. (GPL)[/1.1/] at the Industrial Development Area, Peddapuram, near Samalkot in East Godavari district, Andhra Pradesh, India. The project is expected to generate and displace 3,387 GWh of electricity annually from the power deficit, fossil fuel dominated Southern Grid of India, thereby contributing to GHG emission reduction of 12,934,220 tCO_2 over a period of 10 years and contributing to climate change mitigation efforts.

1.4 Validation Team

The following validation team was assigned to carry out the validation of the project.

Validation Team Leader : Dr. D. Siddaramu

Validation Team Members : Dr. G. Vishnu and Mr. Ravi Shankar

Financial Expert : Mr. G.N.Jayaram

Dr. D. Siddaramu the validation team leader holds a Ph.D in Environmental Science and P.G. Diploma in Industrial Safety. He has more than 7 years of experience in research & development, and EIA projects viz., hydro power projects, stone quarrying & mining and biomass assessment studies. He has experience in monitoring air and noise quality, conducting socio-economic surveys and data analysis. He has been trained in the CDM validation and verification processes, and has been qualified in accordance with SIRIM QAS intl.'s qualification criteria as CDM lead auditor.

Dr. G. Vishnu has a Ph.D in Environmental Science. He has around 7 years experience in the field of research and consultancy related to water, wastewater, solid waste management systems, implementation of new, cleaner production technologies and biomass assessment studies. He has been qualified in accordance with SIRIM QAS intl.'s qualification criteria as CDM lead auditor.

Mr. Ravishankar possesses a B.Tech Degree and P.G.Diploma in Industrial Safety and Environmental Management. He has more than 16 years of industrial experience of which last five years have been in CDM consultancy and auditing, validation and verification of CDM projects. He has undergone extensive training on CDM validation and verification and is a qualified lead auditor for validation and verification in accordance with SIRIM QAS Intl.'s procedures.

Mr. G.N.Jayaram is a qualified Chartered Accountant (FCA) and possesses Diploma in Information System Audit (DISA), and is a member of the Institute of Chartered Accountants of India. He possesses more than 23 years of experience in the field of accountancy. i.e., in conducting statutory and internal audits of various public sector undertakings, and public and private limited companies. He has about 4 years of experience in financial appraisal and assurance related to CDM projects. He is well versed with the CDM rules and guidelines.

2.0 METHODOLOGY

The SIRIM QAS Intl.'s validation process consists of the following phases:

i) a document review of the project design documents and preparation of validation protocol;
ii) on-site visit to the project activity and interviews with project developer and project consultant; and
iii) resolution of outstanding issues and the issuance of final validation report and opinion

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

- it organizes, details and clarifies the requirements that 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 below in Figure 1.

Validation Protocol Table 1: Mandatory Requirements			
Requirement	Reference	Conclusion	Cross Reference / Comment
Mandatory requirements that the project must meet.	Gives reference to the legislation or agreement where the requirement is found	This is acceptable based on evidence provided (OK), a CAR where there is risk of non-compliance with stated requirements or a request for CL where further clarifications are needed.	Used to refer to the relevant checklists in Table 2 to show how the specific requirement is validated. This is to ensure a transparent validation process.

Validation Protocol Table 2: Requirements Checklist			
Checklist question	Means of verification (MoV)	Comment	Draft and/or final conclusion
The various requirements in Table 2 are linked to checklist questions the project should meet. The checklist is ntil zed in seven sections. Each section is further sub-divided. The lowest level constitutes a checklist question.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (OK), or a CAR due to non-compliance with the checklist question or CL when the validation team has identified a need for further clarification.

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

Figure 1: Validation protocol tables

The completed validation protocol of the "Natural Gas based grid connected power project at Peddapuram, A.P. by Gautami Power Limited" is in Appendix A of this report.

Findings established during the validation were classified as non-fulfillment of validation protocol criteria or where risks to the fulfillment of project objectives were identified. Corrective Action Request (CAR) was issued, where:

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

The validation team has also raised "Clarification" (CL), where additional information is needed to fully clarify an issue of the project activity.

2.1 Document review of PDD and other documents

The initial PDD version 2[/2/], additional documents related to the project design and baseline submitted by PP were reviewed as an initial step of the validation process. The subsequent step involved the identification of corrective action requests and clarification requests (CAR and CL) which are presented in Table 3 of Appendix A of this report. As a result of these findings, the PDD was revised by client to version 3[/3/]. Further based on the comments received during information and reporting check the PDD was revised into version 3.1[/3.1/].

A complete list of all documents and records reviewed is as attached in Section 6.0 of this report.

2.2 Follow-up interviews

SIRIM QAS Intl. had conducted visits to client's head office and project site from 26th to 27th March 2010, to confirm selected information and to resolve issues identified in the document review. The table below provides a list of all persons interviewed and the main topics covered.

NAME	ORGANISATION	TOPICS
Mr. A. Issac George	Director, GVK Gautami Power Ltd.	➢ General information about the project. ➢ CDM consideration. ➢ Financial analysis, project barrier and additionality.
Mr. G. Madhava Reddy Mr. K.N. Bhavani Shankar Mr. V. Shashidhar Raju	GM-Finance GM-Finance Manager (F) GVK Gautami Power Ltd.	➢ General information about the project & the PDD ➢ Baseline determination ➢ Monitoring and management ➢ Financial analysis, project barrier and additionality ➢ Stakeholder consultation ➢ Operation and maintenance procedures
Mr. Pravin Jadhav	CDM Consultant General Carbon Advisory Services Pvt. Ltd.	➢ General information about the project & the PDD. ➢ Baseline determination ➢ Monitoring and management. ➢ Financial analysis, project barrier and additionality. ➢ Stakeholder consultation
Mr. P. S. Kumar Mr. Zakir Hussain Mr. G. Satyanarayana Mr. N. Srinivasa Rao Mr. P.V. Ravi Ram	GM (Mechanical) DGM (FA&S) Advisor (Technical) GM DGM – Operations GVK Gautami Power Ltd.	➢ Operation and maintenance procedures ➢ Training. ➢ Calibration and maintenance of monitoring & measuring equipment. ➢ Potential risk and the emergency procedures
Mr. Solivewatra Mr. Swami Madhva Mr. M. V. Choudary Mr. K. Bapi raju	**Local Stakeholders** R. B. Kotturu village R. B. Kotturu village Vetlapalem village Vetlapalem village	➢ Stakeholder meeting agenda ➢ Members present ➢ Issues raised ➢ Replies of the PP

2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation is to resolve the request for corrective actions and clarification and any other outstanding issues which needed to be clarified prior to SIRIM QAS Intl. positive conclusion on the project design. Six (6) Corrective Action Requests and Eighteen (18) Clarification Requests raised by SIRIM QAS Intl. were resolved during communication between the client and the validation team. In order to ensure the transparency of the validation process, the concerns raised and responses that have been given are summarized in Section 2 of this report and documented in more detail in the Table 3 of the validation protocol in Appendix A.

2.4 Internal quality control

SIRIM QAS Intl. has established an internal quality control process. A Technical Reviewer has been appointed to review the final draft validation report and the final validation report. The comments made by the Technical Reviewer have been taken into consideration and incorporated in the final report.

The final report (after resolutions of all findings) is then submitted to the CDM Quality Manager for review and approval.

3.0 VALIDATION FINDINGS

This section summarises the main issues that were found during the validation process. A detail listing of all findings is available in table 2 and 3 of the validation protocols (Appendix A of this report).

3.1 Participation requirements

GVK Gautami Power Ltd. (GPL) is the project participant and the host country is India. India ratified the Kyoto Protocol on 26th August 2002 and meets the participation requirements of the CDM.

Further, the participation requirements were validated based on the confirmation of the following:

- The project participant is listed in section A.3 of the PDD.
- The information is consistent with the contact details provided in Annex 1 of the PDD.
- The participation of the project participant has been approved by the Host Party (India) involved, as confirmed in the letter of approval.
- No entity other than that approved as project participant is included in the relevant sections of the PDD.

During the on-site validation, the written Letter of Approval (LoA) from the host country DNA (Reference number 4/25/2008-CCC) dated 06th February 2009 was made available[/4/]. The authenticity of the LoA was verified by checking with the DNA's website (http://cdmindia.in/reports_list_details.php?id=Large&reporttype=3&page=10) with the project listed as ID 1144-08. The LoA received has a referencing in the letter itself (Reference number 4/25/2008-CCC) which was found to be correct. The LoA was reviewed and confirmed the following:

- India is a party to the Kyoto protocol
- CDM is a voluntary participation,
- the project under validation will assist in India's sustainable development,
- the project title is in line with the title mentioned under section A.1 of the PDD.

LoA has been verified to be unconditional with respect to all the above confirmed aspects. The validation team has confirmed that the LoA has met the requirements of para 45-48 of the VVM. Further, the PP commits to contribute 2% of the revenue from the sale of CERs on realization, towards the social welfare activities.

A statement of Modalities of Communication (MoC) with the EB and UNFCCC secretariat has been issued and signed by authorized person of GPL[/5/]. The MoC, (latest version1.3) was found to be appropriate as it clearly defined the responsible parties for communicating with the EB and UNFCCC regarding the issuance of CER of the proposed CDM project.

3.2 Project Design

The project document uses the latest CDM-PDD template version 3, currently applicable and hence acceptable. Heading/logo, format/font follows the standard requirements. The corresponding sections of the PDD are correctly filled and followed according to the guidelines specified (CDM- PDD version 7, (http://cdm.unfccc.int/Reference/Guidclarif/pdd/PDD_guid04_v07.pdf).

The current project activity of GPL involves the installation of a 469 MW natural gas fired, gas turbine based combined cycle power plant located at GVK Gautami Power Ltd. (GPL) at Industrial Development Area- Peddapuram, near Samalkot in East Godavari district, Andhra Pradesh, India, for generation and supply of electricity to Andhra Pradesh state electricity grid, governed by a Power Purchase agreement with APDISCOMS (Andhra Pradesh Distribution Company).

The geographical coordinates of the project activity plant are 17º03'03" N and 82º07'04" E. The location of the proposed project activity was physically verified during the on-site visit. The geographical coordinates of the project activity as mentioned in the PDD were cross checked with globally accessible satellite based imagery data software and found to be consistent. The site details such as the survey number and village were cross checked with land documents[/6/, /6.1/] and found to be correct. The commercial operation date (COD) of the project is on 05th June 2009[/7/] which was verified during the site visit.

The project activity is construction and operation of a new natural gas fired grid-connected electricity generation using combined cycle power plant. As per the scopes of the project activity listed in the "List of Sectoral scopes" (Document CDM-ACCR-06 Version 04)', the project activity falls under scope number 1, sectoral scope – Energy industries (non-renewable sources) being a Grid-connected electricity generating project using non-renewable fuel in energy industries.

This power plant, operating on a comparatively cleaner fuel natural gas will lead to lower carbon dioxide emissions for producing equivalent amount of power using carbon intensive fossil fuels like coal and will help in reducing the carbon intensity and power deficiency of the southern grid.

Project history:

A power plant (where the project activity exists) was taken up for development by Satyam Constructions Ltd. In 1995 (300 MW liquid fuel based) and PPA was signed in 1997 with APSEB[/8/]. Another 227 MW liquid fuel based power plant envisaged by Nagarjuna Construction Co. (NCC) Ltd. also signed PPA in same time. In 2000, Government of Andhra Pradesh decided to convert all short gestation period power plants to be natural gas based (PPA of Gautami Power Ltd. Dt. 18th June 2003 pg. 4, Clause 15[/9/]). Thus, although necessary approvals and PPAs existed for both projects, in the light of the change of policy, they became invalid and the projects had to be abandoned

These two plants (and holding companies Gautami Power Private Limited(GPPL) and NCC Power Corporation Ltd.) were merged by the High Court order in 2001 and the later company ceased to exist (PPA of Gautami Power Ltd. Dt. 18th June 2003 pg. 6, Clause 22[/9/]). NCC was dissolved as legal entity and did not exist after this merger; GPPL remained as single company with 527 MW capacity). The PPA for 464 MW CCPP using NG was approved by APERC on 12th April 2003. All other earlier milestones like feasibility studies and due diligence/ approval processes were not taken as the investment decision as before achieving financial closure i.e., 1st July 2004 the project plant cannot come up.

The PDD and other relevant documents such as EPC contract, Notice to proceed to EPC contractor[/10/], Host Country Approval[/4/] and PPA[/8/, /9/, /9.1/] were verified and found that the project activity capacity is 469 MW. It has also been verified through the PDD, version 2, dated: 25th July 2008 submitted to the DNA for host country approval which mentions the capacity of the project activity as 469 MW. Further, all the supporting documents submitted for CDM validation of the project activity such as determination of additionality and the estimation of the CERs, and the physical site verification confirmed the project capacity as 469 MW.

In order to validate the technical specifications of the project activity as mentioned in the PDD, the technical specifications of the equipment were cross verified with the details provided in the notice to proceed to EPC contractor[/10/], and were found to be correct and consistent.

The CO_2 emissions due to extraction, processing and transportation of fuel outside the project

boundary are being accounted for as leakage emissions to calculate the net emissions reduction.

Leakage emissions due to fossil fuel combustion / electricity consumption associated with the liquefaction, transportation, re-gasification and compression of LNG into a natural gas transmission or distribution system has been conservatively calculated as 97,909 tonnes of CO_2 based on the applicable methodology ACM0029.

The present project activity has chosen a fixed crediting period of 10 years, starting from 1st August 2011 or the date of registration of the project activity with CDM EB, whichever is later. This was verified during the discussion with the PP and compared with the expected operational life time of 15 years as mentioned in "The Gazette of India, Extraordinary"/11/ [Part II-Sec. 3(ii), Ministry of Power Notification, Dt. 29th March 1994] is considered reasonable.

The validation team has verified that the project has not received any public funding and/or Official Development Assistance (ODA). The project is a unilateral project and has considered 70:30 debt to equity ratio as evidenced from "Project Information Memorandum – November 2003" by lender PFCL (page no. 4 and 33)/12/.

The project design is sound and reflects good engineering practices and the geographical (Industrial Development Area –Peddapuram, Samalkot, East Godavari District, Andhra Pradesh, India) and temporal (15 years) boundaries of the project are clearly defined. The project boundary consists of the equipment viz., gas turbine generator, steam turbine generator, auxiliary equipment of gas turbine and generator, heat recovery steam generator and steam turbine and generator meters, pipelines and all power plants connected physically to the baseline grid, which is the southern grid of India.

The project activity plant is operating at the peak design PLF presently. As per the PPA, the entire electricity generated would be sold to the grid based on the tariff rate specified in the PPA. The project is expected to displace 3,387 GWh of fossil fuel dominated energy from Southern Grid, which is equivalent to 1,293,422 tonnes of CO_{2e} per annum.

The validation team hereby confirms that the project descriptions and project design in PDD were accurate and complete based on the document review, on-site inspection, physical verification and Interviews conducted.

In this section 4 CAR's and 7 CL's were raised with details as follows;

Four corrective action requests (CAR 1, 2, 5 and 6) were raised with regard to

i. Section A.3 was not clear in indicating the PP as a private or public entity (CAR 1).

ii. Section A.2 of PDD has not described the existing scenario prior to the start of the implementation of the project activity (CAR 2).

iii. The starting date of the crediting period mentioned in section C.2.2 of the PDD not being realistic (CAR 5).

iv. Justification with appropriate evidences that supercritical power plant was not available in India in 2003 (CAR 6).

Seven clarification requests (CL 1, 2, 3, 5, 7, 15 and 18) were raised with regard to

i. Justification for the claim i.e., that best available technology was used at the time of EPC mentioned in section A.3 (CL 1).

ii. Section A.2 of PDD has not clarified the start-up power covered under auxiliary power (CL 2).

iii. 2% of CER allocation for sustainable development including society/community development with a monitorable action plan is not evident from the PDD (CL 3).

iv. Clarification for the presumption made in section B.2 and others places of the PDD, that allocated gas (by GOI) implies availability of gas in abundance (CL 5).

v. Justification for the assumption and rationale for CER calculation, leading to the increase in quantum of CER in the earlier web hosted and the present PDD (CL 7).

vi. Justification for the assumptions on project lifetime for the different options considered in section B.4 of the PDD i.e., 15 years for both NG and diesel power plant (CL 15).

vii. Section A.3 and Annex 1 of the latest PDD, version 3, mentioning the PP as GVK Gautami Power Limited, Hyderabad, where as in the web-hosted PDD, version 2 it was indicated as Gautami Power Limited, Hyderabad (CL 18).

The CARs and CLs raised were adequately addressed and satisfactorily resolved and closed as detailed in Table 3, of Appendix A of this report.

3.3 Project Baseline

The 469 MW natural gas based combined cycle power project at Peddapuram uses the latest approved baseline methodology AM0029 ("Baseline Methodology for Grid Connected Electricity Generation Plants using Natural Gas", version 3). The applicability of the methodology has been discussed in section B 2 of PDD and the project fulfills the applicability conditions as below:

The project activity of GPL involves utilization of natural gas as the only fuel source to generate power. No other start up fuel is to be used for the project activity. Electricity generated from the proposed project activity will be supplied to the Andhra Pradesh state grid, which in turn forms a part of the Southern Grid whose boundaries are clearly identified and its information is publicly available from Central Electricity Authority, Government of India.

For the project activity, GPL has made agreements with M/s Gas Authority of India Limited (GAIL)/13/ for the gas supply quantity of 1.96MCMD natural gas till 31st December 2010 (Gas Supply Contract with GAIL; page 5).

Apart from this, GPL has also entered into an agreement with Reliance Industries Limited (RIL)/14/, for which the Term sheet has been signed on 09th June 2007. The project proponent is now using the natural gas supplied by RIL. The agreement with RIL is for 70699 MMBtu which is equivalent to approximately 2.23 MCMD. This supply is assured until 31st March 2012 which can be extended further.

Natural gas reserves are sufficiently available in the country and at the time of real action of the project activity the reserves were to the order of 751 Billion Cubic Meter (2002-2003, http://petroleum.nic.in/petstat.pdf) in comparison to the supply commitment by GAIL towards the project activity of 1.96 MCMD (which is equivalent to 715.4 MCM considering an operation of 365 days in an year). This means that the commitment of natural gas quantity to the project activity by GAIL is only 0.095% of the total reserves of natural gas during the period of 2002-2003 and the available reserves are capable of firing more than 1000 times the installed capacity of the project activity. The gas availability in the country after 3 years of the date of award of the EPC Contract (generally the time required to construct the infrastructure facility) of the project activity is 1101 BCM which is capable of firing more than 1500 times the installed capacity of the project activity.

In the state of Andhra Pradesh, the demand from consumers having firm commitments for supply in the year 2001-2002 was 6.12 MCMD. Against this demand, the availability from GAIL for the year

2001-2002 was 7.50 MCMD. Further, the announcement of consideration of Lanco's Kondapalli (http://petroleum.nic.in/clip4151206.pdf) and ongoing 768 MW expansion (http://asian-power.com/regulation/more-news/ge-supply-parts-and-services-vemagiri-plant; http://www.gmrgroup.in/corporate/pdf/GIL_Q3-FY_11_-_Press_Release_Ver3_0_Final.pdf) at Vemagiri power projects by Ministry of Petroleum (Government of India) as well as 800 MW GVK Gautami Power Ltd., prove that the project in question is not depriving any other future users. Hence, it is without doubt that this project activity will not constrain future natural gas based power capacity additions, comparable in size to the project activity.

The above information was checked and verified to be correct from the note on gas availability/15/.

The demand supply data of India available from Ministry of Petroleum and Natural Gas shows that the country's natural gas consumption has been less than the gross production/16/.

The spirit of emphasizing "sufficient availability" of NG in the methodology as an applicability criterion is:

- to ensure that NG from other users are not diverted and
- to ensure future power generation facilities of comparable size are not deprived due to NG being taken up by the project activity

The above are emphasized in the clarification provided by CDM EB [Ref: F-CDM-AM-Clar_Resp_ver 01.1 – AM_CLA_0091]. The clarification was requested for applicability of the above criterion to a project activity which was constructing a power plant using LNG imported from Australia. Clarification was requested on how to define sufficient availability of natural gas in this situation.

The EB response clearly stated that this condition is required to ensure the project activity does not displace natural gas that would otherwise be used elsewhere in an economy of the country or region, thus leading to possible leakage. Notwithstanding where the natural gas is imported from, this applicability condition is to be implemented by demonstrating, through monitoring, that the full demand of natural gas by the project activity is dedicatedly met with imported gas, and where dedicated imports is not the case, the monitoring should show that satisfying the project activity's demand for natural gas will not lead to a shortages in supplies of the gas to other projects within the country.

The above clarification clearly indicates that gas availability in region actually means that consumption of NG by the project activity would not lead to shortage of supplies to other projects within the country. Such conditions would be met, when:

1. There is enough gas reserves in the country
2. There are provisions and plans to make the gas available in the country (gas supply infrastructure).

If the above two conditions do not satisfy the demand, then there are enough infrastructure capacity to import and distribute this fuel in the country

The validation team verified the information provided and concluded, therefore, that future natural gas based power capacity additions would not be constrained as a result of the use of gas in the project activity and hence the applicability condition of the methodology pertaining to the availability of natural gas is met by the project activity.

Consideration of alternatives

The project participant identified all the plausible and credible alternatives to the project activity and the reasons for their exclusion / inclusion are explained below:

The various possible alternatives available with the PP at the investment decision time (August 2003), include the following:

Sl No	Alternative to project activity	Justification of feasibility / non-feasibility
1	The project activity i.e. 469 MW NG based combined cycle power plant with an efficiency of 50%-55% and with a lifetime of 15 years not taken as a CDM project activity.	The purpose of the project activity is to generate electricity from the natural gas and deliver it to the Southern Grid to meet the base load power requirement of the grid. This alternative is in compliance with all the applicable legal and regulatory guidelines. Hence this option is taken as a baseline scenario.
2	Power generation using natural gas as the fuel but with different alternative technologies such as open cycle and cogeneration mode.	The purpose of the project activity is to deliver the power to the grid, whereas, this option does not deliver the similar output/ services comparable to the project activity. Hence, this is not a credible and realistic alternative for the PP. Therefore this alternative is not taken as a baseline scenario.
3	Power generation using energy sources other than natural gas	The various alternative energy sources that can generate power other than natural gas include: 3a) Power generation using coal as the energy source with an efficiency of 34%-36%[/17/] and a lifetime of 25-30 years[/18/]. This is a realistic and credible alternative to the PP, which delivers base load power to the grid. Hence, this is a plausible baseline scenario. 3b) Power generation using wind as the energy source with an average PLF of 20% with a life of 20 years[/19/]. Power generation from wind does not meet the base load requirement for the grid on a continuous basis as wind is seasonal in nature and the capacity utilization factor is very low. Due to the high uncertainty of wind, it is not a credible and realistic option for the project proponent for such high capacity comparable to the project activity. 3c) Power generation using hydroelectric power plant with an average PLF of 60%[/20/] (http://www.sandrp.in/hydropower/crtlenv_isue_wcd.pdf pg. 5, 2nd last line). The different types of hydro power projects available with the project proponent include: 3c.i) Reservoir storage based hydro power plants[/21/]: This is not a plausible baseline scenario as it delivers peak-load power to the grid and not the base load power. 3c.ii) Run-of-river based hydro power projects Power generation from hydro is not a feasible alternative to the project activity as it involves high gestation periods and also cannot meet the base load power requirement for the grid on a continuous basis due to the uncertainty of monsoons

		(http://www.brighthub.com/environment/renewable-energy/articles/7826.aspx). Moreover, the hydro power projects are not credible and realistic alternative to the PP due to the following reasons. • Hydro power projects are comparatively capital intensive. In the context of resource shortages and continuing power shortages, thermal projects (coal, liquid fuel and gas), which need a relatively short gestation period, have been getting priority in fund allotments. • The existing tariff formulation norms for hydro projects (based on a cost plus approach) with no premium for peaking services and the provision for 12% free power to distressed states from the initial years are also proving to be deterrents. Hence, the alternative is not taken as a baseline scenario.
4	Power generation using cluster of diesel engine based power plants with an efficiency of 42% and a lifetime of 15 years[/22/].	Diesel engine based power plants were installed before 2001[/23/] and lately the independent power producers (IPP) are not going for the liquid fuel based generation due to the increase in the fuel costs. The State Electricity Boards are also discouraging the IPPs to go for liquid fuel based power plants for the same reason. The prices of petroleum products have long since been controlled by the Government of India (GoI) under the Administered Pricing Mechanism (APM) to reduce the burden on the consumers. However, in April 2002 the GoI dismantled the APM on the oil derived fuels (petrol, diesel etc.) after which there has been sharp increase in their prices to match international parity prices. Hence the option is not an economically viable alternative to any individual IPP with such a large capacity as it was mandated by the Central Government that sanction of IPPs should be through the competitive bidding mechanism. Moreover, the rupee dominated tariffs also fail to attract investors as observed in the Indian power sector particularly relating to the short gestation liquid fuel projects. As per Andhra Pradesh Government order, it was not a legal option to take up liquid fuel power plant GVK was also developing a 200 MW diesel based power plant from 1994 and it could never achieve financial closure, thus stalled in 2002. Thus, PP would not consider diesel option in 2003 at investment decision making for project activity (http://www.processregister.com/Ratlam_Power/Project/pid4013.htm). Therefore this alternative is not taken as a baseline scenario.
5	Power generation using nuclear fuel	This scenario is available only to Nuclear Power Corporation of India Limited, a 100% Government of India owned company, whose capacity additions are driven by the Government of India's initiatives based on its long term strategic programmes and not by the project activity. Hence, this option is not available for any of the stakeholders including the project activity (Page 17, clause 22 of the Atomic energy ACT 1962[/24/]). Therefore this alternative is not taken as a baseline scenario.

6	Electricity imports from other grids:	This is not a realistic alternative as all the other grids are themselves facing shortages in meeting the energy demands and especially at the peak demand (www.cea.nic.in). This alternative also does not deliver the same output comparable to the project activity due to the high transmission losses. Hence, this alternative is not considered as a feasible and credible alternative under the existing scenario.
7	Coal fired supercritical power plant:	The coal fired supercritical power plant is new advanced technology. However, the technology was not available in India in 2003 (at the time of project activity decision was made). The first supercritical power plant in India was being built in 2006. (http://www.ese.iitb.ac.in/aer2006_files/papers/031.pdf, http://goliath.ecnext.com/coms2/summary_0198-211733_ITM) Hence, this alternative is not taken as a baseline scenario.

From the above discussion it is evident that the plausible baseline scenarios identified by the PP include:

a) The project activity i.e. 469 MW NG based combined cycle power plant with an efficiency of 50%-55% in combined cycle mode of operation and with a lifetime of 15 years not taken as a CDM project activity.
b) Power generation using coal as the energy source with an efficiency of 35%-38% with a life of 25-30 years

As recommended in the methodology, the levelised cost of electricity production in Rs/kWh is used as financial indicator for investment analysis.

The levelised tariff was calculated[/25/, /26/] for the plausible baseline options to the proposed project activity, as mentioned below :

1. New power plant (s) based on natural gas and
2. New power plant (s) based on coal

From the levelised cost analysis (detailed in additionality section) it is observed that, using coal as fuel with sub-critical technology is the economically most attractive alternative for producing power in Andhra Pradesh and thus forms the baseline scenario. With this option, the GHG emissions will be more than the CDM project activity, while it is also observed that the project activity is not the most economical option for power production. As per this, the fossil fuel (Coal using Sub-critical technology) based power plant, was found to be economically more attractive alternative and thus forms the baseline scenario. The same was also confirmed by performing sensitivity analysis on the critical parameters (fuel price, PLF and heat rate) as defined under the guidance for investment analysis.

The project participant has calculated and used the baseline emission factor as the lowest among the option required by the methodology. The value of the emission factor corresponds to the build margin calculated according to the 'Tool to calculate the emission factor for an electricity system[/27/].

Options	Emission Factor (tCO_2e/MWh)
Build Margin	0.8179
Operating Margin	0.9876
Combined Margin	0.9028
Emission factor of coal based power plant	0.9580

The emission factors such as operating margin (OM), and build margin (BM) have been evaluated

according to the procedures prescribed in 'Tool to calculate the emission factor for an electricity system Version 02.2 (EB 61)'. Data from the CO_2 Baseline Database for the Indian Power Sector-Central Electricity Authority (Version 5.0)[/28/], applicable at the time of validation has been used in the revised PDD. The emission factor of coal (sub-bituminous) has also been derived from the CEA database Version 5.0 which was checked and verified to be appropriate and conservative.

Accordingly, the baseline emission factor value applicable to the project activity is 0.8179 tCO_{2e}/ MWh.

As per the applicable methodology, the project boundary includes the project site and all power plants connected physically to the baseline grid as defined in "Tool to calculate emission factor for an electricity system". In accordance to this, the project boundary comprises of the project site and all power plants connected physically to the Southern Grid. The specific components and facilities included in the project boundary are the gas turbine, heat recovery steam generator, steam turbine generator, station transformers, auxiliary equipments of gas turbine and generator, heat recovery steam generator and steam turbine and generator; meters (gas, electricity) and gas supply pipelines.

Based on the project boundary, CO_2 is indicated as the main source of the baseline emissions, the project emissions, which is correct as per the project activity and the applicable methodology.

It is the opinion of the validation team that the methodology is correctly quoted and applied by comparing it with the actual text of the applicable version of the methodology available on the UNFCCC CDM website and the selected methodology is applicable to the project activity. Also, the credible baseline alternatives have been chosen and exclusion of the alternatives has been appropriately justified to arrive at the applicable baseline and the project boundary along with the sources of GHG emissions and activities (baseline and project activity) has been clearly explained. The emission reductions have been correctly calculated based on the applicable formulae and applicable emission factor, which are detailed in the GHG calculations section.

The validation team therefore confirms that the selected baseline scenario reasonably represents what would happen in the absence of the project activity. Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and deemed reasonable. The validation team confirms that the identified baseline scenario is the most reasonable baseline scenario for the proposed CDM project activity and meets the requirements of VVM para 87

In this section a corrective action request (CAR 3) and 2 clarification requests (CL 4 and 6) were raised with regard to

i. The alternative for the baseline with an explanation and documentation to support the exclusion of such scenario (CAR 3).

ii. The PDD not addressing the issues with respect to Government control in allocation and prioritization of supply of NG for different Industry and its effect on baseline and associated leakage (CL 4).

iii. The availability of gas with respect to time and space and the possibility of a possible leakage (CL 6).

These CAR and CLs were adequately addressed, resolved and closed in revised PDD, version 3. The resolution of each CAR and CL is represented in Table 3: Resolution of Corrective Action and Clarification Requests.

3.4 Additionality

As specified in the approved methodology AM0029 version 03, the assessment and demonstration of additionality has been carried out based on sub-step 2b- option II- Investment comparison analysis. The levelized tariff for all the plausible options to the proposed project activity has been calculated and presented.

The PP has used the following assumptions for investment analysis as per the information available at the time of project decision making (25th August 2003).

The validation team [with financial expert and sectoral scope expert (technical reviewer) appointed for the project] assessed the input values and the evidences submitted by PP. The key assumptions in validating the appropriateness and justification for each of the parameter is given below table:

Techno economic parameters of the project activity (Installed Capacity469 MW)		
Parameter	**Value / Reference**	**Justification**
Total Investment	14,500 Million [DPR/30/, May 2001 specifies D/E ratio (DPR for a similar configuration power plant was made by earlier owners in 2001, and that estimated a project cost of Rs. 13,237.6 million. An annual escalation of 5% for two years till decision making is assumed)].	Reflects realistic values as compared to CEA expert committee, the project has also later achieved financial closure (financial closure also means loan sanction i.e., common loan agreement signing) and taking in to account escalation costs, hence conservative. The actual project cost is Rs.14,500.04 million (page no. 151) as per the "Common Agreement (for loan) – 29/04/2004"/29/, which is more than the project cost used for investment decision and demonstration of additionality i.e., Rs.14,500 million (page no. 4)/12/ and to substantiate the conservativeness, a sensitivity analysis has been done as per EB guidelines (para 20 of EB 62, Annex 5).
Debt: Equity	70: 30% D/E is the standard for any power financing in India even now. GPL is SPV (Special Purpose Vehicle) so no earlier loan record was available for reference of the D/E ratio.	As per the "Project Information Memorandum – Nov 2003"/12/ by lender (PFCL), D/E ratio is 70:30 (page no. 33). Hence the D/E ratio considered for the project activity is appropriate and standard practice for power projects.
O & M costs	3.76% of the capital Cost based on the experience of PP from operating NG CCPP 1) PP has submitted O & M cost of an operational power project of similar type and comparable capacity in the same region. A chartered accountant's certificate/30.1/	PP has a Group Company having an operating power plant (GVK Industries Ltd.) at investment decision and this break up of O & M cost was estimated based on that experience. O & M cost of 3.76% of Jegurupadu phase I project is conservative compared to 3.8% considered by Project Information Memorandum for GPL by PFCL in Nov.

	confirms the O&M cost at > 4% for three years before the investment decision. 2) An appraisal of the project activity power plant by PFC (a Govt. of India undertaking) had also considered 3.8% of the capital cost as O & M cost for the project appraisal report prepared for raising loans.	2003 (Pg. No. 36, 39 of pdf file)[/12/]. Jegurupadu phase I project was operating from 1997 with the same Parent Company (GVK Group under same management). Based on actual operational history of an existing power plant in similar technology with the PP's Group company, the value used here was considered conservative. Also, including this cost as well, the O & M cost used in the investment analysis is still lower than that recommended in the CERC Tariff order 2001 and the DPR made for the project activity plant in 2001 by TCE. Thus, the O & M cost used is from ready reference, which is appropriate and conservative.
Escalation of components of O & M cost	6%	The escalation on most O & M components is taken at 6% as recommended by CERC (Terms & Conditions of tariff) Regulations, 2000; pg. 92[/34/]. The employee cost and contingency reserves are escalated at 10% and is in line with the existing power plant data before the investment decision. As the total value of O & M from this break up was conservative than the recommended by CERC Regulation applicable at investment decision, this was accepted.
Plant Load Factor	85% based on DPR (Appendix 13)[/30/] [The DPR, 2001 of the power plant, Appendix 13 has used the same value for the financial feasibility study].	The PPA of this project activity (final as well as all earlier drafts) has used 80% as base PLF. The PP has used a higher PLF i.e., 85% conservatively showing higher electricity generation and hence revenue. Thus, the value was accepted. As per Detailed Project Report (DPR[/30/]) based on the PPA signed with APTRANSCO, the PLF is considered 85%. Also sensitivity analysis for PLF to an extent of ±10% is conducted in line with the guidance on investment analysis. Comparing with CERC 2004 guidelines[/31/] (page no.10), the assumed PLF is conservative.
Auxiliary consumption	3% The DPR of project activity	CERC (Terms & Conditions of tariff) Regulations, 2001; pg. 8)[/32/] also

	power plant, Appendix 13 has used same value for the financial feasibility study.	recommended same auxiliary consumption for NG based power plants, which is available to PP at the time of investment decision. Hence this is appropriate and acceptable.
Gross calorific value	9308 kcal/SCM DPR, Appendix 13[/30/]	The calorific value applied is found to be in line with the value in the gas invoices.
Station heat rate	1850 kcal/ kWh PPA of GPL 1997, Clause 57[/8/]	Conservative, compared to the combined cycle station heat rate recommended for gas based power plant according to CERC 2001 guidelines[/32/] (pg. 8 is 2000 kcal/kWh).
Gas consumption	1.96 million SCM per day Fuel Supply Agreement is for the same value. Thus, project activity plant can use maximum this quantity of gas	The project activity power plant was designed based on this quantity of contracted gas. Also, CER sheet has calculated the maximum gas requirement at design heat rate and 85% PLF and found this to be within this limit. Thus, the value was accepted.
Discount rate	12% RBI MTLR and PLR average[/32.1/]	The RBI statistical supplement published for the 23 Aug 2003 (http://rbidocs.rbi.org.in/rdocs/Wss/PDFs/38543.pdf), had two rates i.e. MTLR of IDBI and PLR of five major banks. The average of higher range is 12%. Also, this value is same in both the alternatives (project activity without CDM and coal based power plant) and hence was accepted.
Fuel charges	4205/ 1000 SCM	The assumed value is conservative comparing with the NG pricing trend available on http://www.oilnergy.com/1gnymex.htm#since30. [Matches with the third party value from Project Information Memorandum[/12/] for GPL by PFCL, dated: Nov. 2003 (Pg. No. 100, 104 of pdf file)].
Transmission charges (for using gas pipelines of GAIL)	481.44	
Escalation on transmission Charges	3% Fuel supply agreement with GAIL[/13/] (09/10/2000) and applicable taxes pg.7	
Gas price escalation	5% Estimate by PP - A 10 year historic price index for natural gas on New York Mercantile Exchange (from Feb. 1994) shows 7% annual escalation.	Actual gas bill was checked and value was found much higher than that estimated by PP at investment decision by using this escalation. Also, as the escalation was considered lower than an international, the value is acceptable.
Each component of revenue	Each of these components is available in the PPAs of this project in 1997[/8/], 1999[/8/] and match with final PPA dt. 2003[/9/]	Actual bill was also studied and revenue was computed based on the terms taken for the feasibility study. Thus, the values were accepted. A break up of this and supporting

		evidences are given below*.
Book Depreciation Rate (Straight Line Method basis)		
Civil Works	8.24%	Based on the Depreciation Norms for Generating Companies by the Notification from Ministry of Power dt. 29/03/1994 available at the time of investment decision.
Plant and Machinery	8.24%	
Book Depreciation up to (% of asset value)	90%	
Income Tax		
Income Tax rate	35%	As per companies Act & Income Tax Act and hence accepted.
Minimum Alternate Tax	7.5%	
Surcharge	2.5%	
Dividend Distribution Tax	12.5%	
Working capital		
Working capital interest rate	11%	Conservative based on CERC guidelines 2001[/32/] (Pg. 30) and the PLR existing at the time of investment decision.

***Supporting break up for point for -** each component of revenue

Parameter	Value	Reference	
Capacity charge -Guaranteed PLF	80%	PPA for Gautami Power Ltd. on 31/03/1997[/8/], Pg. 17 (No. 19 in pdf file)	Actual bills were also studied and revenue was computed based on the terms taken for the feasibility study. Thus, the values were accepted.
Foreign Debt Service revenues (FDSC - US Cents/kWh)	0.699		
FDSC applicable	11 years		
FDSC realisable (Maximum PLF)	80%		
Other Fixed Charges (OFC Rs/kWh)	0.699	Note this value is '0.699' and used from amended PPA dt. 17/07/1999[/8/] pg. 4 (119 of pdf file)	
OFC applicable	15 years	PPA dt. 31/03/1997[/8/], Pg. 17 Note – 'shall be fixed for the term of this PPA' Article 6: Duration of Agreement– pg. 32	
OFC realisable (Maximum PLF)	80%		
Committed Incentive Charge (CIC - Rs/kWH)	0.0699	Note this value is '0.0699' and used from amended PPA dt. 17/07/1999[/8/] pg. 4 (119 of pdf file)	
CIC applicable	15 years		

The assumptions considered for calculating the levelized cost of generation for the alternative (b) i.e. power generation using coal as the energy source are described in the table below. For coal based power plant, the nearest capacity in the standard available turbine generator set i.e. 500 MW which is used for comparison. This 500 MW plant at 85% PLF and 9.5% auxiliary consumption will generate 3,369,315MWh electricity. Whereas, a 469 MW gas based unit at 85% PLF and 3% auxiliary consumption will generate 3,387,409MWh electricity.

Techno Economic parameters for power generation using coal as the energy source			
Parameter	**Value**	**Reference**	**Justification**
Installed Capacity	500 MW	CERC (Terms & Conditions of tariff) Regulations, 2001[/32/]	Nearest block size for coal, considering its higher auxiliary consumption than equivalent to NG CCPP.
Total Investment (INR Rs.)	19,974.41	Million – Estimated from TEC available to other thermal projects[/33/]	Conservative compared to State/Central Sector Thermal Schemes Appraised by CEA.
Debt : Equity (INR Rs.) Total Debt- 13,982.08 Total Equity – 5,992.32	70:30	CERC (Terms & Conditions of tariff) Regulations, 2004; pg. 38[/31/]	At standard 70:30 debt/ equity based on CERC guidelines.
O & M cost of coal based power plant	2.5% of the capital Cost + 6% escalation/ year	CERC (Terms & Conditions of tariff) Regulations, 2000; pg.92[/34/]	CERC Regulation is a National level regulation developed based on the actual conservative expenditure of the power plants and the same is used in the tariff determination. This value is available from the cited source before the investment decision. hence appropriate
Plant Load Factor	85%	Kept same as that of the project activity to get same electricity supply as project activity as discussed above this table. PP has kept this value as same level as the project activity.	The baseline 500MW plant at 85% PLF and 9.5% auxiliary consumption will generate 3,369,315MWh electricity. Whereas, a 469MW gas based unit at 85% PLF and 3% auxiliary consumption will generate 3,387,409MWh electricity. The difference is only 0.53% (higher for the NG based unit) between the baseline and project plant. Sensitivity analysis for PLF to an extent of ±10% conducted is in line with the guidance on investment analysis. Comparing with CERC guidelines 2004[/31/], pg23, the assumed PLF is conservative. CERC assumes 80%, conservatively 85% is considered & same as NG option to get same output as per AM0029. Thus, the value of PLF was accepted.

Auxiliary Consumption	9.5%	CERC (Terms & Conditions of tariff) Regulations, 2001; pg. 8[32]	Based on the CERC guidelines 2001 available at the time of investment decision had recommended same auxiliary consumption i.e., 9.5%. Also, using this value gave similar output from the baseline plant as the project activity power plant as discussed in point above for PLF. Hence value considered is appropriate.
Return on Equity	16%	CERC (Terms & Conditions of tariff) Regulations, 2001[32]; pg. 27 (For NG, ROE is not considered. The NG power plant was based on a bid that did not include guaranteed ROE by Government).	The value is in line for thermal power plants installed in year 2001-2004 according to Central Electricity Regulatory Commission (CERC) 2001[32].
Gross Calorific Value	4760.50 kcal/kg	Price Notification No. 7/2001-2002 dated 9th April, 2001 from the Singareni Collieries Co. Ltd[35]	The PP has used price notification from the nearest coal mine company and breakup of the price using the same was justified. The price notification dated 09/04/2001 was verified and found that the values applied are appropriate i.e., existing at the time of investment decision.
Fuel Charges	1357/ ton		
Annual escalation of fuel charges in baseline	5%	This was kept at same level as the project activity fuel.	As the same escalation was applied to both the alternatives (project activity without CDM and coal based power plant), this was accepted as conservative. (NG shows 7% escalation in NY index, but PP has used 5% for both coal & NG)
Station Heat Rate-Stabilization	2600 kcal/ kWh	CERC (Terms & Conditions of tariff) Regulations, 2001[32]; pg. 7	Based on the CERC guidelines 2001[32] available at the time of investment decision. For calculations 2500 kcal/ kWh is used, which is conservative.
Station Heat Rate-Post Stabilization	2500 kcal/ kWh		
Depreciation rate for revenue calculation (Straight Line Method basis)			
Civil Works	7.84%	Electricity Supply Act[36]	Depreciation Norms for Generating Companies by the Notification from Ministry of Power dt. 29/03/1994.
Plant and Machinery	7.84%		
Book Depreciation up to (% of asset value)	90%		

Book Depreciation Rate (Straight Line Method basis)			
Civil Works	3.34%	Company's Act[/37/]	As per companies Act & Income Tax Act and hence accepted.
Plant and Machinery	5.28%		
Book Depreciation up to (% of asset value)	95%		
Surcharge	2.5%		
Dividend Distribution Tax	12.5%		
Working capital			
Working capital interest rate	11%		Conservative based on CERC guidelines 2001[/32/] (Pg. 30) and the PLR existing at the time of investment decision.

The validation team has confirmed that the values assumed / applied have been sourced from authentic document / references which were cross checked and found to be appropriate, conservative and correct.

Based on the values assumed, a levelised cost of Rs.2.10/kWh and Rs.1.93/kWh has been calculated for the natural gas and coal for power generation which is conservative and correct and in accordance with para 6 of EB 62, annex 5 (i.e., Guidelines on investment analysis). The below table summarizes the levelized cost of electricity generation for various alternatives.

No.	Scenario	Levelized Cost of generation (`/kWh) at 85% PLF
(a)	Project activity implemented as a project without the CDM revenue	2.10
(b)	Power generation using coal as the energy source	1.93

Thus, the economically attractive baseline scenario as identified by the investment analysis using the levelized cost of electricity generation (in Rs./kWh) as the financial indicator is the alternative (b) which is power generation using coal as the energy source.

Based on the calculations it has been established that the credible options available at the time of investment decision are financially more attractive, compared to the least polluting but more expensive option which is the project activity. The project activity is concluded to be additional and the revenues from CERs will help in making the project viable.

Sensitivity analysis:

A sensitivity analysis is performed for all alternatives; to confirm that the conclusion regarding the financial attractiveness is robust to reasonable variations in the critical assumptions i.e., the capital cost, fuel price, plant load factor and SHR. Project cost is varied as it is taken as per investment decision date. Actual project cost is higher due to delay in commissioning and increase in IDC component.

In accordance with para 20 of the investment guidance in EB 62, the project proponent has conducted a sensitivity analysis on the financials by varying the parameters which have a bearing of 20% or more on either the project costs or the project revenues and has tabulated the results

Sensitivity analysis considering variation in fuel price		
Price of fuel change	**-10%**	**+10%**
Levelized cost of electricity generation for power generation using natural gas as energy source (Project activity not implemented as CDM Project)	1.97	2.21
Levelized cost of electricity generation for power generation using coal as energy source	1.82	2.05

Sensitivity analysis considering variation in Plant Load Factor (PLF)		
PLF change	**-10%**	**+10%**
Levelized cost of electricity generation for power generation using natural gas as energy source (Project activity not implemented as CDM Project)	2.17	1.96
Levelized cost of electricity generation for power generation using coal as energy source	2.01	1.87

Sensitivity analysis considering variation in capital cost		
Capital cost change	**-10%**	**+10%**
Levelized cost of electricity generation for power generation using natural gas as energy source (Project activity not implemented as CDM Project)	2.07	2.11
Levelized cost of electricity generation for power generation using coal as energy source	1.90	1.97

Sensitivity analysis considering variation in heat rate		
Station Heat Rate (SHR)		
Capital cost change	**-10%**	**+10%**
Levelized cost of electricity generation for power generation using natural gas as energy source (Project activity not implemented as CDM Project)	1.97	2.14
Levelized cost of electricity generation for power generation using coal as energy source	1.81	2.05

The sensitivity analysis confirms that the economically most attractive baseline scenario identified in the sub-step 1 is robust to reasonable variations in all the critical assumptions.

The validation team, based on the assessment result by the financial expert engaged, hereby confirms that the assumptions are appropriate, financial calculations are correct and PP has applied all the statutory levies and taxes correctly corresponding to the investment decision date. The listed input values (both project activity and baseline) as presented in section B.5 of PDD, have been consistently applied in the financial calculations.

Common Practice:

The common practice analysis has been analyzed based on requirements of the additionality tool-sub-step 4a where the analysis of other activities similar to the proposed project activity is done.

In this step, an analysis of any other activities that are similar if they are in the same country/region and/or rely on a broadly similar technology, are of a similar scale, and take place in a comparable environment with respect to regulatory framework, investment climate, access to technology, access to financing, etc has been done.

As per CEA version 3[/38/] the share of the gas based power generation in India is 16% of the total installed thermal power capacity and that of coal based power plants is 82%. The total percentage of installed capacity of the gas based power plants in Southern Region is only 17.2% of the total installed capacity. This corroborates the fact that Natural Gas based power generation is not commonly carried out practice in India.

According to the 'Tool for the demonstration and assessment of additionality', analysis of any other activities implemented previously or currently underway that are similar to the proposed project activity needs to be performed to describe whether and to which extent similar activities have already diffused in the relevant region. Similar project activities include Natural gas based Grid Connected Power Plant of similar scale that takes place in a comparable environment with respect to regulatory framework, investment climate, and access to technology etc., in the state of Andhra Pradesh with the tariff determined through the International Competitive Bidding Process (ICB) those activities that are implemented previously or currently underway.

To arrive at the power plants that fall under the above said criteria, an analysis is conducted including all the power plants connected to grid that are operational having similar or comparable capacity (200-500 MW) at the time of investment decision. They include

Sl No.	Power generation units	Unit No.	Capacity	Fuel used
1	K_gudem new	1	250	Coal
2	K_gudem new	2	250	Coal
3	Vijaywada	1	210	Coal
4	Vijaywada	2	210	Coal
5	Vijaywada	3	210	Coal
6	Vijaywada	4	210	Coal
7	Vijaywada	5	210	Coal
8	Vijaywada	6	210	Coal
9	Rayal seema	1	210	Coal
10	Rayal seema	2	210	Coal
11	R_gundem stps	1	200	Coal
12	R_gundem stps	2	200	Coal
13	R_gundem stps	3	200	Coal
14	R_gundem stps	4	500	Coal
15	R_gundem stps	5	500	Coal
16	R_gundem stps	6	500	Coal
17	Simhadri	1	500	Coal
18	Simhadri	2	500	Coal
19	Peddapuram ccgt	1	220	Natural gas
20	Jegurupadul	1	235.4	Natural gas
21	Spectrum Godavari	1	208	Natural gas

Among the above mentioned power plants Sl No 19, 20 and 21 are NG based power plants. Although this may use a similar fuel as compared to the project activity, the tariff structure of GPL is different as compared to that of the NG based power plant mentioned above. These power plants have a two part tariff system in which the capital cost was approved by CEA and they are entitled for a fixed return of equity [http://www.ercap.org/TariffOrders/TO_2001-02.pdf (Page 45)].

In contrast to that the PPA for the project activity was signed with APTRANSCO with the tariff that was fixed for the short gestation projects (Natural Gas Based Power Generation Projects) selected under the International Competitive Bid Process (ICB).

The tariff fixed for the project activity was to match the tariff fixed for the Natural Gas based Power Projects which have participated in the International Competitive Bid Process. The Natural Gas based power plants that have participated in the process and won the bid for the similar tariff include

- 370 MW Vemagiri Power Project promoted by GMR Group.

http://cdm.unfccc.int/Projects/Validation/DB/5PJHBSBR7NOR16EJM699U5OT91W5A3/view.html

- 445 MW Konaseema Power Project promoted by Konaseema Gas Power Limited.

http://cdm.unfccc.int/Projects/Validation/DB/YVZZAK437I4UGWTRQTDD0KO1MDE98N/view.html

- 228 MW Combined Cycle Natural Gas based grid connected power plant promoted by GVK Industries Ltd., Hyderabad

http://cdm.unfccc.int/Projects/Validation/DB/82ORS4DFFAE3F7JI64VMOSYQEYXGCB/view.html

All these projects are in different stages of CDM registration process and all of these have already been web hosted for global stakeholder comments (http://cdm.unfccc.int/Projects/Validation).

The plants that existed from earlier days in the vicinity namely Spectrum Power Generation and another project from the same project promoters is based on a different tariff structure to include a guaranteed 16% return on equity [http://www.scribd.com/doc/20623495/GVK-Power-Infrastructure-Initiating-Coverage-11Aug09 (Page 4)].

Thus, all the projects with similar tariff structures are in different stages of CDM registration Process.

The multi-fuel power plants came up in a different investment scenario and have fuel pass through PPA i.e. cost of fuel is paid to the plant under the PPA signed. Naptha power plants cannot be considered in common practice.

As per 'Additionality Tool' – only 'similar activities' (one condition for similar being those that take place in a similar environment) need to be considered. It should also be noted that there has been no other natural gas based power project that has been commissioned in Andhra Pradesh with the similar tariff structure. The above discussed power projects are already in the CDM pipeline. Hence, it can be concluded that no similar activities have diffused in the relevant region without the consideration of CDM revenue.

Thus in line with the additionality tool, the PP has demonstrated additionality by investment analysis and common practice analysis. Based on the requirements of para 111 of VVM, the validation team is of the opinion that the project is additional.

Early consideration of CDM:

As per the CDM Guidance (Glossary of CDM terms, Ver. 05, pg. 28), the start date shall be considered to be the date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity. Minor pre-project expenses, e.g. the contracting of services /payment of fees for feasibility studies or preliminary surveys, should not be considered in the determination of the start date as they do not necessarily indicate the commencement of implementation of the project (EB 41, Meeting Report, para 67).

The validation team had verified the chronology of project planning and different feasibility studies for the development of a power project at the same site from 1997. The first PPA was signed for a 300 MW power plant in March 1997[/8/] based on a liquid fuel under M/s. Satyam Constructions Ltd. Later there were changes in the plant size, fuel and ownership. However, these were concluded as pre-project exercises as the plant configurations (size in MW) and ownerships, PPA terms on fuel kept changing till 2001 [PPA of 1999[/8/] – clause 6 to 11 (pg. 117 in 143 pg file), and PPA of 2003[/9/] – clause 6 to 15 (pg. 124)]

In December 2001, a draft PPA was submitted to APERC and a public hearing on the same was conducted on 19/12/2002 [PPA of 2003[/9/] – clause 26 (pg. 127)]. After modifying PPA for public comments and APERC objections, consent was given by APERC on 12/04/2003[/9/] [PPA of 2003 – clause 26 (pg. 127)]. Thus, till this date, the PP could not have taken investment decision as the revenue calculation of the project activity power plant was unclear.

On 02nd July 2003, GVK Power Pvt. Ltd [/38.1/] came into management of the Gautami Power Pvt. Ltd.

(GPPL) by a Share Purchase Agreement with then equity holders. GVK was operating a NG based power plant in the state and was also developing another NG based power project on the same terms as GPPL during that period. Thus, an investment decision was taken under this new management on 25th August 2003 and EPC contract was awarded to the consortium of Alstom (Alstom (Switzerland) Limited & Alstom Projects India Ltd). Thus, before this moment, the project cost was not frozen. Even at this time, the EPC agreement had the following terms and signing a contract was not concluded as the start date due to actual expenditure (as detailed below) was due only after the financial closure was achieved and notice to proceed to the EPC contractor was given along with following monetary commitment.

1. 'Agreement for Supplies'/38.2/ with Alstom Projects India Ltd - First payment due on NTP is 10% and is INR. 300.18 million i.e., the contract price is INR 'three billion one million eight hundred thousand'. This price is towards (& close to) 'EPC on-shore' component used in the project cost.

2. 'Supplies CIF'/38.3/ agreement was for CHF 139,254,250 and at exchange rate used in analysis Rs. 34.81/ CHF, this amounts to INR 4,847.83 million. Thus, with NTP, payment due was INR 484.78 million.

3. 'Agreement for Engineering and Construction Services'/38.4/ agreement was for INR 1,733.575 million. The amount due on NTP is 10% i.e., 173.35 million.

Thus, by these three agreements (commonly called EPC contract); total amount due with NTP was INR 958.31 million.

Further, this NTP was importantly linked to the financial closing as per EPC contract and without achieving financial closing, the agreements could be terminated by giving notice from either party. Thus, till, financial closing, none of the financial commitments were 'commitment to implement the project activity' i.e. the CDM starting date.

Thus, validation team based on the above confirm that the CDM start date of the project activity, reported in the PDD, is in accordance with Glossary of CDM terms (version05) and fulfills the requirements of para 99 of VVM.

Further, the validation team has determined that the project under validation is a project activity with a start date before 02 August 2008 and hence qualifies under "existing" project activities based on para 6, 7 and 8 of EB 62, Annex 13 guidelines on prior consideration. The start date is prior to the date of publication of the PDD for global stakeholder consultation i.e., 2nd August 2008, accordingly the requirements of early CDM consideration, indicating real and continuous action by PP to secure CDM status in parallel with CDM implementation have been evaluated.

For evidence towards prior awareness of CDM, PP has submitted his team meeting with CDM consultant. The validation team verified the minutes of the meeting dated: 04th January 2003/39/ and confirmed the same. Based on the above, the validation team confirms that the PP was aware of CDM prior to the start date of the project activity.

Further, from the extract of the minutes of the Board meeting dated 25th August 2003/40/ it was noted that the PP was aware of CDM and describes the intention of the company to install a 469 MW capacity NG power project in the Andhra Pradesh and discusses about the importance of carbon credits from the financial perspective and also from the viewpoint of mitigation of GHG emissions. The minutes also discuss about the negotiation and finalize the EPC contract for supply of equipments. The same was confirmed from the extract of Minutes of the Board Meeting, the validation team also verified the originals of the Board agenda note dated 25th August 2003 during the site visit.

Based on the above, the validation team confirms that CDM benefits were a decisive factor in the decision of PP for the project activity. The continuing and real actions taken to secure CDM status for the project in parallel with its implementation are presented below in the table

Activity	Time period between consecutive CDM activities
Financial closure for the project activity and notice to proceed to the EPC contractor -1st July 2004[/41/]	Start date
ERPA for sale of CERs from the project activity- 11th February 2005[/42/]	8 months
Environmental clearance from Ministry of Environment and Forests, Government of India - 23rd November 2005[/43/]	9 months
Appointment of the CDM consultants -04th January 2007[/44/]	12 months
Local Stakeholders consultation meeting -30th November 2007[/45/]	10 months
PDD submitted for Host Country Approval on 21st August 2008[/46/]	8 months
PDD was web hosted for GSC -17th September 2008 to16th October 2008 (http://cdm.unfccc.int/Projects/Validation/DB/6K9BLL1BKBDHXCNRED0KWA1NY9GWOE/view.html)	
Host Country Approval meeting on 16th October 2008[/47/]	
Host Country Approval letter awarded on 06th February 2009[/4/]	4 months
Commissioning of the project activity plant – 05th June 2009[/7/]	4 months
Appointment of present DOE – 13th September 2009[/48/]	3 months
PDD web hosted for GSC – 30th December 2009 to 28th January 2010 (http://cdm.unfccc.int/Projects/Validation/DB/T75O751QXNTM82IQ0KN5FUQNSRZ155/view.html)	3 months

The validation team verified the evidences for all the events listed in the chronology under Section B.5 of the PDD and it is seen that the PP had initiated real action in parallel to the implementation of the project activity and that all the activities from the start date of the project activity until the date of webhosting the PDD for global stakeholder comments are completed well within the time span of 2 years and hence adequately meets the requirements as mandated by the guidelines on the demonstration and assessment of prior consideration of the CDM (Ver. 04, EB 62, Annex 13).

In this section 7 clarification requests (CL 8, 9, 10, 12, 13, 14 and 16) were raised with regard to

i) The clarification on calculation of levelised cost of generation for base line and the input values as per the Guidelines of EB 51 para 6 (CL 8).

ii) Justification for the low cost fuel "coal" as arrived in section B.4 of PDD (CL 9).

iii) Clarification on discrepancies observed in the start date mentioned in section C.1.1 of the PDD and PCN (CL 10).

iv) For submission of evidence on prior CDM awareness and knowledge (CL 12).

v) Clarification on PLF, useful life of project activity and depreciation and to provide the authentic evidence for the assumed parameters for calculations (CL 13).

vi) The clarification on assumptions for the techno economic parameters of the project activity and the baseline with respect to EB guidelines on investment analysis and justification on their conservativeness (CL 14).

vii) Justification for exclusion of project cost for Sensitivity analysis based on EB guidelines (CL 16).

The CLs raised were adequately addressed and satisfactorily resolved and closed as detailed in Table 3, of Appendix A of this report.

3.5 Monitoring Plan

The project uses approved monitoring methodology "Grid Connected Electricity Generation Plants using Non-Renewable and Less GHG Intensive Fuel", AM0029, version 3, which is applicable to the project. According to the methodology the following parameters should be monitored

- Metering of the electricity exported by power plant to the Southern Grid (ex-post)
- Total volume of natural gas combusted in the project plant in year y (ex-post)
- The net calorific value (energy content) per volume unit of natural gas in year 'y' (ex-post)
- Quantity of LNG or NG consumed in the project activity (for leakage, if any)
- The BM emission factor in accordance with tools to calculate emission factor for electricity system (ex-ante)

It was confirmed from the site visit and the invoices raised[/49/] to the state electricity board that the project design has got provisions to monitor the fuel (NG) from both the supplier (GAIL and RIL) and the consumer (GPL) which acts as a system of cross –verification to arrive at the correct value on a conservative basis. The qualitative monitoring of the fuel is also done periodically using Gas Chromatography. Annex 4 of PDD describes in detail the QA / QC procedures related to calibration, meter testing, internal audits, maintenance of monitoring equipment and monitoring plan implementation which are found to comply with the requirements of the applicable methodology. The O & M is undertaken by the plant personnel appointed by the project proponent[/50/].

The grid emission factor was calculated from the Operating Margin (OM) CO_2 emission factor, Build Margin (BM) CO_2 emission factor and emission factor of coal (sub-bituminous) have been evaluated according to the procedures prescribed in 'Tool to calculate the emission factor for an electricity system Version 02.2 (EB 61)'. Data from the CO_2 Baseline Database for the Indian Power Sector-Central Electricity Authority (Version 5.0)[/28/], applicable at the time of validation has been used in the revised PDD.

The value of the following parameters were checked and verified from CEA version 5 and found to be appropriate and conservative

- $EF_{grid,OM,y}$ of 0.9876 tCO2e/MWh and $EF_{grid,BM,y}$ of 0.8179 tCO2e/MWh considered for the project activity.
- The estimated figure of 0.9028 tCO2e/MWh for grid emission factor and
- 0.9580 tCO2e/MWh emission factor of coal based power plant derived from CEA database.

PP has used the official published data on OM and BM emission factors. The version of the data used is as available on the date of validation. This data is published by CEA, the sole authority for the publication of such data in India. This data is based on the emission factor tool approved by UNFCCC. Validation team agrees to this emission factor, since it is based on the official background data published by CEA.

Leakages occurring due to upstream fugitive methane emissions have been considered on a conservative basis based on the methodology AM0029. Leakages have been taken into account considering:

1. Fugitive methane emissions of natural gas envisaged from production, transportation, distribution, and, in the case of LNG, liquefaction, transportation, re-gasification and compression into a transmission or distribution system, in tCH_4 per GJ fuel supplied to final consumers
2. Upstream fugitive methane emissions occurring in the absence of the project activity in terms of ton of methane per MWh

It is the opinion of the validation team that the project complies with para 124 of the VVM 1.2 based on the following

- The monitoring plan is in line with the requirements of the methodology;
- Monitoring arrangements described in the monitoring plan are feasible within the project design;

The project participants are able to implement the monitoring plan.

In this section a corrective action request (CAR 4) and a clarification requests (CL 11) were raised with regard to

i. The values of build margin ($EF_{BM,y}$) adopted and applied was not as per the indicated source CEA database version in section B.6.2 of PDD. The PDD was not consistent with the version of database applied; accordingly the PDD needs to be updated with most conservative values of emission factor (CAR 4).

ii. The identification of procedures for dealing with possible monitoring data adjustments to handle exigency situations.

The relevant sections of the PDD version 3 i.e., section B.6.2 has been revised as per the latest version of CEA and B.7.2 of the updated with the procedures for dealing with possible monitoring data adjustments to handle any exigency related to registration and the date of JMR. Hence, CAR 4 and CL 11 were closed. The resolution of each CAR and CL is represented in Table 3: Resolution of Corrective Action and Clarification Requests.

3.6 Calculation of GHG Emissions

As per AM0029, the baseline emission sources considered are the power plants connected to the Southern Grid that contribute to its build margin. The project activity uses a lesser GHG intensive fuel and thus proposes to reduce the GHG intensity of the grid to which it supplies. The baseline emission is obtained by multiplying net electricity generated by the project power plant with the build margin baseline emission factor of Southern regional grid as per the data of CO_2 baseline database published by CEA.

The measurement of net electricity generated is according to the applied methodology, established in monitoring section, while the BM applied emission factor has been taken based on comparison of the different options, among which the lowest value has been applied based on CEA version 5[/28/], applicable at the time of validation. Oxidation factor for NG was taken as 1 based on IPCC 2006 "IPCC Guidelines for National Greenhouse Gas Inventories". The energy efficiency of technology in the most likely baseline scenario and is taken as 36.3%, calculated based on CEA Version 5 based on 'Tool to calculate the emission factor for an electricity system'.

The leakage emissions (due to utilization of natural gas as fuel) have been calculated conservatively. Default emission factor for fugitive CH_4 upstream emissions was taken as 296 tCH_4/PJ as this is the value recommended by the methodology and applicable to the operational facilities in most of the developing countries. The emission factor for upstream fugitive methane emissions occurring in the absence of the project activity in terms of tonnes of methane per MWh is calculated as 16.01 CO_2/MU

based on CEA Version 5. The net calorific value of 9308 kcal/SCM (energy content) per volume unit of natural gas in year is provided by supplier and recorded by GPL for verification, which will be cross verified on a continuous basis using a Gas Chromatograph and averaged in the invoice for the metered period.

The estimated emissions reduction ER_y by the project activity during a given year y is:

ER_y = Baseline Emissions – Project Emissions – Leakage,

ER_y = 1,293,422tCO_2e

[i.e., Emission Reductions = 2,770,562– 1,379,231 – 97,909 = 1,293,420tCO_2e]

These have been described adequately in section B 6.1 of the PDD and in CER calculation sheet[/51/] as per the methodology AM0029, Version 3. Hence as per VVM 1.2 para 92, it is the opinion of the validation team that

- All assumptions and data used by the project participants were listed in the PDD, including their references and sources;
- All documentation used by project participants as the basis for assumptions and source of data was correctly quoted and interpreted in the PDD;
- The baseline methodology has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions;
- All estimates of the baseline emissions can be replicated using the data and parameter values provided in the PDD.

A clarification request (CL 17) was raised on the emission reductions not consistently mentioned in the emission reduction calculation sheets and the PDD. The relevant section in the PDD version 3 and emission reduction calculation sheets were made consistent in the revised versions. Hence, this CL was closed. The resolution of each CAR and CL is represented in Table 3: Resolution of Corrective Action and Clarification Requests.

3.7 Environmental Impacts

An Environmental Impact Assessment (EIA) for the project activity had been conducted by SGS India Ltd., Environmental Services Secunderabad in the month of November 2000[/52/]. The project got environmental clearance from Ministry of Environment and Forests (MoEF), Government of India (Host Party) on 09th January 2001[/53/]. The project had also received consent to operate from local regulatory authority (Andhra Pradesh Pollution Control Board) on 04th January 2009[/54/].

The plant has been granted the environmental clearances and consents as per the requirements of the regulatory authority of the host country. Also the NCDMA of India through its approval letter has confirmed that the project contributes to sustainable development in India.

The significant environmental impacts of the project activity along with the measures taken to mitigate the impacts and the conclusions are enumerated in Appendix A of the PDD. As the plant is located in a notified industrial area and the proposed plant will run on natural gas (a clean fuel), it is ensured that there are no major negative impacts envisaged on the air quality, water environment and land environment of the surrounding region. Moreover the plant authorities have taken necessary care to see that all statutory regulations existing in the country are met. The validation team considered that the project will not have adverse environmental impact.

3.8 Comments by Local Stakeholders

A formal consultation process with the local stakeholders was held on 30th November 2007[/45/] at project activity premises (i.e., GVK Gautami Power Ltd. (GPL) at Industrial Development Area-Peddapuram, Samalkot, East Godavari district, Andhra Pradesh, India). PP had communicated by written invitation in local language[/55/] 15 days in advance before the meeting to the identified stakeholders. The meeting was attended by 25 participants[/56/] including locals residing in the neighboring villages, local health officer, staff of neighboring college, officials of state electricity board and pollution control board.

The project activity was explained to the gathering and a brief presentation on climate change and CDM was made. The role of the project activity in the mitigation of climate change and local sociological benefits were explained. Then queries were invited from the local stakeholders. The stakeholders were given further 15 days' time to contact project proponents for any further queries.

The main concerns of the stakeholders were with regard to health and skin problems, any danger due to the leakage of natural gas/liquid fuel, the safety arrangements that are maintained to face any accidents, whether necessary employment opportunities created to the people of surrounding villages and any community facilities will be provided to the residents of nearby villages. The stakeholders were given clarification on the issues raised to their satisfaction by providing relevant evidence of the project claims. There were no specific comments that required follow up action from CDM project activity point of view as evident from the minutes of the stakeholder meeting[/45/] and the description provided in Section E of the PDD.

The information regarding the stakeholders meeting was verified during the site visit by interviewing the relevant members who had participated and were present at the meeting. The interviewed persons confirmed the information provided in the PDD and the documents / record of the local stakeholder consultation process.

The DNA of India (NCDMA) or any other related body does not specify any standard procedures / requirements for conducting local stakeholder consultation. However, the consultation process was carried out as per CDM requirements. The validation team hereby confirms that the process of local stakeholder consultation is observed to be adequate.

4.0 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOs

The PDD version 2 dated 10th December 2009 was made available for Parties, Stakeholders and UNFCCC accredited NGOs to comment via UNFCCC website (http://cdm.unfccc.int/Projects/Validation/DB/T75O751QXNTM82IQ0KN5FUQNSRZ155/view.html) from 30th December 2009 to 28th January 2010 for a period of 30 days.

One (1) comment received during this period was issued to PP for resolution and is part of this report as Appendix B.

5.0 VALIDATION OPINION

SIRIM QAS Intl. performed a validation of the proposed CDM project "Natural Gas based grid connected power project at Peddapuram, A.P. by Gautami Power Limited" in India. The validation was performed on the basis of the UNFCCC criteria for the Clean Development Mechanism and the host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting. Using a risk based approach, the review of the project design documentation and the subsequent follow-up interviews provided the validation team with sufficient evidence to determine the fulfillment of the stated criteria.

The project participant is M/s GVK Gautami Power Limited. The project is a unilateral project, the party involved and the host country is India. India fulfills the requirements to participate in the CDM. The DNA of India has confirmed that the project assists in achieving sustainable development.

The proposed large scale CDM project is eligible under sectoral scope 1 category 1: energy industries and the category (with a total installed capacity of 3387 GWh electricity generation) is justified as the project is a grid connected electricity-generating project using non-renewable fuel in energy industries. The project applies the approved baseline methodology AM0029 version 03 "Baseline Methodology for Grid Connected Electricity Generation Plants using Natural Gas".

The proposed project activity is commissioning and operation of a new Greenfield 469 MW natural gas fired combined cycle power plant at Industrial Development Area, Peddapuram, near Samalkot in East Godavari district, Andhra Pradesh, India by GVK Gautami Power Ltd (GPL). The main purpose of the project activity is to generate electricity through less GHG intensive fuel, such as natural gas (NG), that displaces electricity from an electricity distribution system (Southern Grid) dominated by more GHG intensive fossil fuel fired generating units. The project activity will displace approximately 1,293,420 tCO_2e of less carbon intensive CO_2 of power annually to the power deficit, more carbon intensive Southern Grid.

The project capacity is fixed and no addition will be made in capacity during the crediting period. The project will result in the reduction of greenhouse gas emissions that are real, measurable and give long term benefits to the mitigation of climate change.

It is demonstrated that the project faces an investment barrier that would prevent its implementation without the CDM. Without the CER revenue, the levelised cost is calculated to be 2.09 INR/ kWh which is more costly compared with the credible and feasible baseline alternative of energy generation using coal. Emission reductions from the project are hence additional to any that would occur in the absence of the project activity.

The GHG emission calculations are documented in a complete and transparent manner. The formulae and methodologies for accounting GHG emissions are appropriate and emission factors are deemed to be of sufficient accuracy. The total emission reductions from the project as envisaged in the PDD version 3, dated 29th April 2011 are 12,934,200 tCO_2e over the 10-year crediting period. The emission reductions forecast has been checked and it is deemed likely that the stated amount is achievable on the basis that the underlying assumptions do not change.

The monitoring plan is in line with the approved monitoring methodologies of AM0029, version3. The plan adequately addresses all necessary information for monitoring and reporting of emissions reductions due to the project activity. Responsibilities and authorities for project management, monitoring and reporting, and the data quality control and quality assurance procedures have been described in the PDD are implemented.

An Environmental Impact assessment (EIA) for the project activity has been conducted. The plant has been granted with the environmental clearances and consents as per the requirements of the regulatory authority of the host country. The project is not likely to create any significant adverse environmental impacts. The project complies with all environmental regulations of India. Also the NCDMA of India through its approval letter has confirmed that the project contributes to sustainable development in India.

In summary, it is SIRIM QAS Intl.'s opinion that the "Natural Gas based grid connected power project at Peddapuram, A.P. by Gautami Power Limited" as described in the PDD version 3, dated 29th April 2010 meets all relevant UNFCCC requirements for the CDM, is eligible as category I under scope I of the large-scale CDM project activities and correctly applies the baseline and monitoring methodology specified in AM0029 (version 3). As such, SIRIM QAS Intl. recommends the registration of the project as a CDM project activity.

NO. 1, PERSIARAN DATO' MENTERI, SECTION 2,
40911 SHAH ALAM, SELANGOR DARUL EHSAN
MALAYSIA
Tel.: 603-55446479
Fax: 603-55446787
www.sirim-sqas.com.my

Prepared by :	Approved by :
Dr. D. Siddaramu (Validation Team Leader)	Parama Iswara Subramaniam (DOE Representative)

6.0 REFERENCES

6.1 Information Reference List

Ref. No.	Document or Type of Information
/1/	VV Manual Version01.2 (http://cdm.unfccc.int/Reference/Manuals/index.html)
/1.1/	GPL -fresh Certificate of Incorporation
/2/	PDD, version 02 dated 10th December 2009 (http://cdm.unfccc.int/Projects/Validation/DB/T75O751QXNTM82IQ0KN5FUQNSRZ155/view.html)
/3/	Revised PDD version 3, dated 29th April 2011
/3.1/	Revised PDD version 3.1, dated 22nd August 2011
/4/	LoA from NCDMA dated 06th February 2009 (Reference number 4/25/2008-CCC)
/5/	Modalities of Communication
/6/	Land documents –Part 1
/6.1/	Land documents–Part 2
/7/	Commercial Operation Date, 05th June 2009
/8/	PPA signed in 1997 and PPA signed in 1999 (pg 115)
/9/	PPA of Gautami Power Ltd. dt. 18th June 2003 pg. 4, Clause 15
/10/	Notice to proceed to the EPC contractor dt. 01st July 2004
/11/	THE GAZETTE OF INDIA EXTRAORDINARY Dt. 29th March 1994 (http://www.powermin.nic.in/acts_notification/generating_companies.htm)
/12/	Project Information Memorandum – November 2003 by lender PFCL (refer pg. 4 and 33)
/13/	Gas Supply Contract with GAIL
/14/	Gas Supply Contract with RIL
/15/	Note on gas availability
16/	Demand supply data of India -Ministry of Petroleum and Natural Gas
/17/	Power generation using coal
/18/	Life of coal power plant (www.cercind.gov.in/160502/comp_bidding.pdf)
/19/	Maharashtra Electricity Regulatory Commission, Wind Project Tariff Order, 18th September 2003 (http://www.mercindia.org.in/pdf/Annexures.pdf)
/20/	Hydroelectric power plant -average PLF of 60% (http://www.sandrp.in/hydropower/crtlenv_isue_wcd.pdf pg. 5, 2nd last line).
/21/	The Base Load Fallacy, Author: Mark Diesendorf
/22/	Power generation using cluster of Diesel Engine
/23/	Diesel Engine based power plants were installed before 2001
/24/	Atomic energy ACT 1962 (http://www.dae.gov.in/rules/aeact.pdf)
/25/	Levelised tariff calculations for Natural Gas
/26/	Levelised tariff calculations for Coal
/27/	Tool to calculate the emission factor for an electricity system Version 02.2
/28/	CEA version 05
/29/	Common Agreement (for loan) – 29th April 2004
/30/	PLF of 85% as per DPR (Appendix 13) available at investment decision
/30.1/	Chartered Accountant's Certificate
/31/	CERC Terms & Conditions of Tariff 2004 (http://www.cercind.gov.in/28032004/finalregulations_terms&condition.pdf)
/32/	CERC (Terms & Conditions of tariff) Regulations, 2001
/32.1/	RBI PLR in Aug 2003 - avg 12%
/33/	Estimated from TEC available to other thermal projects
/34/	CERC (Terms & Conditions of tariff) Regulations, 2000

/35/	Price Notification No. 7/2001-2002 dated 9th April, 2001 from the Singareni Collieries Co.
/36/	Electricity Supply Act
/37/	Depreciation Rates- Company act
/38/	CO_2 baseline database for the Indian power sector, User guide, Version 3.0, December 2007, Central Electricity Authority, Government of India
/38.1/	GPL Shareholders' Agreement with Addendums-1 & 2
/38.2/	Agreement for Supplies
/38.3/	Supplies CIF
/38.4/	Agreement for Engineering and Construction Services
/39/	Meeting of the PP's team with CDM consultant –Minutes of the meeting dated: 04th January 2003
/40/	Board meeting of Gautami Power Ltd. for the investment decision in project considering prospect of CDM revenue - minutes of Board of Directors' meeting dated: 25th August 2003
/41/	Start date of the project activity -NTP to the EPC contractor -01st July 2004
/42/	ERPA for sale of CERs from the project activity- 11th February 2005
/43/	Environmental clearance from Ministry of Environment and Forests, Government of India - 23rd November 2005
/44/	Appointment of the CDM consultants -04th January 2007
/45/	Local Stakeholders consultation meeting -30th November 2007
/46/	PDD submitted for Host Country Approval on 21st August 2008
/47/	Host Country Approval meeting on 16th October 2008
/48/	Appointment of present DOE – 13th September 2009
/49/	Invoices raised to the state electricity board from June 2009 to Feb 2010
/50/	O & M -PIL- 15th September 2005
/51/	CER calculation spreadsheet
/52/	EIA conducted by SGS India Ltd -November 2000
/53/	Environmental Clearance from Ministry of Environment and Forests (MoEF) -09th January 2001
/54/	Consent to operate from Andhra Pradesh Pollution Control Board -04th January 2009
/55/	Invitation to Stakeholders
/56/	Stakeholders meeting Attendance list

APPENDIX A
VALIDATION PROTOCOL
Project No. SQAS-CDM-ES12880011

Table 1 Mandatory Requirement for Large Scale Clean Development Mechanism (CDM) Project Activities

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference / Comment
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3	Kyoto Protocol Art.12.2	OK	The Project will reduce GHG emissions. However in Section A.3 no Annex I party has been identified by the PP and this is a unilateral project.
2. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof	Kyoto Protocol Art. 12.2, Marrakesh Accords, CDM Modalities §40a	OK	Section A.3 of the PDD indicated that India (non-annex I party) is the host country and Section A.2 of the PDD justifies the compliance to National SD requirements. The confirmation of the host country has also been obtained (Ref No. 4/25/2008/CCC dated 06 Feb 2009).
3. The project shall have the written approval of voluntary participation from the designated national authorities of each party involved	Kyoto Protocol Art. 12.5a, Marrakesh Accords, CDM Modalities §40a	OK	Letter of approval indicating voluntary participation from designated national authority of India, NCDMA has been issued on 06 Feb 2009.
4. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change	Kyoto Protocol Art. 12.5b	OK	The continuous monitoring of the parameters in the monitoring plan in Section B.7 of the PDD will result in the project contributing to emission reductions which are real, measurable and give

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference / Comment
			long-term benefits related to the mitigation of climate change.
5. Reduction in GHG emissions shall be additional to any that would occur in absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity	Kyoto Protocol Art. 12.5c, Marrakesh Accords, CDM Modalities §43	~~Depends on Closure of issue raised by GSCP~~ OK	The present project activity is additional, as the anthropogenic emissions of GHGs by sources are reduced below those that would have occurred in the absence of the registered CDM project activity.
6. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance	Marrakech Accords	OK	Project funding is not sourced from the Official Development Assistance from Annex I countries. Funding involves equity and debt arrangement as mentioned in Section A.4.5 of PDD.
7. Parties participating in the CDM shall designate a national authority for the CDM	Marrakech Accords, CDM Modalities §29	OK	India has designated a National Clean Development Mechanism (CDM) Authority for the purpose of protecting and improving the quality of environment in terms of the Kyoto Protocol.
8. The host country shall be a Party to the Kyoto Protocol	Marrakech Accords, CDM Modalities §30	OK	The host country, India ratified the Kyoto Protocol on 26th August 2002.
9. Comments by local stakeholders shall be invited, a	Marrakech	OK	The comments by the local

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference / Comment
summary of these provided and how due account was taken of any comments received	Accords, CDM Modalities §37b		stakeholders are invited and the summary of comment is provided in the Section E.2 of the PDD. This has been confirmed by interview conducted with local stakeholders during the on-site audit.
10. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.	Marrakech Accords, CDM Modalities §37c	OK	The company had done a Rapid EIA. The detail Report for the same was reviewed. The significant environmental impacts of the project activity along with the measures taken to mitigate the impacts and the conclusions are enumerated in Appendix A of PDD. The mitigation measures that have been adopted for the project are also elaborated in section D of PDD.
11. Baseline and monitoring methodology shall be previously approved by the CDM Methodology Panel	Marrakech Accords, CDM Modalities §37e	OK	The baseline methodology AM0029 version 03 is approved by the EB 39 and is the active.
12. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP.	Marrakech Accords, CDM Modalities §37f	OK	Provisions for monitoring, verification and reporting GHG emission data as per the requirement of monitoring methodology of AM0029 is

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference / Comment
			described in Section B.7.2 of the PDD and is in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP.
13. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available.	Marrakech Accords, CDM Modalities, §40	~~Depends on Closure of Comments 1,2 & 3 in Appendix 1 to DVR~~ OK	The PDD version 02 dated 10th December 2009 was made available for Parties, Stakeholders and UNFCCC accredited NGOs to comment via UNFCCC website (http://cdm.unfccc.int/Projects/Validation/DB/T75O751QXNTM82IQ0KN5FUQNSRZ155/view.html) from 30th December 2009 to 28th January 2010 for a period of 30 days. One comment was received during this period. This comment is attached as Appendix-B to this report.
14. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances.	Marrakech Accords, CDM Modalities, §45c,d	~~Depends on closure of CAR 3, 4 and CL7-9.~~ OK	Baseline has been established based on the Baseline Methodology of AM0029 on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference / Comment
			circumstances.
15. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure	Marrakech Accords, CDM Modalities, §47	OK	The approved applied methodology ensures that no CERs are earned due to decrease in activity level outside the project activity or due to force majeure.
16. The project design document shall be in conformance with the UNFCCC CDM-PDD format	Marrakech Accords, CDM Modalities, Appendix B, EB Decisions	OK	Latest active CDM-PDD format Version 03 - in effect as of: 28 July 2006 has been used.

Table 2 Requirements Checklist

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
A. General Description of Project Activity *The project design is assessed.*					
A.1. Project Boundaries *Project Boundaries are the limits and borders defining the GHG emission reduction project.*					
A.1.1. Are the project's spatial (geographical) boundaries clearly defined?		DR, SV	Yes, as mentioned in A.4.1, the project's spatial (geographical) boundaries clearly defined The project activity is located at Industrial Development Area, Samalkot, East Godavari District Andhra Pradesh state in India. The Geographical coordinates are 17º03'03" N and 82º07'04" E. Project Site visit confirms it.	OK	OK
A.1.2. Are the project's system (components and facilities used to mitigate GHGs) boundaries clearly defined?		DR, SV	Yes, the project's system (components and facilities used to mitigate GHGs) boundaries clearly defined in section A.4.3 and B.3 of PDD.	OK	OK
A.1.3. Are all sections of the PDD filled appropriately.		DR	Section A.3 of PDD does not clearly indicate if the entity is private or public.	~~CAR 1~~	OK
A.1.4. Are the data, input parameters and description of project provided in a consistent manner?		DR	No, Please clarify	~~CL 18~~	OK

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

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			In section A.3 and Annex 1 of the latest PDD, version03, it is mentioned that the PP is GVK Gautami Power Limited, Hyderabad (Private entity), where as in the web-hosted PDD, version02 it was indicated as Gautami Power Limited, Hyderabad (Public Limited Company).		
A.2. Technology to be employed *Validation of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The validator should ensure that environmentally safe and sound technology and know-how is used.*					
A.2.1. Does the project design engineering reflect current good practices?		DR, SV	Section A.3 claims that Best Available Technology was used at the time of EPC. Please justify. ---------- Also It is Not clear from section A.2 of PDD that the start up power (it is indicated that the combustion turbine is started by operating the generator as a variable speed motor. The variable frequency power required for this purpose is supplied by the static frequency convertor system) is covered under Auxiliary power.	~~CL 1~~ ~~CL 2~~	OK OK

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

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
A.2.2. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?		DR, SV	The technology used (Combined Cycle Power plant) which results in better performance than the commonly used technologies in the Host country.	OK	OK
A.2.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period?		DR, SV	Project activity has opted to implement latest technology with high efficiency, Hence it is unlikely to be substituted by other more efficient technologies within the crediting period.	OK	OK
A.2.4. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?		DR, SV	The project requires extensive initial training and maintenance. The training was given as part of EPC Contract. However, the PP has past experience in power production with the specified fuel.	OK	OK
A.2.5. Does the project make provisions for meeting training and maintenance needs?		DR, SV	Project has made provisions for training and also used experienced and trained personnel from other project.	OK	OK
A.2.6. Is the project described in detail and transparent?		DR	Section A.2 of PDD describes the scenario existing prior to the start of the implementation of the project activity, the power plant which was conceived and subsequently abandoned prior to the decision of the CDM project activity (compare CDM-PDD guidelines).	~~CAR 2~~	OK

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

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
A.2.7. Does the PDD indicate/demonstrate awareness of CDM prior to the project activity start date? And that benefit from CDM was decisive factor in the decision to proceed with the project?		DR	Evidence of prior CDM knowledge before the board decision as indicated in the revised PDD has not been provided.	~~CL 12~~	OK
A.3. Contribution to Sustainable Development *The project's contribution to sustainable development is assessed.*					
A.3.1. Is the project in line with relevant legislation and plans in the host country?		DR	Yes, the project has got all necessary legal approvals like permission from Gram Panchayat, Environmental clearance, Consent to establish and is in line with the legislation of the host country.	OK	OK
A.3.2. Is the project in line with host-country specific CDM requirements?		DR	As per DNA requirement, a minimum of 2% of CER allocation for Sustainable Development including society/community development is not evidenced and also monitorable action plan for the same is missing in the PDD, Version 02, dated 10/12/2009 (web hosted). Whereas, in the PCN and PDD (Version 02, dated 25/07/2008) submitted to HCA for approval, it is declared that "the project proponent undertakes to spend an amount equal to 2% of the net realization from out of Carbon Credits on sustainable development activities".	~~CL 3~~	OK

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

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
A.3.3. Is the project in line with sustainable development policies of the host country?		DR	Yes, the project in line with sustainable development policies of the host country The approval by host country (Ref No. 4/25/2008/CCC dated 06 Feb 2009) confirms the same.	OK	OK
A.3.4. Will the project create other environmental or social benefits than GHG emission reductions?		DR	Apart from GHG emission reduction, the project has direct and indirect socio, economic & environmental benefits which have been mentioned in section A.2 of PDD.	OK	OK
B. Project Baseline *The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.*					
B.1. Baseline Methodology *It is assessed whether the project applies an appropriate baseline methodology.*					
B.1.1. Is the baseline methodology previously approved by the CDM Methodology Panel?		DR	Yes, the baseline methodology AM0029 version 03 is approved by the EB 39 and is the Active version.	OK	OK
B.1.2. Is the baseline methodology the one deemed most applicable for this project and is the appropriateness justified?		DR	Yes, the baseline methodology applied for the project has demonstrated in section B.2 of PDD that it is applicable for this project and appropriate.		

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

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			However the following CL / CAR raised Please clarify, The applied methodology has been basically written considering open market / free trade conditions. In case of Indian context where there is some sort of Govt. control in allocation and prioritisation of supply of NG for/among different Industry. • The underlying policy has Not been discussed with respect to the effect of these policy on baseline & associated leakage (if any) ---------- • In section B.2 and others places in PDD it is presumed that allocated of gas (by GOI) implies availability of Gas in abundance. Please justify / clarify the conclusion. ---------- Please clarify the gas availability with respect to Time and space. • Time:- at the time of investment decision, commissioning, and future projections • Space:- project specific /region	~~CL 4~~ ~~CL 5~~ ~~CL 6~~	OK OK OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			specific scenario. PDD does Not conclude (availability of GAS in abundance) and rule out the possibility of a possible leakage.		
The below questions only apply when the validator is reviewing the baseline methodology prior to submission to the CDM EB (Two Steps Approach):			NA		
B.1.3. Is the discussion and selection of the baseline methodology transparent?			NA		
B.1.4. Is the proposed baseline methodology in line with one of the approaches outlined in Paragraph 48 of the Marrakech Accords?			NA		
B.1.5. Does the baseline methodology specify data sources and assumptions?			NA		
B.1.6. Does the baseline methodology sufficiently describe the underlying rationale for algorithm/formulae (e.g. marginal vs. average, etc.)			NA		
B.1.7. Does the baseline methodology specify types of variables used (e.g. fuels used, fuel consumption rates, etc)?			NA		
B.1.8. Does the baseline methodology specify the			NA		

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
spatial level of data (local, regional, national)?					
B.1.9. Does the baseline methodology specify an approach to define the additionality of the project?			NA		
B.2. Baseline Determination *The choice of baseline will be validated with focus on whether the baseline is a likely scenario, whether the project itself is not a likely baseline scenario, and whether the baseline is complete and transparent.*					
B.2.1. Is the application of the methodology and the discussion and determination of the chosen baseline transparent?		DR	In section B.4 The alternative for baseline: - Gas as the fuel but with different alternative technologies has been evaluated and dropped on based on the explanation "the option has lower system efficiency" in comparison to the power generation using Combined Cycle mode of operation. An appropriate explanation and documentation to support the exclusion of such scenario is Not provided (Compare Para 1 (last line) of applied methodology).	~~CAR 3~~	OK
			Please clarify; **1. BOARD RESOLUTION:** Please furnish certified copy of the Board resolution in which the decision to invest	~~CL 13~~	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			was finalized. **2.** The useful life of the project is assumed to be 15 years whereas the guidance in EB 51 para 3 envisages a maximum of 20 years. Credible evidence for this factor to be provided. **3. PLF:** Has been assumed @ 85%. Pl provide authentic evidences for the same which should also be in line with the guidance in EB 48. **4. DEPRECIATION:** Accelerated depreciation (80%) which is allowable under the IT Act has not been taken for the income tax depreciation calculations. Kindly clarify **5. URLs / OTHER AUTHENTIC EVIDENCES MAY BE PROVIDED FOR THE FOLLOWING:** • Rate of Depreciation • Per MW Cost • Debt : Equity ratio • Auxiliary consumption • GSHR (kcal/kWh) • Price of Fuel		

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			• Escalation rate • GCV (Kcal/ BTU) • O&M Expenses (lacs per MW/yr) Kindly provide the authentic evidence for the above table.		
B.2.2. Has the baseline been determined using conservative assumptions where possible?		DR	In section B.6.2 of PDD the values of $EF_{BM, y}$ build margin adopted and applied are not as per the Indicated source CEA database version 4. The PDD is Not consistent with the version of database applied; accordingly the PDD needs to be updated with most conservative values of emission factor. ---------- The web hosted version of PDD by earlier DOE indicates the annual CER as 924,147 and the PDD under validation as 1,293,420 Please explain and justify • Increase in quantum of CER ---------- In the calculation of levelised cost of generation for base line (ref excel sheet 'cost of Generation'), the landing cost of coal is based on prices notified by Singreni Collieries in year 2001. As the CDM consideration was thought of in year 2003,	~~CAR 4~~ ~~CL 7~~ ~~CL 8~~	OK OK OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			escalation of fuel for period from year 2001 to year 2003 is not considered in the calculations. This is required as the input values are to be as per the Guidelines of EB 51 para 6.		
B.2.3. Has the baseline been established on a project-specific basis?		DR	The NIT advertised on 01/06/1995 Indicates the fuel as GAS/ NAPTHA/ LSHS/ Furnace oil based short Gestation period project (for which PP has applied). Whereas Coal based power plant is of separate category (in the same Notice) Long Gestation period project. Accordingly coal as fuel is Not in the preview of short gestation period project chosen by PP. Please justify the low cost fuel "coal" as arrived in section B.4 of PDD in the above context.	~~CL 9~~	OK
B.2.4. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?		DR	No, Pls clarify on the assumptions for the techno economic parameters for the project activity and the baseline with respect to EB guidelines on investment analysis and justify their conservativeness.	~~CL 14~~	OK
			Justify the assumptions on project lifetime for the different options considered in section B.4 of the PDD • 15 years for NG power plant	~~CL 15~~	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			• 15 years for Diesel power plant		
B.2.5. Is the baseline determination compatible with the available data?		DR	No, Sensitivity analysis on project cost has not been done based on EB guidelines.	~~CL 16~~	OK
B.2.6. Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?		DR	Depends on closure of CAR 3,4; CL4-9	~~Depends on closure of CAR 3,4 and CL4-9~~	OK
B.2.7. Is it demonstrated/justified that the project activity itself is not a likely baseline scenario (e.g. through (a) a flow-chart or series of questions that lead to a narrowing of potential baseline options, (b) a qualitative or quantitative assessment of different potential options and an indication of why the non-project option is more likely, (c) a qualitative or quantitative assessment of one or more barriers facing the proposed project activity or (d) an indication that the project type is not common practice in the proposed area of implementation, and not required by a Party's legislation/regulations)?		DR	Depends on closure of CAR 3,4; CL4-9	~~Depends on closure of CAR 3,4 and CL4-9~~	OK
B.2.8. Have the major risks to the baseline been identified?		DR	Depends on closure of CAR 3,4; CL4-9	~~Depends on closure~~	OK

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

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
				~~of CAR 3,4 and CL4-9~~	
B.2.9. Is all literature and sources clearly referenced?		DR	All literature and sources like CEA database issued by govt of India. IPCC Guidelines for National Greenhouse Gas Inventories, indiastat.com, CERC terms and conditions of tariff 2001are clearly referenced.	OK	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 and reasonable?		DR	Please clarify, In section C.1.1 of the PDD (Version 02, dated 10/12/2009), it is mentioned that, "The starting date of the project date is taken as 01/07/2004, which is the date of notice to proceed for the project activity. This was date when the project proponent committed to the expenditures for the project activity with financial closure and notice to proceed to the EPC Contractor (with first instalment)". But, in PCN, submitted to HCA for approval, it is mentioned that, "The starting date of the project date is taken as 30/06/2004, which is the date of financial closure for the project activity".	~~CL 10~~	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
C.1.2. Is the assumed crediting time clearly defined and reasonable (renewable crediting period of max. two x 7 years or fixed crediting period of max. 10 years)?		DR	The Starting date of crediting period mentioned in section C.2.2 of the PDD is not realistic.	~~CAR 5~~	OK
D. Monitoring Plan *The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed ((Blue text contains requirements to be assessed for optional review of monitoring methodology prior to submission and approval by CDM EB).*					
D.1. Monitoring Methodology *It is assessed whether the project applies an appropriate baseline methodology.*					
D.1.1. Is the monitoring methodology previously approved by the CDM Methodology Panel?		DR	Yes, the applied monitoring methodology AM 0029 version 03 is approved by EB 39.	OK	OK
D.1.2. Is the monitoring methodology applicable for this project and is the appropriateness justified?		DR	Yes, the monitoring methodology applied for the project has demonstrated in section B.2 of PDD that it is applicable for this project. However the appropriateness can be justified / depends on the closure of CL 4-9.	~~Depends on closure of CL 4-9~~	OK
D.1.3. Does the monitoring methodology reflect good monitoring and reporting practices?		DR	The followed monitoring practices reflect good monitoring and reporting practices which are in line with the applied	OK	OK

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

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			methodology.		
D.1.4. Is the discussion and selection of the monitoring methodology transparent?		DR	The discussion and selection of the monitoring methodology and its Transparency. Depends on closure of CL 4-9.	~~Depends on closure of CL 4-9~~	OK
The below questions only apply when the validator is reviewing the monitoring methodology prior to submission to the CDM EB (Two Steps Approach):					
D.1.5. Does the monitoring methodology 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?					
D.1.6. Is the selected monitoring methodology supported by the monitored and recorded data?					
D.1.7. Are the monitoring provisions in the monitoring methodology consistent with the project boundaries in the baseline study?					
D.1.8. Have any needs for monitoring outside the project boundaries been evaluated and if so, included as applicable?					

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

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
D.1.9. Does the monitoring methodology allow for conservative, transparent, accurate and complete calculation of the ex post GHG emissions?					
D.1.10. Are formulas used for calculations stated and calculations incorporated or referenced?					
D.1.11. Do the methodologies for calculating emission reductions comply with existing good practice?					
D.1.12. Is the monitoring methodology clear and user friendly?					
D.1.13. Does the methodology mitigate possible monitoring errors or uncertainties addressed?					
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?		DR, SV, I	Yes the monitoring plan is implemented to collect and archive all data indicated in the methodology to facilitate the estimation & measuring the GHG within the project boundary for the entire crediting period.	OK	OK
D.2.2. Are the choices of project GHG indicators reasonable?		DR,	The choices of project GHG indicators $EF_{BL,CO2,y}$, COEFf,y , FC_{FY} and electricity	OK	OK

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

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
		SV, I	are reasonable as per the applied methodology.		
D.2.3. Will it be possible to monitor / measure the specified project GHG indicators?		DR, SV, I	Yes the following GHG indicators are monitored • Quantity & quality of Fuel. • Quantity of electricity supplied to the grid.	OK	OK
D.2.4. Will the indicators give opportunity for real measurements of achieved emission reductions?		DR, SV,	Yes, the indicators give opportunity for real measurements and achieving of emission reductions	OK	OK
D.2.5. Will the indicators enable comparison of project data and performance over time?		DR, SV	Yes the archived GHG emission data will facilitate the evaluation, comparison & performance of project over a period of time.	OK	OK
D.3. Monitoring of Leakage *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?		DR, SV	Depends on CL 4-6 ;		
D.3.2. Have relevant indicators for GHG leakage been included?		DR, SV	Depends on CL 4-6 ;		

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

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
D.3.3. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?		DR, SV	Depends on CL 4-6 ;		
D.3.4. Will it be possible to monitor the specified GHG leakage indicators?		DR, SV	Depends on CL 4-6 ;		
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?		DR, SV, I	Yes, Monitoring Plan provide collection and archiving of all relevant necessary data like • Electricity Generated during the project activity per annum • Electricity supplied by project activity power plant to the grid • Quantity of NG consumed in the project activity • Net Calorific Value of Natural Gas • CO2 Emission Co-efficient of natural gas	OK	OK
D.4.2. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?		DR, SV, I	Yes, The baseline Indicator "Emission factor of the most likely baseline scenario is reasonable and conservative as the lowest value of emission factor out of all the possibility EF_{CM} , EF_{Coal} and EF_{BM} is applied.	OK	OK

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

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
D.4.3. Will it be possible to monitor the specified baseline indicators?		DR, SV, I	Yes the baseline indicators will be calculated from the monitored Data.	OK	OK
D.5. Monitoring of Sustainable Development Indicators/ Environmental Impacts *It is checked that choices of indicators are reasonable and complete to monitor sustainable performance over time.*					
D.5.1. Does the monitoring plan provide the collection and archiving of relevant data concerning environmental, social and economic impacts?		DR, SV, I	Host country does Not direct PP to monitor SD indicator. Also PP has Not opted to measure / monitor SD indicators.	OK	OK
D.5.2. Is the choice of indicators for sustainability development (social, environmental, economic) reasonable?		DR, SV, I	Host country does Not direct PP to monitor SD indicator. Also PP has Not opted to measure / monitor SD indicators.	OK	OK
D.5.3. Will it be possible to monitor the specified sustainable development indicators?		DR, SV, I	Host country does Not direct PP to monitor SD indicator. Also PP has Not opted to measure / monitor SD indicators.	OK	OK
D.5.4. Are the sustainable development indicators in line with stated national priorities in the Host Country?		DR, SV, I	Host country does Not direct PP to monitor SD indicator. Also PP has Not opted to measure / monitor SD indicators.	OK	OK

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

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
D.6. Project Management Planning *It is checked that project implementation is properly prepared for and that critical arrangements are addressed.*					
D.6.1. Is the authority and responsibility of project management clearly described?		DR, SV, I	Yes the authority and responsibility of project management is clearly defined in B.7 of PDD.	OK	OK
D.6.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?		DR, SV, I	Yes the authority and responsibility for registration, monitoring, measurement and reporting clearly described in B.7.2 of PDD Vice president is overall responsible for registration.	OK	OK
D.6.3. Are procedures identified for training of monitoring personnel?		DR, SV, I	Yes, Training is identified for monitoring, which was confirmed at site visit and interview with plant personnel.	OK	OK
D.6.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?		DR, SV, I	Procedures are identified for emergency preparedness and exigency like Fire which can cause unintended emissions.	OK	OK
D.6.5. Are procedures identified for calibration of monitoring equipment?		DR, SV, I	Calibration procedures are identified, implemented and practiced for monitoring equipments based on UNFCC requirement and as per the Gas purchase agreement, Power purchase agreement and the equipment manufacturer's requirements.	OK	OK

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

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
D.6.6. Are procedures identified for maintenance of monitoring equipment and installations?		DR, SV, I	Maintenance procedures are identified, implemented and practiced for monitoring equipments as per manufacture's requirement.	OK	OK
D.6.7. Are procedures identified for monitoring, measurements and reporting?		DR, SV, I	Yes, procedures are identified and practiced for monitoring, measurements and reporting as described in section B.7 of PDD.	OK	OK
D.6.8. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)		DR, SV, I	Yes, procedures as mentioned in B.7.2 are identified and practised for day-to-day records handling (including what records to keep storage area of records and how to process performance documentation).	OK	OK
D.6.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?		DR, SV, I	Please clarify Section C.2.2.1 indicates the expected starting date of crediting period is the date of registration of the project. Whereas the JMR is taken on a fixed date, It is most likely that the date of registration may not coincide with the date of JMR. PDD does not identify procedures for dealing with possible monitoring data adjustments to handle such exigency. Identical situation is anticipated in the last month of crediting period. Please clarify.	~~CL 11~~	OK

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

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
D.6.10. Are procedures identified for review of reported results/data?		DR, SV, I	GM power plant reviews and verifies the monitored Data	OK	OK
D.6.11. Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?		DR, SV, I	GM power plant is Responsible for Periodic Independent Check, inspection, verification of monitored Data and implementation of necessary corrective action.	OK	OK
D.6.12. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?		DR, SV, I	The discussion with GM power plant confirmed that only verified and reviewed Data are submitted for verification.	OK	OK
D.6.13. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?		DR, SV, I	Corrective and preventive action procedure is identified, followed and practiced across the plant including monitoring, measuring and reporting of GHG.	OK	OK
E. Calculation of GHG Emissions by Source *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. Predicted Project GHG Emissions *The validation of predicted project GHG emissions focuses on transparency and completeness of calculations.*					
E.1.1. Are all aspects related to direct and indirect GHG emissions captured in the project design?		DR,	Yes all direct and indirect GHG emissions indicated in the applied methodology are	OK	OK

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

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
		SV, I	captured in the project design.		
E.1.2. Are the GHG calculations documented in a complete and transparent manner?		DR, SV, I	In Section B.6.3 of PDD a complete and transparent documentation of GHG calculation is presented.	OK	OK
E.1.3. Have conservative assumptions been used to calculate project GHG emissions?		DR, SV, I	All GHG indicators are evaluated based on data from reliable & authentic source and calculated as per the Tool and methodology approved by CDM EB which ensures the conservativeness of value arrived. However, The emission reductions are not consistently mentioned in the Emission Reduction calculation sheets and the PDD. Clarify	~~CL 17~~	OK
E.1.4. Are uncertainties in the GHG emissions estimates properly addressed in the documentation?		DR, SV, I	Uncertainties in the GHG emission estimates for project emission, baseline emission and leakage are as per the approved Tool and methodology which is addressed in section B.6.3 of PDD.	OK	OK
E.1.5. Have all relevant greenhouse gases and source categories listed in Kyoto Protocol Annex A been evaluated?		DR, I	Yes all relevant GHG mentioned in the applied methodology has been evaluated and included in the project (boundary) and represented in section B.3 of PDD.	OK	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.*					
E.2.1. Are potential leakage effects beyond the chosen project boundaries properly identified?		DR, SV, I	Leakage from fuel extraction, processing, liquefaction, transportation, re-gasification and distribution of fossil fuels has been accounted as per the applied methodology outside of the project boundary.	OK	OK
E.2.2. Have these leakage effects been properly accounted for in calculations?		DR, SV, I	Yes the leakage effects have been properly accounted for in calculations and exhibited in B.6.3 of PDD.	OK	OK
E.2.3. Does the methodology for calculating leakage comply with existing good practice?		DR, SV, I	Methodology for calculating leakage is followed as per the applied methodology and comply with existing good practices However the closure of CL 4 will ascertain it.	~~Depends on closure of CL 4~~	OK
E.2.4. Are the calculations documented in a complete and transparent manner?		DR, SV, I	Yes the calculation of leakage is documented in a complete and transparent manner in B.6.3 of PDD.	OK	OK
E.2.5. Have conservative assumptions been used when calculating leakage?		DR, SV,	All assumptions made for estimation / calculation of leakage has been justified and in accordance with the applied	OK	OK

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

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
		I	methodology.		
E.2.6. Are uncertainties in the leakage estimates properly addressed?			Refer CL 4 and CL 5	~~Depends on closure of CL 4 and CL 5~~	OK
E.3. Baseline Emissions *The validation of predicted baseline GHG emissions focuses on transparency and completeness of calculations.*					
E.3.1. Have the most relevant and likely operational characteristics and baseline indicators been chosen as reference for baseline emissions?		DR, SV, I	Yes, the operational characteristic like electricity supplied to grid and lowest Emission Factor for baseline has been established as per the applied methodology.	OK	OK
E.3.2. Are the baseline boundaries clearly defined and do they sufficiently cover sources and sinks for baseline emissions?		DR, SV, I	All sources like (1) Gas Turbine (2) Heat recovery steam generator (3) steam turbine generator (4) Station transformers (5) Auxiliary equipments of Gas Turbine and Generator, meters (gas, electricity) and gas supply pipelines. Has been included in baseline boundary. No sink has been identified.	OK	OK
E.3.3. Are the GHG calculations documented in a complete and transparent manner?		DR, SV, I	Yes, the GHG calculations are documented in a complete and transparent manner in B.6.3 of PDD.	OK	OK

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

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
E.3.4. Have conservative assumptions been used when calculating baseline emissions?		DR, SV, I	The most conservative value for emission factor out of the 3 Emission factor options i.e. Build margin, Combined margin and Coal has been applied for calculation of baseline.	OK	OK
E.3.5. Are uncertainties in the GHG emission estimates properly addressed in the documentation?		DR, SV, I	Uncertainties in Estimation of GHG Emission related to project emission and baseline emission have been addressed and documented. However uncertainty in /of Leakage depends on closure of CL 4, CL5.	~~Depends on closure of CL 4 and CL 5~~	OK
E.3.6. Have the project baseline(s) and the project emissions been determined using the same appropriate methodology and conservative assumptions?		DR, SV, I	Yes baseline and project emission has been determined using the same appropriate methodology and conservative assumptions.	OK	OK
E.4. Emission Reductions Validation of baseline GHG emissions will focus on methodology transparency and completeness in emission estimations.					
E.4.1. Will the project result in fewer GHG emissions than the baseline scenario?		DR, SV	The project uses less carbon intensive fuel and more efficient power plant (than the baseline). Hence project result in fewer GHG emissions than the baseline scenario.	OK	OK

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

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
F. Environmental Impacts *Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.*					
F.1.1. Has an analysis of the environmental impacts of the project activity been sufficiently described?		DR	Rapid EIA has been conducted to access the environmental impacts; The report of rapid EIA sufficiently describes the Impact.	OK	OK
F.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?		DR	Rapid EIA was conducted in accordance with host country requirement and Environmental clearance for the same is approved.	OK	OK
F.1.3. Will the project create any adverse environmental effects?		DR	No, adverse effect has been anticipated by the EIA findings The significant environmental impacts of the project activity along with the measures taken to mitigate the impacts and the conclusions are enumerated in Appendix A of PDD.	OK	OK
F.1.4. Are transboundary environmental impacts considered in the analysis?		DR	No trans-boundary impacts have been identified due to the project activity, as the only based in Andhra Pradesh, India	OK	OK
F.1.5. Have identified environmental impacts been addressed in the project design?		DR	The significant environmental impacts of the project activity along with the measures taken to mitigate the impacts and the conclusions are enumerated in Appendix A.	OK	OK

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

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
F.1.6. Does the project comply with environmental legislation in the host country?		DR	Yes the project complies with the requirements of host country and is approved by the host country.	OK	OK
G. *Stakeholder Comments* *The validator should ensure that a stakeholder comments have been invited and that due account has been taken of any comments received.*					
G.1.1. Have relevant stakeholders been consulted?		DR	Yes, relevant stakeholders like the locals residing in the neighbouring villages, local health officer, staff of neighbouring college, officials of state electricity board and pollution control board has been considered.	OK	OK
G.1.2. Have appropriate media been used to invite comments by local stakeholders?		DR	Identified stakeholders were intimidated by written invitation 15 days prior to the meeting.	OK	OK
G.1.3. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?		DR	Host country does not provide any Guideline for conducting stakeholders meeting.	OK	OK
G.1.4. Is a summary of the stakeholder comments received provided?		DR	A summary of the stakeholder comments received has been provided in section E.2 of PDD.	OK	OK
G.1.5. Has due account been taken of any stakeholder comments received?		DR	The clarification provided to the stakeholders for their comments have been	OK	OK

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

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			described in section E.2 of the PDD. There are no specific comment which requires follow up action.		

Table 3 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
CAR 1 Section A.3 does not clearly indicate if the entity is private or public.	**A.1.3**	The revised PDD, Section A.3 has indicated that the PP is a private entity. (Earlier indication 'public limited' was made as the company is listed on stock market and some shares are held by public).	The section A.3 of the revised PDD, version03 has now been modified and indicated that the PP is a private entity. **Conclusion:** CAR 1 Closed
CAR 2 Section A.2 of PDD does not describe the scenario existing prior to the start of the implementation of the project activity, the power plant which was conceived and subsequently abandoned prior to the decision of the CDM project activity (compare CDM-PDD guidelines)	**A.2.6**	Section A.2 of the revised PDD is updated to include a section on the project planning history to explain the scenario existing prior to the start of the implementation of the project activity. The earliest planned plant was based on naphtha and different plant configuration (plant capacity – 300_227 MW, PPA terms, ownership/ management etc).	The scenario existing prior to the start of the implementation of the project activity has now been described in section A.2 of the revised PDD, version03. **Conclusion:** CAR 2 Closed
CAR 3 In section B.4 The alternative for baseline:- Gas as the fuel but with different alternative technologies has been evaluated and dropped on based on the explanation "the option has lower system efficiency" in comparison to the power generation using	**B.2.1**	A report of the CEA's 'Performance Review of Thermal Power Stations 2006-07 Section-10' shows that not a single NG based power plant is commissioned using open cycle after 2000.	In the revised PDD, version03 section B.4 now has an appropriate explanation and documentation to support the exclusion of alternative for baseline scenarios. And the referenced document was verified from the

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
Combined Cycle mode of operation. An appropriate explanation and documentation to support the exclusion of such scenario is not provided. (compare Para 1 (last line) of applied methodology)		Further, the CEA's 'Performance Review of Thermal Power Stations in 2007-08 says 'Use of combined cycle operation in the field of Gas Turbines is being promoted for energy conservation.' Having lower efficiency will result in higher fuel consumption making operations unviable even compared to the project activity (i.e. higher levelize cost). Thus it can not be a financially attractive scenario and a realistic baseline. Thus, open cycle based power plant is not a credible alternative.	following link and found appropriate. (http://www.cea.nic.in/god/opm/Thermal_Performance_Review/0607/SECTION-10.pdf Pg. 1, Para 2). Hence the justification provided by the PP is acceptable and this CAR is resolved. **Conclusion:** CAR 3 Closed

CAR 4 In section B.6.2 of PDD, the values of $EF_{BM,y}$ build margin adopted and applied are not as per the Indicated source CEA database version 4. The PDD is not consistent with the version of database applied; accordingly the PDD needs to be updated with most conservative values of emission factor.	**B.2.2**	The PDD is updated at the time of web hosting for the global comments with applicable version 5.0. This has been consistently applied in the revised PDD now.	The project has applied the latest and active CEA version05 available at the time of web hosting the PDD and has now consistently applied/mentioned the version of database applied in the revised PDD, version03 **Conclusion:** CAR 4 Closed

CAR 5			The start date has been revised to

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
The Starting date of crediting period mentioned in section C.2.2 of the PDD is not realistic.	**C.1.2**	The start date of the crediting period is changed to 01/08/2011 (Revised PDD, section C.2.2)	01/08/2011 in section C.2.2 of the revised PDD, version03. **Conclusion:** CAR 5 Closed

CAR 6 Justify with appropriate evidences that supercritical power plant was not available in India in 2003 (at the time of project activity decision was made).	**B.4**	First supercritical power technology based plant is planned for commissioning in Oct. 2010. http://www.livemint.com/2009/12/08212515/NTPC-looks-to-revive-Sipat-pro.html http://www.topnews.in/ntpc-chhattisgarh-plant-produce-660-mw-oct-2010-2261543 DOE is also requested to refer to CEA CO_2 Baseline Database for Indian Power Section, even the latest available version (5.0), coal based power plant has a single unit maximum capacity as 500 MW (and supercritical starts with minimum 660 MW). Thus, it is evident that supercritical technology was not available in India in 2003.	The justification provided by PP is acceptable. As per the link provided and CEA, version05 it is evident that supercritical technology was not available in India in 2003 (i.e., during Investment decision). **Conclusion:** CAR 6 Closed

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
CL 1 Section A.3 claims that Best Available Technology was used at the time of EPC. Please justify.	**A.2.1**	The combined cycle natural gas based power plant of the heat rate is still the best available and supplied by reputed OEM Alstom. The heat rate of the project activity plant still meets the latest CEA requirements and the discharge norms including the pollution control, specifically NOx. The GT specification sheet describes it as '*Constantly updated, today's GT13E2 incorporates a number of further technical enhancements as the result of a careful continuous product improvement process. With the latest rating, the engine has now the highest simple cycle efficiency in it's class - 180 MW gross output with 36.9% gross efficiency*' (Attachment 1).	The referenced document was verified and found to be correct. So, the claim by PP that "Best Available Technology was used at the time of EPC" is acceptable. Hence this CL is resolved. **Conclusion:** CL 1 Closed

CL 2 It is not clear from section A.2 of PDD that the start up power (it is indicated that the combustion turbine is started by operating the generator as a variable speed motor. The variable frequency power required for this purpose is supplied by the static frequency convertor system) is covered under Auxiliary	**A.2.1**	The electricity used in start up is covered under the total auxiliary power requirement. The sentence in PDD is revised as below. 'The variable frequency power required for this purpose is generated by the static frequency converter system from station auxiliary power systems (only during start up). This electricity usage is	Section A.2 of the revised PDD, version03, was checked and the PP has now modified the earlier sentence. Hence this CL is resolved. **Conclusion:** CL 2 Closed

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
power.		accounted in the total auxiliary consumption for calculation of net export.'	

CL 3 As per DNA requirement a minimum of 2% of CER allocation for Sustainable Development including society/community development is not evidenced and also monitorable action plan for the same is missing in the PDD, Version 02, dated 10/12/2009 (web hosted). Whereas, in the PCN and PDD (Version 02, dated 25/07/2008) submitted to HCA for approval, it is declared that "the project proponent undertakes to spend an amount equal to 2% of the net realization from out of Carbon Credits on sustainable development activities".	**A.3.2**	The 2% revenue commitment for socio-economic development is made in the HCA and is updated in the revised PDD. A brief monitorable action plan for utilization of 2% CER revenue for socio-economic development is included in the latest version of PDD, Annex 4.	The 2% revenue commitment for socio-economic development has been included/ updated in the revised PDD, version03. And a brief monitorable action plan for utilization of 2% CER revenue for socio-economic development is included in Annex 4 of PDD. **Conclusion:** CL 3 Closed

CL 4 Please clarify, The applied methodology has been basically written considering open market / free trade conditions. In case of Indian context where there is some sort of Govt. control in allocation and	**B.1.2**	In the 1990's, Gas Linkage Committee was constituted for allocation of domestically produced NG (which will be supplied at an administered price, which is generally lower than the price at which a user can procure from the market). As per the Gas Linkage Committee, the priority of allocation, at	The clarification provided by PP that NG was available in the market at market determined prices and primarily to prevent diversion (leakage), to new users at the cost of existing users is acceptable. Hence this CL is resolved. **Conclusion:**

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
prioritization of supply of NG for/among different Industry. The underlying policy has not been discussed with respect to the effect of these policy on baseline & associated leakage (if any)		any point of time, was for existing users, primarily to prevent diversion (leakage), to new users at the cost of existing users. The Gas Linkage Committee based allocation has been abandoned since early 2000 and now only a market based mechanism is in place. Price of the gas is market determined. In the year 2003, project participants were free to A. Import NG. Two active LNG terminals were already in operation in 2003 B. Buy NG from the various intermediaries involved in importing NG. The discussion on this policy is also covered in the Note on Gas Availability which has been presented to the DOE. From the above discussion, it is clear that NG was available in the market at market determined prices.	CL 4 Closed

CL 5		A detailed note on availability and how future capacity addition is not hindered	As per the detail note titled "Gautami Power Ltd. CDM project – Gas

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
In section B.2 and others places in PDD it is presumed that allocated of gas (by GOI) implies availability of Gas in abundance. Please justify / clarify the conclusion.	**B.1.2**	by the project activity has been presented to the DOE. The reference to availability of gas allocation is made to confirm that diversion of gas supply from existing users has not taken place (in principle with Gas Linkage Committee's guidelines of prioritizing existing allocations in case of new gas availability for distribution).	availability and non-leakage" the availability of gas in AP region is surplus. Hence this CAR is resolved. **Conclusion:** CL 5 Closed

CL 6 Please clarify the gas availability with respect to Time and space. • Time:- at the time of investment decision, commissioning, and future projections • Space:- project specific/region specific scenario. PDD does not conclude and rule out the possibility of a possible leakage.	**B.1.2**	Please see the gas availability description in the Section B.3 of the revised PDD and the detailed note on gas availability (provided separately) wherein the gas availability, in the project region, at the time of i) investment decision ii) commissioning iii) in future, through the crediting period, is discussed. As the issue of whether the use of gas by the project plant will restrict the future plants in their choice of fuel, is based on projections, we propose to institute a monitoring mechanism to rule out leakage, due to the project activity. It is proposed to monitor existing users (to confirm non-diversion) and equivalent future capacity addition	The clarification provided by PP to the gas availability, in the project region, at the time of investment decision, commissioning and in future, through the crediting period. And a monitoring mechanism to rule out leakage, due to the project activity, by monitor existing users (to confirm non-diversion) and equivalent future capacity addition during the crediting period is acceptable Hence this CL is resolved. **Conclusion:** CL 6 Closed

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		during the crediting period.	

CL 7 The web hosted version of PDD by earlier DOE indicates the annual CER as 924,147 and the PDD under validation as 1,293,420 Please explain and justify the assumption and rationale for CER calculation which leads to the increase in quantum of CER.	**B.2.2**	The latest available CEA database (Ver. 05 compared to earlier 04) was used at the time of this web hosting. This resulted in higher applicable emission factor and hence increased CERs in the new PDD. As per our understanding, latest available information at the rime of web hosting PDD for GSC is required to be used.	The clarification provided by PP that latest available information (i.e., CEA, version05) at the time of web hosting PDD for GSC is required to be used is acceptable. Hence this CL is resolved. **Conclusion:** CL 7 Closed

CL 8 In the calculation of levelised cost of generation for base line (ref excel sheet 'cost of Generation'), the landing cost of coal is based on prices notified by Singreni Collieries in year 2001. As the CDM consideration was thought of in year 2003, escalation of fuel for period from year 2001 to year 2003 is not considered in the calculations. This is required as the input values are to be as per the Guidelines of EB 51 para 6.	**B.2.2**	The cost of coal had not increased from 2001 to decision making year (at same annual escalation rate as that of natural gas), 5% (Refer two escalations of 5% incorporated in Cell D184, of 'Input' sheet in "GPL-coal baseline financials.xls"). New price notification on 13/09/2004 has given cost of same coal as 862 Rs/ton from earlier 823 i.e. an increase of 4.7% over 3.5 years or 1.4% annual. Thus, as a conservative approach, 862 Rs/ton is used as base year price at decision time. Further, annual 5% price escalation is also included throughout the assessment period.	The clarification provided by PP that as a conservative approach, 862 Rs/ton is used as base year price at decision time and further, annual 5% price escalation is also included throughout the assessment period is acceptable. Hence this CL is resolved. **Conclusion:** CL 8 Closed

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<u>CL 9</u> The NIT advertised on 01/06/1995 Indicates the fuel as GAS/ NAPTHA/ LSHS/ Furnace oil based short Gestation period project (for which PP has applied). Whereas Coal based power plant is of separate category (in the same Notice) Long Gestation period project. Accordingly coal as fuel is not in the preview of short gestation period project chosen by PP. Please justify the low cost fuel "coal" as arrived in section B.4 of PDD in the above context.	**B.2.3**	The baseline methodology AM0029, pg 2 under the 'Identification of the baseline scenario' requires '***the baseline scenario candidates identified may not be available to project participants, but could be other stakeholders within the grid boundary*** *(e.g. other companies investing in power capacity expansions). Ensure that all relevant power plant technologies that have recently been constructed or are under construction or are being planned (e.g. documented in official power expansion plans) are included as plausible alternatives.*' There were two coal based IPP projects under development in Andhra Pradesh with same power purchaser (APTransco) (1) 2x260 MW coal-based plant of BPL Power Projects (AP) Ltd. at Ramagundam (http://www.financialexpress.com/printer/news/63579/) (2) 2x520 MW Visakhapatnam Power Project by Hinduja National Power Corpn. Ltd.	The clarification for consideration of coal as a credible alternative provided by PP is acceptable. Thus, PP (i.e., GVK management) had the option of going for a coal based power plant instead of the CDM project activity power plant. Hence this CL is resolved. **<u>Conclusion:</u>** CL 9 Closed

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		(http://www.processregister.com/Visakhapatnam_Power/Project/pid6967.htm) Thus, the coal based power plant option was available to other stakeholders in the grid. Further, in January 2002, GVK was awarded coal mine for an under consideration 500 MW subcritical coal based power plant. Thus, the option of developing a subcritical coal based power project was also a credible alternative. A number of actions are needed to assess the feasibility of a project including EPC contract, PPA, FSA, environmental clearances etc. Thus, these different steps were also taken by PP to study the feasibility of a power project and the public hearing referred was part of this feasibility study. These pre-feasibility steps are needed to approach financiers including banks as evident from the letter from Bank (submitted to the DOE). Also, in January 2002, GVK was awarded a coal mine for a 500 MW coal based power plant (http://coal.nic.in/alloblocklist.htm)	

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		[Refer Sl. No. 19 - GVK Power (Govindwal Sahib) Ltd.]. Thus, GVK management had the option of going for a coal based power plant instead of the CDM project activity power plant. Response to the NIT advertisement cannot be used to define Baseline for the Project Activity. Please refer Section A.2 (History) for details on project history. GVKPIL, the parent company of Gautami Power Limited had the option to decide between various investment opportunities including coal based power plants and NG power plants even as late as 2003. Hence coal is a valid option considered during the investment decision (Ref: minutes of the Board of Directors Meeting). Thus, coal can be considered a credible alternative. This is also described in the Section B.4 of the revised PDD.	

CL 10 Please clarify,		The NTP letter dated 30/06/2004 was received by EPC contractor on 01/07/2004. The EPC contractor	The clarification provided by PP on the start date of the project activity is acceptable. Hence this CL is resolved.

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
In section C.1.1 of the PDD (Version 02, dated 10/12/2009), it is mentioned that, "The starting date of the project date is taken as 01/07/2004, which is the date of notice to proceed for the project activity. This was date when the project proponent committed to the expenditures for the project activity with financial closure and notice to proceed to the EPC Contractor (with first instalment)". But, in PCN, submitted to HCA for approval, it is mentioned that, "The starting date of the project date is taken as 30/06/2004, which is the date of financial closure for the project activity".	**C.1.1**	discussed the terms and both parties mutually agreed to take later as the effective NTP date and thus the start date. Please refer the NTP letter (that has over writing by the EPC contractor). This is followed for all the official documents and hence could be acceptable. During HCA application, the financial closure date was considered as the start date (that is one day prior to revised date). It was revised later considering the above given acceptability by the EPC contractor.	**Conclusion:** CL 10 Closed

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
CL 11 Please clarify Section C.2.2.1 indicates the expected starting date of crediting period is the date of registration of the project. Whereas the JMR is taken on a fixed date, It is most likely that the date of registration may not coincide with the date of JMR. PDD does not identify procedures for dealing with possible monitoring data adjustments to handle such exigency. Identical situation is anticipated in the last month of crediting period.	**D.6.9**	The following line is included for this situation in the PDD, Section B.7. 'As the project activity registration may not coincide with the JMR date (both monitoring period start and the end), (1) the net electricity export for this period will be monitored from the check meter/ DCS readings from the PP's monitoring system. OR (2) the crediting period will be taken from the subsequent JMR date after the registration date.'	The clarification provided by PP on procedures for possible monitoring data adjustments and uncertainties of the project activity is acceptable. Hence this CL is resolved. **Conclusion:** CL 11 Closed

CL 12 Evidence of prior CDM knowledge before the board decision as indicated in the revised PDD has not been provided.	**A.2.7**	The minutes of meeting of the GVK management with CDM consultant dt. 04/01/2003, before the investment decision in Gautami Power project (for other similar investment 220 MW NG CCPP by GVK Ind. Ltd.) are being provided.	Evidence of prior CDM knowledge before the board decision as indicated in the revised PDD has now been provided for verification. Hence considered appropriate. **Conclusion:** CL 12 Closed

CL 13	**B.2.1**		

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
Please clarify; **1. BOARD RESOLUTION:** Please furnish certified copy of the Board resolution in which the decision to invest was finalized.		1. The certified copy of the Board resolution where investment decision in the project activity was taken is submitted.	The certified copy of the Board resolution in which the decision to invest in the project activity was taken is been submitted now.
2. The useful life of the project is assumed to be 15 years whereas the guidance in EB 51 para 3 envisages a maximum of 20 years. Credible evidence for this factor to be provided.		2. As per the Guidance '*calculations shall as a preference reflect the period of expected operation of the underlying project activity (technical lifetime)*'. The technical lifetime is 15 years as per the Notification from Ministry of Power Dt. 29/03/1994.	The evidence submitted for the useful life of the project was verified and found appropriate.
3. PLF: Has been assumed @ 85%. Pl provide authentic evidences for the same which should also be in line with the guidance in EB 48.		3. The PLF Guidance referred is applicable for '*methodologies related to renewable energy generation*'. The PLF used here is from the DPR, Appendix 13 and also studied for ±10% sensitivity to cover all realistic range of variation in the parameter.	The justification provided by the PP is acceptable. Hence this query is closed.
4. DEPRECIATION: Accelerated depreciation (80%) which is allowable under the IT Act has not been taken for the income tax depreciation		4. Accelerated depreciation is not applicable to the project activity plant (being a large scale fossil fuel fired power plant). As per understanding of the PP, accelerated depreciation is allowed to renewable energy	The justification provided by the PP for not Accelerated depreciation for the income tax depreciation calculations is acceptable. Hence this query is closed.

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
calculations. Kindly clarify **5. URLs / OTHER AUTHENTIC EVIDENCES MAY BE PROVIDED FOR THE FOLLOWING:** • Rate of Depreciation • Per MW Cost • Debt : Equity ratio • Auxiliary consumption • GSHR (kcal/kWh) • Price of Fuel • Escalation rate • GCV (Kcal/ BTU) • O&M Expenses Kindly provide the authentic evidence for the above table.		generating units and high efficiency boilers (including the oil and gas fired boilers). Project activity plant does not involve boilers but uses gas turbine and HRSG (heat recovery steam generator) and steam turbine. 5. the evidences for each of these parameters are as below a) Rate of depreciation is taken from Depreciation Norms for Generating Companies by the Notification from Ministry of Power dt. 29/03/1994 b) Cost is taken from the DPR, 2001 and escalation is in line with Project appraisal by Power Finance Corporation (Nov. 2003). c) DPR (Appendix 13) has taken same D/E (Refer 2.33) d) Auxiliary consumption- CERC (Terms & Conditions of tariff) Regulations, 2001; pg. 8	The evidences submitted for each of the following parameters were verified and found appropriate. • Rate of Depreciation • Per MW Cost • Debt : Equity ratio • Auxiliary consumption • GSHR (kcal/kWh) • Price of Fuel • Escalation rate • GCV (Kcal/ BTU) and • O&M Expenses **<u>Conclusion:</u>** CL 13 Closed

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		e) Gross station heat rate (GSHR) - PPA of GPL 1997, Clause 57 f) Price of fuel - DPR (Appendix 13) has taken Rs. 4,316/1000 SCM g) Escalation rate – 5%. This is conservative compared to 7% from 10 year historic price index [New York Mercantile Exchange (from Feb. 1994) shows 7% annual escalation - copy of data provided to DOE] h) GCV = 9308 kcal/ SCM from DPR (Appendix 13) i) O&M expense – experience of PP from operating NG CCPP (Jegurupadu phase I) and conservative compared to 3.8% considered by project appraisal for GPL by PFC in Nov. 2003 (Pg. No. 36, 39 of pdf file)	
CL 14	**B.2.4**		Evidences for each of these parameters

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
Pls clarify on the assumptions for the techno economic parameters for the project activity and the baseline with respect to EB guidelines on investment analysis and justify their conservativeness.		The PDD, Section B.4 is updated to give evidences for each of these parameters in each alternative baseline scenario.	in each alternative baseline scenario given in the revised PDD, version03 is now in line with EB guidelines on investment analysis. **Conclusion:** CL 14 Closed

CL 15 Justify the assumptions on project lifetime for the different options considered in section B.4 of the PDD • 15 years for NG power plant • 15 years for Diesel power plant	**B.2.4**	Depreciation Norms for Generating Companies "THE GAZETTE OF INDIA, EXTRAORDINARY", [PART II-SEC. 3(ii)], MINISTRY OF POWER, NOTIFICATION, Dt. 29/03/1994 Has specified the fair life of both gas and diesel based power plants as 15 years. The same was not changed till decision making by any other notification from CERC/ Ministry of Power. Thus, it is used in the PDD.	The Justification provided by PP for the project lifetime of 15 years for Diesel and NG power plant is acceptable as it is evident from THE GAZETTE OF INDIA, EXTRAORDINARY, [PART II-SEC. 3(ii)], MINISTRY OF POWER, NOTIFICATION, Dt. 29/03/1994. Hence this CL is resolved. **Conclusion:** CL 15 Closed

CL 16 Sensitivity analysis on project cost has not been done based on EB guidelines	**B.2.5**	The sensitivity analysis is updated in the revised PDD. Financial models updated and provision made for this sensitivity (coal model 'capital cost sheet, Cell J42'; gas model 'means of Fin sheet, Cell F19'	The revised financial sheets were check and found that a sensitivity analysis on project cost has now been done based on EB guidelines. **Conclusion:**

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
			CL 16 Closed

CL 17 The emission reductions are not consistently mentioned in the Emission Reduction calculation sheets and the PDD. clarify	**E.1.3**	The emission reduction is made consistent in the CER sheet and PDD.	The emission reductions are now made consistently in emission reduction calculation sheets and the revised PDD, version03 **Conclusion:** CL 17 Closed

CL 18 Please clarify In section A.3 and Annex 1 of the latest PDD, version03, it is mentioned that the PP is GVK Gautami Power Limited, Hyderabad (Private entity), where as in the web-hosted PDD, version02 it was indicated as Gautami Power Limited, Hyderabad (Public Limited Company).	**A.1.4.**	The process of DOE appointment was initiated in (validation services quote was received in May 2009 before the name change on 08/09/2009. As the validation contract was signed in the name of Gautami Power Ltd. the same name was retained further. The web hosted PDD mentioned status as Public Limited as it is a registered company on the Stock Exchange and some shares are held by public shareholders. Later, in response to CAR 01.	The clarification provided for name change of PP to GVK Gautami Power Limited, Hyderabad (Private entity) in section A.3 and Annex 1 of the revised PDD, version03 is acceptable. Hence this CL is resolved. **Conclusion:** CL 18 Closed

--oo0oo--

APPENDIX B
Comments From Global Stakeholders Consultation Process

APPENDIX B
GSCP Comments

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
Comment- 1 Please clarify; GSCP Comments for the earlier web hosted PDD (from 17/09/2008 to 16/10/2008). Submitted by: Green ventures According to the methodology AM0029 applicability's criteria "Natural gas is sufficiently available in the region or country, e.g. future natural gas based power capacity additions, comparable in size to the project activity, are not constrained by the use of natural gas in the project activity" But various documents are available in public domain(websites) which clearly states that NG is not available in surplus in AP. Below the details which are available in public domain which clearly states non-availability of NG: I would like to request the DOE/UNFCCC to kindly review the following documents which clearly states that due to non-availability of NG which is highly contradictory to the applicability conditions of the AM0029 a) It has been stated in the	**Table 1, Item no.13**	A detailed note on the requirement of the baseline methodology on gas availability and time series wise description is presented to the DOE. The note shows that the gas is not diverted from the existing users and also, future capacity addition is also not restricted due to the project activity. And the requirements set out in the baseline methodology to demonstrate abundant gas availability are met.	As per the detail note titled "Gautami Power Ltd. CDM project – Gas availability and non-leakage" the availability of gas in AP region is surplus, gas is not diverted from the existing users and also, future capacity addition is also not restricted due to the project activity. For the project activity, GPL has made agreements with M/s Gas Authority of India Limited (GAIL) for the gas supply quantity of 1.96MCMD natural gas till 31st December 2010 (Gas Supply Contract with GAIL; page 5). Apart from this, GPL has also entered into an agreement with Reliance Industries Limited (RIL), for which the Term sheet has been signed on 09/06/2007. The PP is now using the Natural gas supplied by RIL. The agreement with RIL is for 70699 MMBtu which is equivalent to approximately 2.23 MCMD. This supply is assured till

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
PDD(page no. 9) that since the award of EPC contract(27/09/2003) NG was available for procurement but there are many articles and posts available in the public domain which clearly proves the deficiency of Natural gas in the state of Andhra Pradesh. Its been openly stated by Mr. GV Sanjay Reddy, director, GVK Power & Infrastructure Ltd (GVKPIL) that the plant would be running upto the potential of 50-60% owing to the low availability of Natural Gas in the region. Also GAIL had informed the company that although GAIL agreed for NG supply for full capacity but would not be supplying as agreed because of lack of Natural Gas, which can be verified from the article available in the public domain Link of the article: http://www.financialexpress.com/news/Gautami-Power-Plant-to-go-on-stream-by-Sept/129754/ Extract of which is as follows: "Gautami Power Plant, a 464 MW combined cycle power plant, is expected to be commissioned by September 2006, according to GV Sanjay Reddy, director, GVK Power & Infrastructure Ltd (GVKPIL). Mr Reddy said that the company is going ahead with the implementation of the project and is confident that the project will comfortably run at 50 to 60% capacity. "Considering the			31st March 2012 which can be extended further. Natural gas reserves are sufficiently available in the country and at the time of real action of the project activity the reserves were to the order of 751 Billion Cubic Meter (2002-2003, http://petroleum.nic.in/petstat.pdf) in comparison to the supply commitment by GAIL towards the project activity of 1.96 MCMD (which is equivalent to 715.4 MCM considering an operation of 365 days in an year). This means that the commitment of natural gas quantity to the project activity by GAIL is only 0.095% of the total reserves of natural gas during the period of 2002-2003 and the available reserves are capable of firing more than 1000 times the installed capacity of the project activity. The gas availability in the country after 3 years of the date of award of the EPC Contract (generally the time required to construct the infrastructure facility) of the project activity is 1101 BCM which is capable of firing more than 1500 times the installed capacity of the project activity.

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
Central government decision to supply gas on a pro rata allocation to all the customers, Gowthami Power can get enough gas to run at least 50 to 60% of the capacity," Mr Reddy said. Mr Reddy was speaking to the media here on Friday at the road-show for the on-going IPO of GVKPIL. "We have not considered the future opportunities for these projects and kept them separately as long as they carry risk element," Mr Reddy said. As a derisking strategy, GVKPIL will be the sole vehicle for all power investments. Gowthami Power is a subsidiary of GVKPIL, which has already signed gas supply agreement with GAIL and high speed diesel (HSD) supply agreement with BPCL. Interestingly, GAIL had informed the company that the gas allocation will be on a pro rata basis and not the full capacity as agreed earlier. Further, the company also signed natural gas supply agreements with Reliance and GSPC, Mr Reddy said. On the other hand, AP Discoms have asked the gas power generators to back-out and do not go for alternative fuel like naptha or HSD. Further, the power utility had also filed a petition before the AP Electricity Regulatory Commission for a revision of incentive regulation to the private power producers (PPPs) on the fixed cost payment			In the state of Andhra Pradesh, the demand from consumers having firm commitments for supply in the year 2001-2002 was 6.12 MCMD. Against this demand, the availability from GAIL for the year 2001-2002 was 7.50 MCMD. Further, the announcement of consideration of Lanco's Kondapalli (http://petroleum.nic.in/clip4151206.pdf) and ongoing 768 MW expansion (http://asian-power.com/regulation/more-news/ge-supply-parts-and-services-vemagiri-plant; http://www.gmrgroup.in/corporate/pdf/GIL_Q3-FY_11_-_Press_Release_Ver3_0_Final.pdf) at Vemagiri power projects by Ministry of Petroleum (Government of India) for NG allocation, after NG allocation was committed to this project activity as well as 800 MW GVK Gautami Power Ltd., prove that the project in question is not depriving any other future users. Hence, it is without doubt that this project activity will not constrain future natural gas based power capacity additions, comparable in size to the

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
clause, which is to be settled by the regulator. Moreover, "GVKPIL will not be purely a power company but an infrastructure company. The power sector will be the foundation on which infrastructure will be built like townships, SEZs, etc." Mr Reddy said on the company long term business strategy". This link also mentions that they have entered into long term agreement for HSD supply, however, methodology allows only for minimal quantities of any other fuel firing apart from Natural gas. This is contradictory and the project may be using HSD in long term. It can be verified from the information available in the public domain that GVK Power & Infrastructure approached Supreme Court & Andhra Pradesh High court complaining that GAIL as agreed is not supplying the adequate quantity of Natural Gases more-over owing to the above mentioned problem GVK's group chairman G.V. Krishna Reddy proposed a new proposal to state government for letting the Gautami power plant to run on other fuels like naptha, or diesel. This can be verified from the public domain. Specimen Link verifying the above mentioned facts: http://www.livemint.com/2007/05/21001618/Natural-gas-supply-shortage-pu.html Link			project activity. The demand supply data of India available from Ministry of Petroleum and Natural Gas shows that the country's natural gas consumption has been less than the gross production. Hence this query is closed.

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
stating the same fact again: http://www.accessmylibrary.com/coms2/summary_0286-31760888_ITM Not only Gautami Power Plant but apart from these there are other plants also in Andhra Pradesh which are facing problem for the want of Natural Gas for example GMR Infrastructure ltd (Vemagrir Power Plant) which can be verified from the publically available information Specimen Link verifying the above mentioned facts : http://www.domain-b.com/companies/companies_g/gmr_group/20071129_vemagiri.html Extract of which is as follows: "The Hyderabad-based GMR Infrastructure Ltd has announced that its Vemagiri power plant in Rajahmundry district in the state of Andhra Pradesh will start generating power from January 2008 onwards, initially for a period of four months. This will be possible if the state government acts on its assurance to provide the plant 1.12 - 1.15 million cu. m. of natural gas per day from Gas Authority of India Ltd (GAIL). The 388.5 MW Vemagiri plant, which was commissioned in November 2006, works with combined cycle technology, and uses natural gas as fuel. Under the power purchase agreement it has signed with APTRANSCO, Vemagiri Power Generation Ltd must supply			

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
power to the power distributor for a period of 23 years. According to a GMR senior manager, "The Andhra Pradesh government has conveyed its willingness to supply gas to our Vemagiri project from January, 2008. The plant has not been operational for about a year now, due to the non-availability of fuel. This is a very positive development and a win-win situation for both, the people of Andhra Pradesh as well as our company."			
5) According to the guidelines mentioned in EB41 the start date of the project activity will be EPC contract date (27/07/2003) not the financial closure, hence I would request DOE to have a thorough look on the chronology and also the start date which puts question mark on the CDM consideration in the project activity (because the PDD was also submitted 2years after the approval of methodology). Moreover, Cantor started the operations in India sometime in 2007, so the consultant would have been appointed after that only. What was being done for 3-4 years? What are the publically available documents to prove CDM considerations and what are third party communications with Buyers/DOE's during the 2003-2007 period.		The EPC contract dt. 27/07/2003, Section 5.2 required financial closure to be achieved to ensure necessary funds fro the full payment of the EPC contract. This was also required to be proven from a letter of this effect from the financing parties. Thus, the EPC contractor will not start manufacturing the project activity plant related units without PP completing the financial closure and first payment with the NTP. Thus, signing the contract can not be a CDM start date. The CDM chronology is discussed in line with the EB49, Annex 22 Guidance.	The justification provided by the PP is acceptable. Hence the query is resolved.

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
This clearly purports that CDM was not at all considered during decision making for the project activity. Only when Rambabu would have met GVK, they would have come to know of these 'extra' benefits which they can get. Which Rambabu has done in so many other cases and I am sure Rambabu can also get the project registered with his connections in the higher-ups and where it matters (as he claims to do with lot of other project proponents). According to the various documents available the project proponent would be using NG or LNG also hence two types of leakages needs to be considered 1) Leakage emissions due to fugitive upstream CH4 emissions in the year y, 2) Leakage emissions due to fossil fuel combustion / electricity consumption associated with the liquefaction, transportation, re-gasification and compression of LNG into a natural gas transmission or distribution system during the year" The above stated emissions are mentioned in approved methodology AM0050, which is also a natural gas based methodology. So these emissions need to be accounted for AM0029 methodology also Hence the DOE is requested to raise a		PP is not likely to use LNG as sufficient NG contract and supply is in place. When necessary to use LNG, applicable formulae in the baseline methodology applied here will be used for leakage calculations. The global average default value 296 tCH_4/PJ is used already in the calculations.	The validation team agrees with the response of PP. As per the applied methodology, in the case LNG is used in the project plant leakage emissions are to be calculated. And the global average default value of 296 tCH_4/PJ is used in the calculations. Hence the clarification by PP is acceptable. **<u>Conclusion:</u>** Comment 1 closed

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
clarification to meth panel regarding the same on AM0029 methodology. If the project proponent explains that they would not use LNG, hence they would not account for the above emissions, then the same should be taken up in writing by DOE and if PP uses LNG during the crediting period then the emissions would be accounted as zero. More-over the emission factor value available in the methodology AM0029 is according to the 1996 IPCC value that needs to be revised according to IPCC values2006 so DOE is again requested to raise a clarification on the methodology PP has taken value of 160tCH4/PJ instead of 296 tCH4/PJ(values mentioned in PDD to be taken up for projects in countries like INDIA) which according to the methodology is taken up under the following situation “The US/Canada values may be used in cases where it can be shown that the relevant system element (gas production and/or processing/transmission/ distribution) is predominantly of recent vintage and built and operated to international standards.” therefore I request DOE to validate the “gas production and/or processing/transmission/ distribution” is predominantly of recent vintage and built and operated to international standards based on			

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
the publically available data."			

<u>Comment- 2</u> Please clarify; GSCP Comments (17/09/2008 to 16/10/2008) Submitted by: Mr. Naveen Sharma I have certain images to share with the DOE & EB members which are part of my submissions along with the text that I am copying below; thus I would be doing a separate email to Asim Kumar Jana & the CDM EB best regards Naveen ..... I have been keenly following CDM projects that are coming up from India, particularly from the energy sector. I also find that there are numerous reports in the media that strongly criticize Indian CDM projects; at times I would feel aggrieved at the negative outlook that people share about CDM projects from India and wonder why? Well, reading your PDD has answered many of these questions. Your PDD is a sorry and clumsy attempt to hide and misrepresent facts. What surprises me is the sheer audacity with which you have	**Table 1, Item no.13**		

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
misrepresented the facts in a public document; sadly it is projects like yours that have given a bad name to all Indian projects. I am now starting to feel a sense of sympathy for the CDM Executive Board, who has been trying very hard to protect the integrity of the CDM project. But, what can the EB do when DOEs, i.e. the very people they have entrusted the task of validation to, collude with the project developers and consultants to take up forged CDM projects like the Gautami Power. I know, “collusion” is a very strong word to use, but I am forced to use such strong words, for it is impossible to comprehend how TUV Nord could have missed out on checking such basic things. My request to CDM EB, you will notice that there are many things that Gautami power has lied about, you will also notice that all my submissions are based on publicly available information that takes 5 minutes Google search to find. I am surprised that TUV Nord has missed out on this. I pray that there should be curative procedure to ban such organizations (including their promoters) and DOEs from the CDM process forever. My observations on the PDD are as follows: 1. PDD writing: I find that most of the PDD is written in italics, is there something wrong,		The comment is out of context for this PDD version as it did not have italics text.	This comment is not relevant to the project activity, as the web hosted PDD, version02 (dated 10/12/2009) does not

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
haven't you guys read the PDD guidelines. Where in this world, can you find reports written in italics? It is extremely difficult to read the PDD this way, please re write the PDD following the guidelines and re-web host it.			have italics text.
2. Your project is a dual fuel fired project Only Natural Gas fired projects are eligible for CDM, one thing that you have very cleverly hidden from everybody is that your project is dual fuel fired project that can also fire HSD. I find that on page 81 (refer the table) of the public issue prospectus of GVK Power (one of the promoters of Gautami Power available at www.sebi.gov.in/dp/gvkpil.pdf) it is clearly mentioned that your project is dual fuel fired project that can fire Natural Gas and HSD for power generation. It is clear that you had conceived this project considering HSD firing also, now you have very conveniently hidden this fact. You have also written the following on page 306 of your public issue prospectus (of GVK Power). AP TRANSCO has filed a petition (O.P. No. 24 of 2004) against the company before the APERC under Section 86(1)(b), 94(1)(f) of the Electricity Act read with Section 11(1)(e) of the Andhra Pradesh Electricity Reforms Act, 1998 and Regulation		The PPA of the project activity is revised and NG is the only fuel possible to be used. Even when proposed as CDM project, PP has proposed to use only NG for fuel. The duel fuel firing feature was as per the earlier Government bids. HSD based project was envisage in pre-2000 by a separate management under the Satyam Constructions Ltd. When the PP took over project, it is planned as per the NG based project alone. The project activity plant now uses only natural gas and applicability condition foot note 1 of the AM0029, Ver. 3.	The clarification by PP is acceptable. Thus the validation team is of the opinion that the comment has been addressed appropriately.

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
8 and 9 of Andhra Pradesh Electricity Regulatory Commission Business Regulations seeking deletion of the alternate fuel clause from the PPA dated June 18, 2003 entered into with us. The company has filed the counter to the petition. The case is posted for further arguments of APTRANSCO. One thing that is clear from this is that when APTRANSCO asked you to give up your alternative fuel option (even though you are not firing HSD now because HSD based power cost is significantly higher than NG based power) you have refused to do so. Which means that your project is a HSD+NG fired project and not a NG fired project as you have represented. This means that you are not eligible for CDM. How can you take a HSD fired project under CDM?			
3. Availability of Natural Gas (Page 9, Section B.2.) This is about your claim about the so called “abundance of Natural Gas availability in India”. This is indeed laughable, I don’t’ understand how the DOE could have missed this. There are hundreds of news items available (please do a google search) that tell about the shortage of Natural Gas in the region, because of which many power plants are not able to operate. Forget about all other		Gas availability is demonstrated to the DOE in a detailed note and meets the requirement of the baseline methodology.	As per the detail note titled “Gautami Power Ltd. CDM project – Gas availability and non-leakage” the availability of gas in AP region is surplus, gas is not diverted from the existing users and also, future capacity addition is also not restricted due to the project activity. Hence this query is closed.

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
cases, in case of Gautami power itself, the construction was completed in September 2006 and the plant has been lying idle for more than two years now. I have noted the following from public issue prospectuses of promoters of Gautami Power. The following are extracts from public issue prospectus of Maytas Infra, one of the promoters of Gautami Power, in case TUV does not know, the prospectus can be downloaded from http://www.sebi.gov.in/dp/maytas.pdf Page no. XXIV of the prospectus clearly states: “Construction of the first stage of the Gautami power station project has substantially been completed and was ready for commissioning in 2006, but has not commenced commercial operation due to the unavailability of natural gas”. On page no. XXV you have again written: Gautami Power has recently been involved in litigation with the Government of Andhra Pradesh regarding the failure to supply the Gautami power station with natural gas, resulting in delays in the power station achieving commercial operation. On the same page you have also written: Gautami Power filed a suit in the High Court of Andhra Pradesh against the Government of Andhra Pradesh and the Transmission Corporation of Andhra Pradesh Limited (“APTRANSCO”),			

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
the state electricity authority, seeking, among other things, an order for specific performance directing the Government of Andhra Pradesh and APTRANSCO to recommend to the Ministry of Petroleum and Natural Gas, GoI and Gas Authority of India to supply the contracted levels of natural gas to the project so that Gautami Power might achieve commercial operation. Not only this, the fact that Natural Gas is not sufficiently available is clearly acknowledged in several places in this public issue prospectus, I still don't understand how the company can make a claim that Natural Gas is sufficiently available in the region and to their project. I am appalled to note that TUV doesn't bother to check such basic facts before web hosting the PDD. I would request the RIT team to take note of this. 4. Project start date (Page 21) You have written that the board resolution to invest in the project was taken on 25th August 2003. The following are extracts from public issue prospectus of GVK Power (the promoter of Gautami Power). In July 2003, the Promoters through GVK Energy Holdings Private Limited (originally GVK Power Private Limited) took over the Company (Gautami Power) as a strategic equity partner and assumed the responsibility of implementing			

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
the power project and also contributed to the equity of the project, and executed an agreement in July 2003. I am a little confused; on one hand you say that you took the decision to invest in August 2003 on the other hand you mentioned (in public documents) that you have already invested in the company in July 2003. The question is how can you invest money and assume the responsibility to set up the project without taking the investment decision. My note to TUV and to CDM EB, the issue here is not that there is a difference of only one week, the issue is that the company has resorted to fabrication of lies and arguments to justify their case for CDM As you will notice, they have lied about almost all contentious issues. This table was there on page 117 of GVK Power's public issue document The following description was available on page 135 of the public issue prospectus of Maytas Infra (the other promoter of Gautami Power). • As everyone will see, the initial PPA for the project was signed in 1997, the so called start date of 2003 was when the PPA was amended to change the capacity to 464 MW (against the merged capacity of 597 MW). The point to note here is that this was done because of constraints of Natural Gas supply,		The GVK management was not part of the Gautami Power Ltd. Board of Directors before the take over in July 2003. On inducting as Board members, a resolution in the company's Directors meeting is passed.	The clarification by PP is acceptable. Hence the query is closed.

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
the company had no role to play in revising the capacity. • The project is backed by state government guarantee; the point to note is that the state government guarantee was provided in the year 1997, long before the CDM cut off date of 1st January 2000. • The important thing to note is that the project has been set up based on all these benefits that were given long before 2000. • The Gas supply agreement for the project was signed in 2000. It is common knowledge that gas supply will have to be through gas pipeline. Now consider this, the Gas pipeline is required to be laid by the Gas supplier, the cost of Gas supply therefore can not be finalized unless the Gas supplier knows the exact details of the site to which the pipeline would connect. Moreover, the supplier would never agree on a gas supply contract without knowing the location, as there could be certain terrains where pipeline construction would not be possible or cost prohibitive. This means that the site for the project would have been already identified, which means the land acquisition for the project would have already been completed (or nearing completion) even before commencing the Gas supply negotiations. Gas supply negotiations in India take at least two years to			

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
complete, which means that the land acquisition aspect of the project would have been taken care of by the year 1998. The project land area is 259 acres, to identify and acquire so much of land is difficult and takes lot of time. This means that the actual real action for Gautami Power would have started somewhere around 1996-97 or earlier. I can't do anything but feel sorry at the lack of competence of TUV Nord, even an engineering diploma holder guy would know so much. Its really a sorry state of affairs. • Interestingly, the Kyoto protocol was signed only in 1997. Now let me understand this: The real action for the project was commenced even before the signing of the Kyoto Protocol, and you somehow magically came to know that you would get CDM for your project. It is also interesting to note that the Marrakech Accord was signed only in 2001. You completed construction in 2006, you wanted to start commercial operation but could not do so because there was no gas supply. You were so desperate to start operations that you filed law suits to obtain gas supply. Now, after two years, you suddenly woke up and realized that you had completely forgotten about the CDM aspect, which was such a serious consideration for			

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
your investment decision making. When the company decided to invest in such a large project because of CDM, should it not have engaged the CDM consultant and the DOE way earlier? Why did it have to wait for 4 years from the project start date (its actually 11 years if the real start date is considered) to appoint the CDM consultant when CDM was seriously required for doing the project, how could it have taken that risk. I am sure the DOE's appointment would have been much later, may be in 2008, (I am guessing because PDD was web hosted in 2008), doesn't that tell something. If the project developer was working on a PDD using a proposed new methodology, should it not have engaged the DOE at that time to file the new methodology. I don't understand how people can concoct such stories. The very fact that the HGA for the project is yet to be obtain, even after 11 years of start date (5 years, if the PDD information is to be believed) leads to the conclusion that CDM could not have been seriously considered while making the investment decision. A careful reading of this section of the PDD would make it clear that the PP and its consultants are trying to weave a cleverly engineered storyline to support their case for			

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
CDM. I hope the EB will be taking notice of this. Both the promoters of Gautami Power have gone for public issue to raise funds. Both prospectuses contain detailed information about the 464 MW Gautami Power project, what are the costs, where all the revenues would come from and what all are the payment security mechanism. Interestingly, the word CDM or Kyoto Protocol does not even appear on these public issue documents. This is when they say they are doing the project, because of CDM revenues, should not they have mentioned about CDM revenues in the public issue documents. As the EB may note, there is no end to this farce of weaving lies and stories to get money from CDM.			
2. Page 15, Section B.5.: Investment Analysis I was going through the draft Validation and Verification manual published by the CDM EB and I found that there is a clause called "Transparency". Para 30 of the VVM describes that Transparency is to disclose information to allow intended users to understand and to make decisions with reasonable confidence. The VVM also states that Transparency requires documenting		The financial models in excel sheet with all the assumptions/ data back ups are submitted to the DOE. Additionality Tool version 5 said that "Clarity in the conditions under which different approaches, provided in Step 2: Investment analysis can be applied. • Clarity in the appropriate choice of	The financial excel sheets are submitted in a transparent manner, providing all the relevant assumptions, the analysis is reproducible. Hence the query is closed.

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
assumptions, references and methods such that another party can reproduce reported data; Let us for a moment assume that the esteemed professionals at TUV Nord did not bother to verify this. But then again, I find that the additionality tool clearly states the following: “Present the investment analysis in a transparent manner and provide all the relevant assumptions, preferably in the CDM-PDD, or in separate annexes to the CDM-PDD, so that a reader can reproduce the analysis and obtain the same results. Now my question is, do you or the PP feel that the assumptions provided in the PDD are sufficient to recreate the financial model of a 464 MW Greenfield power project. Are you guys out of your mind??? Do you have any idea how many parameters go into the financial model of a power plant of this size and how a minor variation in one of the parameters can significantly alter the outcome of the financial analysis. Understood that you may not have in-depth experience in power sector financial modeling, however there are some outlandish errors that anyone just fairly acquainted with the power sector could have identified easily. Accuracy of levelised cost calculations: I would like to give some advice here; Power plant financial		the benchmark for the assessment of additionality when using benchmark analysis” Thus, it expanded scope by giving choice to PP to use any suitable financial indicator and not restrict it to the e.g. IRR said as an example.	

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
models are complex, any modeling expert can manipulate these models in a manner that you won't even have a clue to where things are wrong. You should try and get the model validated by some renowned power sector expert or a modeling expert and I am sure you will unearth many errors and grey areas in the levelised cost calculations. Now this section is the real state of art, the guy writing the PDD must have thought that the RIT team, the DOE and stakeholders would be all fools. Haven't you read the additionality tool, levelised cost can not be benchmark? Please read the relevant sections in Additionality tool version 4 and version 5, you will find that in version 5, the use of levelised cost as benchmark has been removed, only IRR or NPV can be used as benchmark. The tool very clearly says that the benchmark should be most relevant to the decision making context. Your project is grid supply project that gets tariff on cost plus basis, the ultimate cost therefore is being borne by the consumer. What matters for you, to make the investment, is the IRR or NPV you get out of the investment and the levelised cost. So please calculate IRR/NPV and re-webhost the PDD and excel sheet for public comments. Page 87 of GVK Power's public			

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
issue document has the following: There are many things that become clear from this, (1) project start date for GPL is earlier to 2000 as the tariff had already been decided by then (2) GVK agreed to develop another gas fired project at a lower tariff. Page 258 of GVK's public issue prospectus states: For those who are not familiar with Indian regulations, le me clarify, CAG is the audit arm of Government of India. The CAG determined that GVK's Jegurupadu project (that has a lower tariff than Gautami Power project) generates an ROE or 17%. Which means that the returns on GPL should be in excess of 17%, the EB will note that in India a 14% return benchmark is considered as sufficient for thermal power projects. Now, how can the project be additional, it is clear that the calculations that will be submitted to the DOE and EB will be fudged. Please note that India has more than 100,000 MW of capacity that has come up on the basis of 14% ROE, in such a case how can this project be considered as additional. The other thing that I possibly can't understand is that on what ground the project developer is seeking CDM benefits. I understand that the project has been set up through International Competitive Bidding. Now let us take the case of			

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
International Competitive Bidding (ICB), in case of ICBs the project details are specified i.e. bids would have been invited for a Gas based CCGT in Andhra Pradesh to supply power to APTRANSCO. If the terms of ICB are such that the bidder can only set up a gas based CCGT, how can a coal based plant be considered as the alternative. Because, all said and done the project is governed by the terms of ICB and if the bidding is for a CCGT then no other type project can be put up under the ICB route. This means that the Project Proponent could have set up only a CCGT and no other power project, hence the project itself is the baseline and can not be considered as additional. TUV please note that it took me only 10 minutes to find all this facts about the project, shouldn't you have done this homework before web-hosting the PDD.			
3. Common Practice (Page 24, Section B.5). There are several other gas based power plants in India and in southern region that are currently operational. Still you claim that your project is not common practice. You have very cleverly compared gas based generation with grid generation to show that Gas based		The nature of PPA is discussed with the DOE and there is no fuel pass through clause as claimed by the stakeholder. In the ICB, the bids were awarded on a bid number independent of the plant operations e.g. heat rate and the fuel used.	The clarification by PP is acceptable. Section B.5 of the revised PDD, version03, has demonstrated that the project activity is not a common practice in the region/ country as per the Additionality tool.

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
generation is not common practice. In reality, the reason why gas based generation does not account for a major portion, is because of lack of availability of gas supply and not because gas based projects are not profitable. Please note that the common practice test is required to be carried out as corroboration of the Investment analysis. Therefore, your analysis, to say that gas based generation is not a common practice, is incorrect. In fact under a two part tariff PPA it does not matter to the project developer what type of fuel is used, since the returns are always guaranteed under the PPA. The burden of high tariff is always passed on to the consumer; the project developer always gets the assured rate of return.		As per Additionality Tool – 'Projects are considered similar if they are in the same country/region and/or rely on a broadly similar technology, are of a similar scale, and take place in a **comparable environment with respect to regulatory framework, investment climate**, access to technology, access to financing, etc.' Thus, the PDD has identified all the operational power plants at the investment decision and also commissioning. An analysis of these identified plants that are concluded as similar is presented to demonstrate that all the four similar plants are under CDM. Thus, the project activity is not a common practice in the region/ country.	**Conclusion:** Comment 2 closed

Comment- 3 Please clarify; GSCP Comments (from 30/12/2009 to 28/01/2010) Submitted by: Mark Robinson The project participants have very cleverly changed the DOE so that they are not	**Table 1, Item no.13**	The new DOE has already requested to reply to earlier web hosting global	The earlier Global stakeholder comments received are raised as

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
required to answer the earlier Global stakeholder comments received, however the DOE (might not be concerned) and CDM EB should take into account the previous concerns of stakeholders. Without closing those comments the project should not be taken forward. The previous comments can be referred at, http://cdm.unfccc.int/Projects/Validation/DB/6K9BLL1BKBDHXCNRED0KWA1NY9GWOE/view.html Intentionally, this time PP submitted this project to a new DOE where the technical competence is questionable to resolve the serious and authentic comments raised by the stake holders. Has the new DOE ever bothered why the earlier DOE validation contract got terminated? It was very clear from the previous comments that the project start date should be the EPC contract signed date and not the financial closure.		stakeholder comments. This DOE was appraised on the earlier validation process. The earlier DOE has given necessary NOC for starting the validation process with new DOE. As per the CDM Guidance, the start date shall be considered to be the date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity. Minor pre-project expenses, e.g. the contracting of services /payment of fees for feasibility studies or preliminary surveys, should not be considered in the determination of the start date as they do not necessarily indicate the commencement of implementation of the project (EB 41, Meeting Report, Para 67). The present project proponent took over the (63% shares) of company in Aug. 2001. At this time, like any other project development cycle, all the necessary clearances (CFE, PPA, CEA clearance) were taken for approaching the lenders/ bankers.	comment 1 and 2 of this report. The PP has addressed all the issue raised in the 2 comments. NOC from the earlier DOE has been taken for starting the validation process again.

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		Moreover, the previously conceived project by the earlier owner was based on Naphtha as fuel. The current project activity based on Gas was considered during 2000-01. When a potential CDM project is conceived and defined, the start date will fall between conceptual planning of "that project activity" and actual commissioning. Thus, there was no financial commitment to implement this project and unless financial closure is achieved and notice to proceed to EPC contractor is given, there is no other credible financial commitment to implement the project. In a typical project cycle of this scale in India, the following is the sequence of the steps – • A project is conceived by a project developer and a Project Feasibility Report (PFR) is prepared. • The required consents and clearances are obtained; • The fuel supply and power purchase agreements are signed.	

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		This gives data for the initial financial estimates and expenditure incurred /committed on the above is a very low percentage of the total project cost. These are termed as the pre-project expenses. At the time of financial closure, a real financial viability assessment is done and major expenditure is committed only after the approval of revenues. Lenders and investors of this scale projects also look for an EPC contract to check the negotiated price before taking a decision on the investment. Actually, 'Fuel supply agreement' and 'Power purchase agreements' are necessary to have the loan sanctions and proceed for the financial closure. Thus, until the financial closure has been achieved, the PP had liability only for the pre-project expenses and bank guarantee/ security deposits. Even the EPC contract is not valid unless the PP given notice to proceed along with the first installment (~ 10% of the total agreement value) as agreed in the contract. In this case, PPA clearly mentions that the security deposit/ bank guarantee of 1% project	

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		cost will lapse in case the project is not implemented (Ref. PPA). Hence signing of Gas supply agreement and/or a PPA and/or EPC contract does not qualify as a start date for this case. Actually these are pre-project activities and essential part of the project to have a financial closure. In support of our claim we provide below one of such many examples exist in India : A power company had a liquid fuel based thermal power project - Ratlam DGPP (CEA approved Project No. 24 at link http://powermin.nic.in/projects/address_private_projects.htm). Where the project could not achieve the financial closure due to un-viability in spite of all the pre-project agreements being in place such as: •pre-feasibility studies conducted •required clearances obtained •fuel supply tied up, •power purchase agreement signed, •all the consents in place	

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		•EPC contractor tied up Hence, unless the financial closure is achieved and 'Notice to proceed' is placed a project can be withdrawn based on its viability. All the above events are therefore considered as pre-project activities and cannot quality as start date.	
The project was completed in 2006 yet it could only be commissioned in 2009 thereby itself demonstrating the unavailability of NG for the 3 year period. This can be easily checked by a simple cross-check in google. Request the DOE to do the needful.		The project was under construction and not completed till commissioning in 2009. The gas availability requirement in the baseline scenario means non diversion from existing users and project plant should not constrain future capacity addition. Both these conditions are met and now there is surplus supply and many new NG based power plants double the capacity of the project activity power plant are being planned. Thus, project activity plant did not constrain future capacity addition as well.	The validation team agrees with the response of PP. The plant was under construction and not completed till commissioning in 2009. Hence the clarification by PP is acceptable.
The funny part of the PDD is to demonstrate its serious CDM consideration it says ERPA was signed in 2005, however it expired in 2007. Till this date even the Validator for the		The CDM registration related efforts are discussed in the PDD in accordance with the EB49, Annex 22, clause No. 7 and 8. During the period	The validation team agrees with the response of PP that the plant was under construction and not completed till commissioning in 2009. Hence the

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
project was not finalized again this shows lack of seriousness for CDM, it has been now 7 years from 2003 the first EPC placed by the project and there is no progress of CDM. Why does the PP require the CDM benefits now? The PP has already commissioned the project without any CDM registration, at this stage I ask the PP, will they stop the project if they do not get CDM funds? They will not stop the project now, thus proving that CDM was never important for the operation of the project.		of ERPA, the buyer was to arrange for the CDM consultant and the validators. However, due to one clarification for a similar plant in the registration was rejected and the CDM procedure was slowed down. The project was in validation (hosted for the GSC) about a year before the estimated commissioning. Thus, plant operations are not viable without CDM.	clarification by PP is acceptable. The clarification by PP is acceptable. Hence the query is closed. **<u>Conclusion:</u>** Comment 3 closed

--oo0oo--

APPENDIX C
AUDITOR’S CERTIFICATE

SIRIM QAS INTERNATIONAL

Sijil
Certificate

This is to certify that

DR. D.SIDDARAMU

has been qualified as

LEAD AUDITOR
FOR
CDM VALIDATION AND VERIFICATION SCHEME

in accordance with the relevant provisions of SIRIM QAS International's CDM procedure

Parama Iswara Subramaniam
Chairman
Auditor Evaluation Panel
Management System Certification Department

SIRIM QAS International Sdn. Bhd.

Qualification Date : **28 July 2010**

SIRIM QAS INTERNATIONAL

Sijil
Certificate

This is to certify that

RAVI SHANKAR

has been qualified as

LEAD AUDITOR
FOR
CDM VALIDATION AND VERIFICATION SCHEME

in accordance with the relevant provisions of SIRIM QAS International's CDM procedure

Sectoral Scopes No.

1 – Energy industries (renewable/non-renewable sources)

Parama Iswara Subramaniam
Chairman
Auditor Evaluation Panel
Management System Certification Department
SIRIM QAS International Sdn. Bhd.

Initial Qualification Date : **21 October 2009**

SIRIM QAS INTERNATIONAL

Sijil
Certificate

This is to certify that

DR. G. VISHNU

has been qualified as

LEAD AUDITOR
FOR
CDM VALIDATION AND VERIFICATION SCHEME

in accordance with the relevant provisions of SIRIM QAS International's CDM procedure.

Parama Iswara Subramaniam
Chairman
Auditor Evaluation Panel
Management System Certification Department
SIRIM QAS International Sdn. Bhd.

Qualification Date : **28 July 2010**