



VALIDATION REPORT RELIANCE INDUSTRIES LTD

VALIDATION OF DEMAND SIDE ENERGY EFFICIENCY PROJECT AT IPCL-VADODARA COMPLEX

REPORT No. **INDIA-val/65.49/2007**
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BUREAU VERITAS CERTIFICATION

VALIDATION REPORT

Date of first issue: 15/01/2007	Organizational unit: Bureau Veritas Certification Holding SA
Client: Reliance Industries Ltd	Client ref.: Mr. Kisor K Mukherjee

Summary:

Bureau Veritas Certification has made the validation of the of Demand side energy efficiency project at IPCL-Vadodara Complex project of Reliance Industries Ltd located in IPCL Complex, Vadodara, Gujarat ,India on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

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

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

In summary, it is Bureau Veritas Certification's opinion that the project correctly applies the baseline and monitoring methodology **Type IID Version 10** and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria.

Report No.: INDIA-val/65.49/2007	Subject Group: CDM
Project title: Demand side energy efficiency project at IPCL-Vadodara Complex	
Work carried out by: R. Seshapathy, Team Leader R Sankaranarayanan, Member P Srinivas, Member Saraf Shrikant Specialist	
Work verified by: Dr.Ashok Mammen	
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Indexing terms

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**Abbreviations change / add to the list as necessary**

BBH	Benzene - Butadiene Hydrogenation
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reductions
CL	Clarification Request
CO ₂	Carbon Dioxide
DOE	Designated Operational Entity
GHG	Green House Gas(es)
GOP	Gujarat Olefins Plant
I	Interview
IETA	International Emissions Trading Association
MoV	Means of Verification
MP	Monitoring Plan
NGO	Non Government Organization
PCF	Prototype Carbon Fund
PDD	Project Design Document
UNFCCC	United Nations Framework Convention for Climate Change



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1 INTRODUCTION

Reliance Industries Ltd has commissioned Bureau Veritas Certification to validate its CDM project Demand side energy efficiency project at IPCL-Vadodara Complex (hereafter called “the project”) at IPCL Complex, Vadodara, Gujarat, India,

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

1.1 Objective

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

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

1.2 Scope

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

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

1.3 GHG Project Description

The purpose of undertaking this project activity was recovery of Acetylene Wash Column overhead stream, which was being flared to prevent build-up of Vinyl acetylene in the system, and converting the same as fuel gas. This Fuel Gas is used to increase the gaseous fuel component and reducing LSHS in the fuel mix being fired in the Hot Oil Heater, HH-2 at LAB Plant. This results in useful utilization of the heat component of a



hydrocarbon stream that was being flared. The project activity also contributes towards reduction of emission of Greenhouse Gas from burning equivalent quantity of LSHS.

Flared gases or liquids represent wastage of energy. In the project activity, the AWC O/H continues to be used, although in a fully hydrogenated form of n-Butane, as a fuel. However, in this case, the evolved heat is gainfully employed to heat Process oil in the heater HH-2, thus partially displacing the higher CO₂ emitting LSHS.

The total CO₂ emission reduction for the entire crediting period of 10 years (2007 to 2016) has been calculated as 64940 tonne CO₂ – equivalent. The other benefits being reduction of GHG emissions considering global scenario, Sustainable development through better energy efficiency.

1.4 Validation team

The validation team consists of the following personnel:

R Seshapathy

Bureau Veritas Certification Team Leader, Climate Change Validator

R Sankaranarayanan

Bureau Veritas Certification Climate Change Validator

P Srinivas

Bureau Veritas Certification Climate Change Validator

Saraf Shrikant

Bureau Veritas Specialist

Dr Ashok Mammen

Bureau Veritas Certification, Internal reviewer

2 METHODOLOGY

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

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

- It organizes, details and clarifies the requirements a CDM project is expected to meet;



- It ensures a transparent validation process where the validator will document how a particular requirement has been validated and the result of the validation.

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

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



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

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

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



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

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

Figure 1 Validation protocol tables

2.1 Review of Documents

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

To address Bureau Veritas Certification corrective action and clarification requests Reliance Industries Ltd revised the PDD and resubmitted it on 08/2007.

The validation findings presented in this report relate to the project as described in the PDD version 08.



2.2 Follow-up Interviews

On 13/10/2006 and 14/10/2006 Bureau Veritas Certification performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of Reliance Industries Ltd were interviewed (see References). The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
Project Participant Reliance Industries Ltd, IPCL	Environmental legal requirements related to project Interaction with Stakeholders Sustainable development Technology used Monitoring plan Crediting period Approval of host country
Local Stakeholder Mr. D.V.Pandya Mr. V.P.Patel - Operator GOP Mr. R P Patel LAB Plant	Communication from Project proponent regarding the project Discussion of their concern / feed back about the project Response from the project proponent
Reliance Industries Ltd , CDM cell	Project category Additionality Source of data Monitoring Methodology National criteria for CDM projects

2.3 Resolution of Clarification and Corrective Action Requests

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

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

3 VALIDATION FINDINGS

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



- 1) The findings from the desk review of the original project design documents and the findings from interviews during the follow up visit are summarized. A more detailed record of these findings can be found in the Validation Protocol in Appendix A.
- 2) Where Bureau Veritas Certification had identified issues that needed clarification or that represented a risk to the fulfillment of the project objectives, a Clarification or Corrective Action Request, respectively, have been issued. The Clarification and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in the Validation Protocol in Appendix A. The validation of the Project resulted in **15** Corrective Action Requests and **07** Clarification Requests.
- 3) The conclusions for validation subject are presented.

3.1 Project Design

The project activity is an Energy efficiency and fuel switching measures for industrial facilities. The project activity may be principally categorised type II D, as per Categorization of Appendix B to the simplified modalities and procedures for small-scale CDM project activities.

Vadodara Complex is an integrated Petrochemical complex using Naphtha as the main feedstock. There are downstream production units to convert the cracked products from Naphtha Cracker to value added products.

In manufacturing Linear Alkyl Benzene (LAB), fuel is used in the hot oil heater HH-2. These Heaters are equipped to burn liquid, gaseous or a combination of both fuels. The Fuel Gas used is generated at Gujarat Olefins Plant (GOP) comprising of the Naphtha Cracker and Benzene-Butadiene Hydrogenation Units.

Non-condensable gases from Acetylene Wash Column overhead (AWC O/H) in the Butadiene plant, which contain Vinyl Acetylene (VA), were being flared. This stream was being flared as recommended by the process licensor in order to prevent build-up of the highly unstable and flammable Vinyl Acetylene in the system to dangerous levels causing in situ explosions. This stream was considered for recovery, and after hydrogenation to n-Butane, to augment Fuel Gas supply for use in the Hot Oil Heater HH-2 at LAB Plant. As a result, the additional quantity of LSHS that is fired in the heater can be reduced leading to overall energy efficiency.

The eductor installed uses Pyrolysis gasoline (PG) as the motive fluid and the recovered stream gets dissolved in the PG stream and is returned to the PG Feed Drum from where it is fed to the hydrogenation reactor to be recovered as saturated C₄, namely n-Butane, for augmenting the quantity of Fuel Gas available. This fuel gas is utilized in the LAB heater, HH-2, to replace an energy-wise equivalent quantity of LSHS, thus leading to energy conservation and reduction in CO₂ emission.



Bureau Veritas Certification recognizes that Reliance Industries Ltd Project is helping country fulfill its goals of promoting sustainable development. The project is expected to be in line with host-country specific CDM requirements because –

- Reduction in fossil fuel consumption - a non-renewable source of limited availability.
- Beneficial use of thermal energy, which was being wasted as Flare.
- Reduction in GHG emission, mainly carbon dioxide.
- Reduction in atmospheric vent of hydrocarbon.
- Encouraging other large facilities irrespective of sector to adopt small but effective fuel switch measures.

The project has been approved by Host country vide letter No. F.No/4/17/2006-CCC. Dt. 22/01/2007.

The Project Scenario is considered additional in comparison to the baseline scenario, and therefore eligible to receive Certified Emissions Reductions (CERs) under the CDM, based on an analysis, presented by the PDD, of investment, technological and other barriers, and prevailing practice.

The project design is sound and the geographical (IPCL Vadodara Complex, Gujarat, India) and temporal (20 years) boundaries of the project are clearly defined.

CARs 1, 3 & 4 were issued with respect to project design, and their resolution/conclusion applicable to project design. Refer appendix-A

Project duration and crediting period

The Project duration is 20 years and crediting period is 10 years.

3.2 Baseline and Additionality

The **Demand side energy efficiency project at IPCL-Vadodara Complex** project uses the approved Type II D (Ver 10): Energy efficiency and fuel switching measures for industrial facilities

Applicability conditions of the methodology.

The project is implemented at a single facility, i.e. the BBH Unit of Vadodara. Manufacturing Complex. The project is aimed at energy efficiency through fuel switching measure.

The Project activity improves energy efficiency of the system inside the project boundary by recovering the energy wasted in the flare and using it to heat oil in the heater, thus reducing the heat rate of the system.



The energy saving through this activity is **24.609 GWH thermal** per year.

PDD has clearly justified the applicability of methodology in section B2.

The Project proponents could provide evidences to show that the starting date of the CDM project activity falls between 1 January 2000 and the date of the registration of a first CDM project activity, bearing in mind that only CDM project activities submitted for registration before 31 December 2005. The starting date of the project was 13/03/2003 as evident from Purchase orders BM2/3101495 dt. 13/03/03 for Eductor. This was further supported by other evidences like, Technology weekly report, Energy audit review meeting,. Proof for the date of modification. Proposal documents GOP/BD/FCO/25 dt. 6th July 2002 etc.

The alternatives considered for determination of the baseline scenario in the context of the project activity include:-

- 1) Project activity without CDM benefit
- 2) Liquefying and cooling the recovered stream for processing as feed to hydrogenation unit
- 3) Product recovery of Vinyl Acetylene (VA) for use in organic synthesis
- 4) Continuation of existing practice

The possible alternative baseline scenarios are the following:

The Acetylene Wash Column Over-head (AWC O/H) stream, a stream consisting of C₄ hydrocarbons was being flared in the baseline case. Emission due to the combustion of LSHS equivalent to the n-Butane recovered, which is equivalent to the C₄ components in the AWC overhead stream is considered as baseline.

The validation team reviewed the project set up during the site visit. The possibility of LSHS not getting replaced by the recovered fuel gas was verified. It was observed recovery of AWC stream would cease whenever it cannot be burnt as fuel in the Heater. It was also observed that there was no chance of unidentified leakage of fuel gas. The detection system and emergency preparedness system are in place so as to avoid any fire incident. During the site visit it was observed that there was a chance that recovered gas can pass through to the vent line without monitoring. The PP has immediately taken a corrective action of installing a flow meter in the concerned pipeline.



In the absence of the project activity, the Hot Oil Heater, HH-2 would have continued to consume LSHS equivalent to the energy obtained from the recovered hydrocarbon stream that reaches the heater as a C₄ stream of n-Butane. Had the project activity not been carried out at Vadodara Complex, it would have, additionally, continued to flare the AWC O/H stream. Hence the baseline for the project activity will be the energy equivalent quantity of LSHS used in the Hot Oil Heater, HH-2 at LAB Plant.

The baseline options considered do not include those options that:

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

The most economically attractive alternative among the alternatives mentioned above has been selected as the baseline scenario, since such alternative is not expected to face any prohibitive barriers that could have prevented it from being taken up as the project activity.

CAR 2,5,6,7 & CL- 1,2,3,4 were issued related to baseline and Refer Appendix –A for their resolution/conclusion applicable to baseline

3.3 Monitoring Plan

The Project uses the approved Type II D (Ver 10): **Energy efficiency and fuel switching measures for industrial facilities as per** Categorization of Appendix B to the simplified modalities and procedures for small-scale CDM project activities.

Refer discussions on the validity of the methodology at section 3.2 above.

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

There was no replacement of equipment. Modification carried out in the existing set-up. Energy savings calculated using metered readings and lab analysis readings.

Relevant data necessary for determining the baseline of anthropogenic emissions by sources of GHGs within the project boundary have been identified clearly in line with the approved monitoring methodology. How such data will be collected and archived is also explained clearly.

PDD has documented the operational and management structure that the project operator will implement in order to monitor emission reductions and any leakage effects, generated by the project activity. The PDD has defined the procedures and responsibilities for GHG Performance, monitoring, measurement and reporting of data and dealing with



uncertainties and cover the responsibilities regarding plant operation and maintenance.

Correction has been made in the PDD vide version 07 to indicate that The AWC O/H stream will be analysed for 1,3-Butadiene, Ethyl Acetylene and Vinyl Acetylene content in the Laboratory, and the actual analysis values will be used for calculating the emission reduction in the project scenario. The actual value will be rejected in case the same is higher than the CI-1 value for that component as given in Table I.F of PDD. In such case CI-1 value will be used for that component to calculate emission reduction. This correction has been made as per the observations made by the accreditation committee. Consistency with respect to above observation is maintained in the PDD version 08 also.

CARs 8 to 13 and CL 6 & 7 were issued regarding Monitoring methodology and plan. Refer appendix -A for their resolution/conclusion applicable to monitoring plan.

Discussion on Additionality:

In accordance with paragraph 28 of the simplified modalities and procedures for small scale CDM projects, a simplified baseline and monitoring methodology is listed in Appendix B may be used if the project participant can demonstrate that project activity would otherwise not be implemented due to the existence of one or more barrier (s) listed in the attachment A to Appendix B.

The barriers analysis has identified those barriers namely Technological, Operational risk and prevailing practice that would prevent the implementation of the proposed project activity.

Technological barrier:

The project activity involves recovering a stream of hydrocarbons consisting primarily of Vinyl acetylene (VA), ethyl acetylene (EA) and 1,3-Butadiene (BD). Rapid decomposition of VA results in rapid release of heat leading to explosion. An explosion in a hydrocarbon stream of a Plant can result in a chain or series of explosions, resulting in loss of property and human life.. The related evidence was made available and verified during the site visit. The technology supplier namely "BASF" has categorically advised that liquid VA has strong tendency to polymerise. This can lead to explosion at higher temperature conditions. The validation team could access the Extract from BASF process manual.

Operational Risk:



The performance of the eductor is dependent on the pressure of the motive fluid, in this case Pyrolysis gasoline. Any build-up of pipe corrosion products on the suction nozzle or at the throat of the eductor will reflect immediately as a loss in eductor performance and result in upset of the recovery system. The risks involved in devising and implementing the system of recovery were sufficient to warrant non-approval of the scheme. Also it is noted that the plant operation in general of Vadodara Manufacturing Complex was not impacted by flaring of this stream as was being practiced according to the process licensor's recommendations and also there was no compelling reason for Vadodara Manufacturing Complex, other than GHG emission reduction.

DOE team has reviewed and accepted the technological barrier and operational barrier based on verification and validation of the proof submitted during the visit. In addition the project has also support of the barrier due to prevailing practice.

Prevailing Practice:

The prevailing practice in similar sized plants elsewhere, is liquefaction of this vent stream and cooling to 5 °C. This involves employing cooling and chilling systems that consume electricity that in turn results in emission of carbon dioxide at the generation stage. Hence, the alternative results in additional GHG emissions.

3.4 Calculation of GHG Emissions

As per Type IID Ver10, the baseline emission sources considered as below:

In the baseline the Acetylene Wash Column Overhead (AWC O/H) stream was being flared. In the project case the same stream is recovered and is used as fuel in the Process Heater at LAB Plant. In the baseline, the emission is due to the combustion of LSHS equivalent to the n-Butane recovered, which is equivalent to the C₄ components in the AWC overhead stream.

As required under methodology Type IID, the baseline emissions are calculated as CO₂ emission from combustion of LSHS, is limited to the extent of the energy available from the recovered AWC O/H stream



converted to n-Butane.. The detailed algorithms are described later under sections B.6 of the PDD..

In the project activity there is no increase in power consumption ,as no power consuming equipment was installed in the project activity .Moreover only a slip stream of the pumped fluid is used in the installed eductor. Hence the project emission is considered as zero.

Also there was no additional energy demand during the recovery process, it is only a catalytic hydrogenation process.

Considering these points, and in line with methodology Type II, D- Energy efficiency and fuel switching measures for industrial facilities of small scale CDM simplified modalities and procedure it was concluded that the project emission was zero

With reference to this methodology, project does not lead to any leakage.

The estimated annual average of approximately 6494 tCO₂e over the crediting period of emission reduction represents a reasonable estimation using the assumptions given by the project.

CAR-14 & 15 were issued with regards to calculation of GHG emissions. Refer appendix-A for their resolution/conclusion

3.5 Sustainable Development Impacts

The project also contributes to sustainable development in terms of environmental, socio-economic and technological development. This project contributes to the already existing sustainable developmental programmes of the company.

3.6 Comments by Local Stakeholders

The Local Stakeholders survey included the operators, engineers and technicians working in the manufacturing facility.



In the questionnaire submitted to all the local stakeholders none of them had given any negative or specific opinion about the project activity. All of them have appreciated the efforts put forward by the company for the betterment of the environment. The Stakeholders were of the opinion that because of the project activity there is no direct or indirect impact to the surrounding moreover the project activity is only going to reduce the Green house gas emissions which would have continued if this project was not commissioned.

Local stakeholder consultation meeting to discuss stakeholder concerns on the proposed Clean Development Mechanism (CDM) project – the Demand side energy efficiency project at IPCL-Vadodara Complex at IPCL Complex, Reliance Industries Ltd was carried out as detailed below:

The stakeholders have filled in questionnaires given to them to assess the impact of the project on the environment. The same were made available and verified by the validation team. The feedback survey was carried out from 28th July 2006 to 14th Oct 2006.

These views were endorsed by the stakeholders interviewed during the site visit of the validation activity.

IPCL is a petrochemical complex established more than 35 years ago. The project site is inside the Vadodara manufacturing complex. IPCL is also situated in the midst of the other plants in a specified industrial area. Being a petrochemical industry, the complex has been certified under ISO 9001, ISO 14001 and OHSAS 18001 standards. As per these standards' requirements as well as other legal requirements, IPCL has already put in place detailed On-site emergency plans. These plans have been communicated to the neighbouring industries, Fire station and Disaster management Cell. Mock drills also have been regularly conducted. The validation team has verified and considered all these points before accepting stakeholder consultation process.

The list of participants, along with a notice inviting participation to interested stakeholders; the project participants maintain photographic record of the stakeholder meeting proceedings.

The stakeholders viewed project the Demand side energy efficiency project at IPCL-Vadodara Complex project as contributing to local environmental benefits and socio-economy. Overall, there was agreement that the project activity was a beneficial project from the local sustainable development. The local stakeholders interviewed during the site visit of the validation activity endorsed these views..



4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

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

Bureau Veritas Certification published the project documents on the UNFCCC CDM website (<http://cdm.unfccc.int>) on 12/09/2006 and invited comments within 11/10/2006 by Parties, stakeholders and non-governmental organizations.

Comments were received from 1 person. The project participants provided response to these comments. Due account of these comments and the respective responses was taken while making the validation opinion. The details of these comments received, responses by the project participant/s and the explanation of how due account of these is taken by the validation team are attached as Appendix B with this validation report.

5 VALIDATION OPINION

Bureau Veritas Certification has performed a validation of the Demand side energy efficiency project at IPCL-Vadodara Complex Project in India. The validation was performed on the basis of UNFCCC criteria and host country criteria and also on the criteria given to provide for consistent project operations, monitoring and reporting.

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

Project participant/s used an approach similar to the tool for demonstration of the additionality. The PDD provides analysis of technological and other barriers to determine that the project activity itself is not the baseline scenario.

By synthetic description of the project, the project is likely to result in reductions of GHG emissions partially. An analysis of the technological and other barriers demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. Given that the project is implemented and maintained as



designed, the project is likely to achieve the estimated amount of emission reductions.

The reviews of the project design documentation (Version No 02 to 08) and the subsequent follow-up interviews have provided Bureau Veritas Certification with sufficient evidence to determine the fulfillment of stated criteria. In our opinion, the project correctly applies and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria.

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

6 REFERENCES

Category 1 Documents:

Documents provided by Type the name of the company that relate directly to the GHG components of the project.

1	Proposal documents. GOP/BD/FCO/25 dt. 6 th July 2002
2	BASF Safety Manual (Revision 7).
3	Technology Weekly Report (dt: 27.06.2003)
4	Purchase orders BM2/3101495 dt. 13/03/03 for Eductor
5	GPCB consent – Consent order no: 3225, dated: 30.07.2004 and valid up to 26.11.2007
6	Lab analysis for AW stream for VA2 – flare.
7	Log sheet of 24 th June 2003 for process start mention.
8	Energy Audit review meeting dt. 28/06/02
9	Revision of default Net Calorific Value, Carbon Content Factor and Carbon Oxidization Factor for various fuels in 2006 IPCC GHG Inventory Guideline August 2005
10	Log sheet Ex 01/OCP/009 for the Fuel gas, LSHS consumption used in Hot oil heater 2.
11	Project design document version 2,3, 4, 5, 6, 7 and 8
12	Host country approval F. No. 4/17/2006- CCC Dt. 22 nd January 2007
13	Proof for the date of modification. Proposal documents GOP/BD/FCO/25 dt. 6 th July 2002.
14	LSHS / Fuel gas consumption pattern in HH2
15	Stake holders records – Questionnaires / Feedback



16	ENERGY AUDIT REVIEW MEETING dt. 28/06/02
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Category 2 Documents:

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

/1/	Kyoto Protocol to the United Nations Framework Convention on Climate Change, United Nations, Dec 1997
/2/	As per Appendix B of the simplified modalities and procedures for small-scale CDM project activities, the name and reference of approved monitoring methodology applied to this project activity are: Type II D (Ver 10): Energy efficiency and fuel switching measures for industrial facilities" .
/3/	Guidelines for completing SSC PDD, Version 3 December 2006

Persons interviewed:

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

The persons interviewed during the validation of Demand side energy efficiency project at IPCL-Vadodara Complex, India

IPCL , Reliance Industries Ltd, Vadodara

Mr Anil Kewal Ramani – GM (Central Technical services)

Mr. M C Rawal GM (Operations)

Mr. D. D. Chauhan (Sr Manager CTS)

Consultant – Reliance Industries Ltd, CDM Cell, Mumbai

Mr. Sujit Das DGM(CDM)

Mr. Yogesh Natsu (Asst.Manager –CDM

Local stakeholders

Mr. D.V.Pandya

Mr. V.P.Patel - Operator GOP BBHO.

Mr. R P Patel LAB Plant



APPENDIX A:

VALIDATION PROTOCOL

VALIDATION REPORT

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

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference/ Comment
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3	Kyoto Protocol Art. 12.2	Table 2, Section A.4.3.2	Table 2, Section E.4.1
2. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof	Kyoto Protocol Art. 12.2, Simplified Modalities and Procedures for Small Scale CDM Project Activities §23a	Ministry of Environment & Forest (DNA). has approved the project.	Table 2, Section A2.3
3. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC	Kyoto Protocol Art. 12.2.	Table 2 Section B.3.1	Table 2, Section E.4.1
4. The project shall have written approval of voluntary participation from the designated national authorities of each party involved	Kyoto Protocol Art. 12.5a, Simplified Modalities and Procedures for Small Scale CDM Project Activities §23a	Ministry of Environment & Forest (DNA). has approved the project	Table 2, Section A.3.2
5. The emission reductions should be real, measurable and give long-term benefits related to the mitigation of climate change	Kyoto Protocol Art. 12.5b	Table 2, Section B.2	Table 2, Section E.1 to E.4
6. Reduction in GHG emissions must be additional to any that would occur in absence of the project	Kyoto Protocol Art. 12.5.c,	Table 2, Section B.2.	Table 2, Section B.2.1



VALIDATION REPORT

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference/ Comment
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	12.5.c, Simplified Modalities and Procedures for Small Scale CDM Project Activities §26		B.2.1
7. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance	Marrakech Accords (Decision 17/CP.7)	The project will not receive any public funding from parties included in Annex 1	
8. Parties participating in the CDM shall designate a national authority for the CDM	Marrakesh Accords (CDM modalities§ 29)	Ministry of Environment & Forest, Government of India is Designated National Authority for India	-
9. The host country shall be a Party to the Kyoto Protocol	Marrakesh Accords (CDM modalities§ 30)	Yes	-
10. The proposed project activity shall meet the eligibility criteria for small scale CDM project activities set out in § 6 (c) of the Marrakesh Accords and shall not be a debundled component of a larger project activity	Simplified Modalities and Procedures for Small Scale CDM Project Activities §12a,c	Table 2, Section A.4.2	-
11. The project design document shall conform with the Small Scale CDM Project Design Document format	Simplified Modalities and Procedures for Small Scale CDM Project Activities, Appendix A	Table 2, Section A 4,2	-



VALIDATION REPORT

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference/ Comment
12. The proposed project activity shall confirm to one of the project categories defined for small scale CDM project activities and uses the simplified baseline and monitoring methodology for that project category	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22e	Table 2 , Section A 4.2	Section A 4,2,2
13. Comments by local stakeholders are invited, and a summary of these provided	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22b	Local stakeholders comments received and due accounts taken.	Table 2, Section G
14. If required by the host country, an analysis of the environmental impacts of the project activity is carried out and documented	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22c	Not required for this project.	Table 2, Section F
15. Parties, stakeholders and UNFCCC accredited NGOs have been invited to comment on the validation requirements and comments have been made publicly available	Simplified Modalities and Procedures for Small Scale CDM Project Activities §23b,c,d	Web hosting done and due accounts taken.	Appendix B of Validation report.

Table 2 Requirements Checklist

CHECKLIST QUESTION	Ref.	MoV ⁱ	COMMENTS	Draft Concl.	Final Concl.
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VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ¹	COMMENTS	Draft Concl.	Final Concl.
A. Project Description The project design is assessed.					
A.1.Small scale project activity					
1. Title of the small scale project	1	DR	Demand side energy efficiency project at IPCL-Vadodara Complex Latest PDD version 8 dt. 18/08/07	OK	OK
A .2 Assessment of the purpose of the project and its contribution to the sustainable development.					
A.2.1 Will the project create other environmental or social benefits than GHG emission reductions?	1	DR I	Yes, <ul style="list-style-type: none"> • Direct / Indirect employment benefits accruing during project stage • Reduction in consumption of fossil fuel. LSHS 	OK	OK
A 2..2 Will the project create any adverse environmental or social effects?	1	DR	No adverse environmental or social effects are envisaged. Ambient Air monitoring Records. Air consents copy to be provided. Hazardous waste generation and disposal.	OK	OK
A 2.3 Is the project in line with sustainable development policies of the host country?	1	DR	Host country approval to be verified. Presentation already made in 30 th Aug	CAR 1	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ³	COMMENTS	Draft Concl.	Final Concl.
A.2.4 Is the project in line with relevant legislation and plans in the host country?			In the manufacturing sector in India, energy efficiency projects are not under the purview of any legal act	OK	OK
A.3 Review of Project participant details:					
A.3.1 Are the names of parties indicated as per the specified format ?			Reliance Industries Limited	OK	OK
A.3.2 Is the project approved by host party?			Refer A 2.3	CAR1	OK
A.4.1. Assessment of Technical description of the project					
A.4.1.1 Are the project's spatial (geographical) boundaries clearly defined?	1	DR I	Spatial boundary is defined in PDD as: Country :India, State: Gujarat; District: Vadodara; located at the Petrochemical Zone Refer B 3 of PDD.	OK	OK
A.4.1.2 Are the project's system (components and facilities used to mitigate GHG's) boundaries clearly defined?	1	DR	Refer B3of PDD; This includes the Acetylene wash column, Recovery system Pyrolysis Gasoline Hydrogenation KO drum, Fuel gas header and LAB hot oil heater	OK	OK
A.4.1.3. Does the project design engineering reflect current good practices?	-	DR	Yes. DCS control in place.	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ³	COMMENTS	Draft Concl.	Final Concl.
A.4.2. It is assessed whether the project qualifies as small scale CDM project activity.					
A.4.2.1 Does the project qualify as a small scale CDM project activity as defined in paragraph 6 (c) of decision 17/CP.7 on the modalities and procedures for the CDM?	1	DR	Yes. The project activity involves recovery of waste hydrocarbon stream i.e. Acetylene wash column overhead stream and converting into fuel gas in the Hot oil heater at LAB plant which is presently using LSHS. Energy saving through this activity is 24.609 GWh _{Th} per year less than 180 GWh _{th}	OK	OK
A.4.2.2 Does proposed project activity confirm to one of the project categories defined for small-scale CDM project activities?	2	DR	Type II D -Energy efficiency and fuel switching measures for industrial facilities. Justification is not adequate in the PDD. PDD needs to explain why TYPE IID was selected instead of type IIIB	CAR-2	OK
A.4.2.3 Will the project results in technology transfer to the host country?	-	DR	No transfer technology	OK	OK
A.4.2.5 Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period? Does the project make provisions for meeting training and maintenance needs?		DR I	Initial training and maintenance efforts not addressed in the PDD	CAR-3	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ³	COMMENTS	Draft Concl.	Final Concl.
A.4.3. It is assessed how the anthropogenic emissions of anthropogenic greenhouse gas (GHGs) by sources are to be reduced by the proposed small-scale project activity					
A.4.3.1. Does the PDD take account of national / sectoral policies ?	1	DR	NO , PDD does not discuss about sectoral / national policies	CAR-4	OK
A.4.3.2 Are the details of emission reduction given in the specified tabular format ?	1	DR	Yes, Annual average estimate is 6494 tonnes of CO ₂ e	OK	OK
A.4.4 Availability of Public Funding and its use reviewed					
A.4.4 Is there any public funding ? If yes, is there any affirmation for not diverting the fund ?	1	DR	No public funding.	OK	OK
A 4.5 It is determined whether the proposed project activity is not a bundled component of a larger project activity.					
A.4.5 The small-scale project activity is not a debundled component of a larger project activity?	1	DR I	Not a de-bundled project. . IPCL has not registered or applied for registration of another small-scale project. Within 1 km of the project boundary Refer A.4.5 of PDD This is the first project. In IPCL Vadodara complex	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ¹	COMMENTS	Draft Concl.	Final Concl.
B. Project Baseline The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.					
B.1. Baseline Methodology It is assessed whether the project applies an appropriate baseline methodology.					
B.1.1. Is the selected baseline methodology in line with the baseline methodologies provided for the relevant project category?	1,2	DR	Approved methodology For Type II D, used. However Refer A.4.2.2	CAR-2	OK
B.1.2. Is the baseline methodology applicable to the project being considered?	1,2	DR	This methodology is applicable to Renewable energy projects under Thermal Energy for the user. But no electrical energy component. Refer A.4.2.2	CAR-2	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ¹	COMMENTS	Draft Concl.	Final Concl.
B.2. Baseline Determination It is assessed whether the project activity itself is not a likely baseline scenario and whether the selected baseline represents a likely baseline scenario.					
B.2.1. Is the application of the baseline methodology and the discussion and determination of the chosen baseline transparent and conservative?	1	DR I	Refer CAR-2	CAR-2	OK
B 2.2 Does the measures replace existing equipment or be installed in a new facility.	1	DR I	The project involves recovery of waste hydrocarbon stream by using an Eductor using Pyrolysis Gasoline as a motive fluid to trap escaping hydrocarbons.	OK	OK
B.2.3 The aggregate energy savings of a single project may not exceed the equivalent of 15 GWh _e per year. A total saving of 15 GWh _e per year is equivalent to a maximum saving of 180 GWh_{th} per year in fuel input to the generation unit.	1	DR	Typographical error "Enrgy" can be rectified. Refer Table B-1 Total energy saving in terms of GWH th is less than 180 GWHth.	CL-1	OK
B.3 Addittonality :- It is assessed how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered <u>small-scale CDM project activity</u> :					



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ³	COMMENTS	Draft Concl.	Final Concl.
B.3.1 Is it demonstrated that the project activity itself is not a likely baseline scenario due to the existence of one or more of the following barriers: investment barriers, technology barriers, barriers due to prevailing practice or other barriers?	1	DR	<p>Refer B.5 of PDD Technological barriers and barriers due to prevailing practices have been discussed and demonstrated.</p> <p>Additionality is proved through a stepwise approach..</p> <p>The project mainly faces safety risk rather than operational risk . Supported by BASF (supplier) document. However during site visit it was observed that the hot oil heater is already using Fuel gas stream. This means that IPCL already had experience in handling fuel gas. On this context it is not clearly explained why this is project is not a "business as-usual " case.</p> <p>At the time of site visit , it was informed that proof for serious consideration of CDM option was available at Mumbai HO. This has to be provided to validation team.</p> <p>As per step 4, this project was part energy conservation awarded project. Proof has to be produced.</p>	<p>CL-2</p> <p>CL-3</p>	<p>OK</p> <p>OK</p>



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ³	COMMENTS	Draft Concl.	Final Concl.
B.3.2 Are relevant national and/or sectoral policies and circumstances taken into account?	-	DR	It is not clear from the PDD whether relevant national and/or sectoral policies have been taken into account. Are the CREP requirements considered ? Promotional policies of Govt. to be indicated. Hazop study done on 15th July 2003. Is there any approval from relevant regulatory authority for the modification done in the existing set-up ?	CL-4	OK
B.4 It is assessed how the definition of the project boundary related to the <u>baseline methodology</u> selected is applied to the <u>small-scale project activity</u> .					
B 4.1 Does the selected baseline represent the most likely scenario describing what would have occurred in absence of the project activity?	1,2	DR	In the absence of the project activity use of LSHS would have continued at the same rate. But B.3 section of PDD does not indicate LSHS in the diagramme. Also during the site visit it was understood that the AWC stream is augmented in the existing Fuel gas system. This is not clearly depicted in the diagram.	CAR-5	OK
B.5 Baseline :					
B.5 .1 Is the baseline selection compatible with the available data?	1	DR	Data provided in the PDD takes into account the concentration of Acetylene in Acetylene Wash Column stream that is to be recovered	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ³	COMMENTS	Draft Concl.	Final Concl.
			and converted into n- Butane and the emission factors as well as NCVs of LSHS and n- Butane as per IPCC values Baseline development is based on the assumption that LSHS will reduce due to the augmentation of Fuel gas. However there is the possibility that the other component of fuel gas can be replaced by AWC stream and LSHS may not be replaced. This aspect has not been considered in the baseline development. Lab analysis data - AWC verified.	CAR-6	OK
B.5.1.2 Is the date of completion is provided in the specified format?	1	DR	Yes.	OK	OK
B.5.1.3 detailed information on the demonstration of additionality and the determination of baselines, including related calculations, be either integrated in PDDs or submitted as annexes to PDDs.	1	DR I	Detailed calculation was demonstrated during the site visit. However it was not part of PDD.	CAR-7	OK
C Duration of the Project / Crediting Period It is assessed whether the temporary boundaries of the project are clearly defined.					
C .1 Are the project's starting date and operational lifetime clearly defined?	1	DR	Starting date of procurement: 13/03/2003 Project commissioning : 24/06/2003 (ref page 18 of PDD)	CL-5	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ¹	COMMENTS	Draft Concl.	Final Concl.
			Expected operational life 20 years. Evidence to be provided.		
C. 2 Is the crediting period clearly defined (seven years with two possible renewals or 10 years with no renewal)?	1	DR	Opted for a fixed crediting period of 10 years starting from date of registration	OK	OK
Monitoring Plan The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed.					
D.1. Monitoring Methodology It is assessed whether the project applies an appropriate monitoring methodology.					
D.1.1 Is the selected monitoring methodology in line with the monitoring methodologies provided for the relevant project category?	1,2	DR	Choice of the monitoring methodologies is indicated in the PDD as Type II D Ver 10 The monitoring methodology is not as per Type IID. I.e Energy saving due to the project is not determined. Selection of Type IID instead of Type IIIB needs to be justified	CAR-8	OK
D.2. Applicability of monitoring methodology					
D.2.1 Is the monitoring methodology applicable to the project being considered	1,2	DR	Choice of the monitoring methodologies is indicated in the PDD as Type II D Ver 10		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ¹	COMMENTS	Draft Concl.	Final Concl.
and justified ?			Refer above		
D.2.2 Is the application of the monitoring methodology transparent?	1,2	DR	The data is being monitored by IPCL on daily basis refer section B 7.1 of PDD.	OK	OK
D.2.3 Will the monitoring methodology gives opportunity for real measurements of achieved emission reductions?	1	DR	PDD is silent about plan for calibration of monitoring equipments to ensure real measurements of achieved emission reductions. Calibration Plan verified.	CL -6	OK
D.3. Monitoring of Project Emissions It is established whether the monitoring plan provides for reliable and complete project emission data over time.					
D.3.1 Are the choices of project emission indicators reasonable?	1	DR	Yes	OK	OK
D.3.2 Will it be possible to monitor / measure the specified project emission indicators?	1	DR	Provision for monitoring this data is made in Section B 7.1 of PDD. Monitoring plan did not include determination and monitoring of Hot oil Heater efficiency.	CAR-9	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ¹	COMMENTS	Draft Concl.	Final Concl.
D.3.3 Do the measuring techniques and frequencies comply with good monitoring practices?	1	DR	Daily data collection. Provision for reporting the DCS on line analyser readings for VA, EA and 1,3 BD in % weight not established. RReliability of the DCS on line analyser – Calibration and frequency needs to be established.	CAR-10	OK
D.3.4 Are the provisions made for archiving project emission data sufficient to enable later verification?	1	DR	Yes, electronic archiving is for period of 2 years after the crediting period i.e. 10 + 2 years. Electronic archiving is also available. Data protection system is not demonstrated.	CL-7	OK
D.4 It is assessed how quality assurance and quality control procedures are undertaken.					
D.4.1 Requirement of QA/QC procedures explained and discussed	1	DR I	Uncertainty of flow measurement not addressed. Reliability of the on off valve to flare not ensured. It is to be noted that passing of this valve means VA flared is diverted towards Flare. This can lead to wrong accounting for CERs	CAR-11	OK
D.5 Project Monitoring D.5.1 It is assessed whether the monitoring plan provides for reliable and complete leakage data					



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ¹	COMMENTS	Draft Concl.	Final Concl.
Over time.					
D.5.1.1 If applicable, are the choices of leakage indicators reasonable?	1	DR	Not applicable.	OK	OK
D.5.1.2 If applicable, will it be possible to monitor / measure the specified leakage indicators?	1	DR	Not applicable.	OK	OK
D.5.1.3 If applicable, do the measuring technique and frequency comply with good monitoring practices?	1	DR	Not applicable.	OK	OK
D.5.1.4 If applicable, are the provisions made for archiving leakage data sufficient to enable later verification?	1	DR	Not applicable.	OK	OK
5.2 Monitoring of Baseline Emissions It is established whether the monitoring plan provides for reliable and complete project emission data over time.					
D.5.2.1 Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	1	DR	Reasonable as per approved monitoring plan.	OK	OK
D.5.2.2. Will it be possible to monitor / measure the specified baseline emission indicators?	1	DR	Monitoring plan did not include efficiency estimation of the hot oil heater. IPCC factor for nButane not referred in PDD	CAR-12	OK
D.5.2.3 Do the measuring technique and frequency comply with good monitoring	1	DR	Yes.	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ³	COMMENTS	Draft Concl.	Final Concl.
practices?		I			
D.5.2.4 Are the provisions made for archiving baseline emission data sufficient to enable later verification?	1	DR	Data is being collected electronically. Archiving provision is also indicated	OK	OK
D.5.3. Project Management Planning It is checked that project implementation is properly prepared for and that critical arrangements are addressed.					
D.5.3.1 Is the authority and responsibility of project management clearly described?	1	DR	The management has established a project specific GHG emission reduction management system which is hooked to the ISO system of the plant Not evident	CAR-13	OK
D.5.3.2 Is the authority and responsibility for registration monitoring measurement and reporting clearly described?	1	DR I	The management has established a project specific GHG emission reduction management system which is hooked to the ISO system of the plant Not evident	CAR-13	OK
D.5.3.3 Are procedures identified for training of monitoring personnel?	1	DR I	The management has established a project specific GHG emission reduction management system which is hooked to the ISO system of the plant Not evident	CAR-13	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ³	COMMENTS	Draft Concl.	Final Concl.
D.5.3.4 Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	1	DR 	PDD has not identified any emergency situations leading to unintended emissions. Not evident	CAR-13	OK
D.5.3.5 Are procedures identified for calibration of monitoring equipment?	1	DR 	Calibration frequency of not defined. Also the instruments requiring calibration have not been identified. Not evident	CAR13	OK
D.5.3.6 Are procedures identified for maintenance of monitoring equipment and installations?	1	DR 	Procedures for maintenance of monitoring equipment and installations are not identified. Not evident	CAR-13	OK
D.5.3.7 Are procedures identified for monitoring, measurements and reporting?	1	DR 	Yes, Technology department monitors the data on monthly basis. As per the monitoring plan indicated in B 7. of PDD Not evident	CAR-13	OK
D.5.3.8 Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	1	DR 	Procedure for records handling not identified	CAR-13	OK
D.5.3.9 Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	1	DR 	The management has established a project specific GHG emission reduction management system, which is hooked to the ISO system of the plant. Not evident	CAR -13	OK
D.5.3.10 Are procedures identified for internal audits of GHG project compliance with operational requirements as applicable?	1	DR 	The management has established a project specific GHG emission reduction management system which is hooked to the ISO system of the plant Not evident	CAR-13	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ³	COMMENTS	Draft Concl.	Final Concl.
D.5.3.11 Are procedures identified for project performance reviews?	1	DR 	The management has established a project specific GHG emission reduction management system which is hooked to the ISO system of the plant Not Evident	CAR-13	OK
D.5.3.12 Are procedures identified for corrective actions?	1	DR 	Procedure for corrective actions is not identified. Not evident	CAR -13	OK
Calculation of GHG emission It is assessed whether all material GHG emission sources are addressed and how sensitivities and data uncertainties have been addressed to arrive at conservative estimates of projected emission reductions.					
E.1. Project GHG Emissions The validation of predicted project GHG emissions focuses on transparency and completeness of calculations.					
1. Are all aspects related to direct and indirect project emissions captured in the project design?	1	DR	In the project activity there is no increase in power consumption ,as no power consuming equipment was installed in the project activity .Moreover only a slipstream of the pumped fluid is used in the installed eductor. Hence the project emission is considered as zero. The increase in the energy consumption is found to be negligible. There was no additional energy	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ³	COMMENTS	Draft Concl.	Final Concl.
			demand during the recovery process (hydrogenation process). Considering these points, it was concluded that the project emission was zero		
2. Have all relevant greenhouse gases and sources been evaluated?	1	DR	Not applicable	OK	OK
3. Do the methodologies for calculating project emissions comply with existing good practice?	1	DR	Not applicable	OK	OK
4. Are the calculations documented in a complete and transparent manner?	1	DR	Not applicable	OK	OK
5. Have conservative assumptions been used?	1	DR	Not applicable	OK	OK
6. Are uncertainties in the project emissions estimates properly addressed?	1	DR	Not applicable	OK	OK
E.2. Leakage It is assessed whether there leakage effects, i.e. change of emissions which occurs outside the project boundary and which are measurable and attributable to the project, have been properly assessed.					
1. Is leakage calculation required for the selected project category and if yes, are the	1	DR	Not applicable	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ¹	COMMENTS	Draft Concl.	Final Concl.
relevant leakage effects assessed?					
2. Are potential leakage effects properly accounted for in the calculations (if applicable)?	1	DR	Not applicable	OK	OK
3. Do the methodologies for calculating leakage comply with existing good practice (if applicable)?	1	DR	Not applicable	OK	OK
4. Are the calculations documented in a complete and transparent manner and (if applicable)?	1	DR	Not applicable	OK	OK
5. Have conservative assumptions been used (if applicable)?	1	DR	Not applicable	OK	OK
6. Are uncertainties in the leakage estimates properly addressed (if applicable)?	1	DR	Not applicable	OK	OK
E.3 Baseline GHG Emissions The validation of predicted baseline GHG emissions focuses on transparency and completeness of calculations.					
1. Are the baseline emission boundaries clearly defined and do they sufficiently cover sources for baseline emissions?	1	DR	Yes, the baseline emission boundaries have been defined in B 4 and B 5 of the PDD and have adequately cover the baseline sources.	OK	OK
2. Are all aspects related to direct and indirect baseline emissions captured in the project	1	DR	Yes	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ³	COMMENTS	Draft Concl.	Final Concl.
design?					
3. Have all relevant greenhouse gases and sources been evaluated?	1	DR	Yes.	OK	OK
4. Do the methodologies for calculating baseline emissions comply with existing good practice?	1	DR	Yes, The PDD has considered baseline emissions as well as the project emissions.	OK	OK
5. Are the calculations documented in a complete and transparent manner?	1	DR	Calculations for the values are provided in Table I. C of PDD are not available.	CAR-14	OK
6. Have conservative assumptions been used?	1	DR	Conservative assumption is not adequately explained.	CAR-15	OK
7. Are uncertainties in the baseline emissions estimates properly addressed?	1	DR	Not properly addressed	CAR-15	OK
E.4 Emission Reductions Validation of baseline GHG emissions will focus on methodology transparency and completeness in emission estimations.					
1. Will the project result in fewer GHG emissions than the baseline case?	1	DR	Yes, as fossil fuel is being replaced by recovered n- butane from the gases going to flare.	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ³	COMMENTS	Draft Concl.	Final Concl.
F. Environmental Impacts It is assessed whether environmental impacts of the project are sufficiently addressed.					
1. Does host country legislation require an analysis of the environmental impacts of the project activity?	1	DR I	Not required. However EIA assessment has been carried out by the project proponent	OK	OK
2. Does the project comply with environmental legislation in the host country?	1	DR I	Yes	OK	OK
3. Will the project create any adverse environmental effects?	1	DR	No.	OK	OK
4. Have environmental impacts been identified and addressed in the PDD?	1	DR	Not required	OK	OK
G. Comments by Local Stakeholder Validation of the local stakeholder consultation process.					
1. Have relevant stakeholders been consulted?	1	DR I	PDD indicates that a stakeholder consultation has taken place. Feedback from interested parties / stakeholders were seen..	OK	OK
2. Have appropriate media been used to invite comments by local stakeholders?	1	DR	PDD indicates that questionnaires have been to given to local stakeholders to invite their comments.	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ¹	COMMENTS	Draft Concl.	Final Concl.
3. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	1	DR	No regulation is required	OK	OK
4. Is a summary of the comments received provided?	1	DR	No adverse comments received as per E of PDD from any stakeholder. verified in site visit	OK	OK
5. Has due account been taken of any comments received?	1	DR	No action required as comments have not been received from local stake holders verified in site visit	OK	OK

Table 3 Requirements of Methodology : AMS II D Version 10

CHECKLIST QUESTION	Ref.	MoV [*]	COMMENTS	Draft Concl	Final Concl
A. Technology and Measures:					
A. 1. : Does the project comprise of any energy efficiency and fuel switching measure implemented at a single industrial or mining and mineral production facility ?	1	DR	The project is implemented at a single facility, i.e. the BBH Unit of Vadodara Manufacturing Complex.	OK	OK
A.2. Is it primarily an energy efficiency project ?	1	DR	The project is aimed at energy efficiency	OK	OK



VALIDATION REPORT

			through fuel switching measure. Refer CAR-2 also		
A..3 Is the total saving less than 60 GWhe per year (equivalent to a maximal saving of 180 GWhth per year in fuel input) ?	1	DR	The energy saving through this activity is 24.609 GWH_{Th} per year.	OK	OK
A. 1.4 Does the measures replace existing equipment or be Installed in a new facility?	1	DR	The project involves recovery of waste hydrocarbon stream by using an Educator using Pyrolysis Gasoline as a motive fluid to trap escaping hydrocarbons.	OK	OK
B Boundary					
B,1 Does the PDD define the project boundary ? Is it acceptable ?	1	DR	Yes	OK	OK
C. Baseline					
C.1 In the case of replacement, modification or retrofit measures, is the baseline consists of the energy baseline of the existing facility or sub-system that is replaced, modified or retrofitted ? In the case of a new facility, is the energy baseline consists of the facility that would otherwise be built ?	1	DR	In the absence of the project activity, the Hot Oil Heater, HH-2 would have continued to consume LSHS equivalent to the energy obtained from the recovered hydrocarbon stream that reaches the heater as a C ₄ stream of n- Butane. Had the project activity not been carried out at Vadodara Complex, it would have, additionally, continued to flare the AWC O/H stream. Hence the baseline for the project activity will be the energy equivalent quantity of LSHS used in the Hot Oil Heater, HH-2 at LAB Plant.	OK	OK
C.2 Is there any transfer of equipment ?	1	DR	No transfer of equipment	OK	OK



VALIDATION REPORT

C.3 IS there any replacement of equipment	1	DR	No replacement	OK	OK
D Leakage					
D.1. Is Leakage to be considered ?	1	DR	No leakage applicable	OK	OK
E. Monitoring					
E.1 In the case of replacement, modification and retrofit measures Does the monitoring consist of: (a) Documenting the specifications of the equipment replaced; (b) Metering the energy use of the industrial or mining and mineral production facility, processes or the equipment affected by the project activity; (c) Calculating the energy savings using the metered energy obtained from subparagraph	1	DR	E.1.a Not applicable E.1.b. Metering is available & verified during the site visit E.1.c. Meter readings used in the calculation	OK	OK
E.2. In the case of a new facility, Does the monitoring consist of: (a) Metering the energy use of the equipment installed; (b) Calculating the energy savings due to the equipment installed.	1	DR	Not a new facility.	OK	OK
E.3. In case the project activity involves fossil fuel switching measures leakage resulting from fuel extraction, processing, liquefaction, transportation, regasification and distribution of fossil fuels outside of the project boundary shall be considered. The guidance provided in the leakage section of ACM0009 as in annex 1 of this document shall be followed for this purpose.	1	DR	Not applicable	OK	OK



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E.4. In case the project activity involves the replacement of equipment, and the leakage effect of the use of the replaced equipment in another activity is neglected, because the replaced equipment is scrapped, an independent monitoring of scrapping of replaced equipment needs to be implemented.	1	DR	Not applicable	OK	OK
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Table 4 Legal Requirements

CHECKLIST QUESTION	Ref.	MoV ¹	COMMENTS	Draft Concl	Final Concl
1. Legal requirements					
1.1. Is the project activity environmentally licensed by the competent authority?	Consents	DR	Yes. Environmental clearance from MOEF is evident. Similarly consents under Air and Water act as well as Authorization for Hazardous waste was evident.	OK	OK
1.2. Are the conditions of the environmental license being met?	Consents	DR	Yes. Various conditions as mentioned in	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ¹	COMMENTS	Draft Concl	Final Concl
		ent s	consents are being monitored are met.		
1.3 Are the conditions of the Designated National Authority being met?	HCA	DR	Refer A.3.2	OK	OK

Ref: 1: guidelines for completing the simplified project design document Version 03 22nd Dec 2006.

2. Appendix B of the simplified M & P for small-scale CDM project activities – Type IID Version 10.

Table 5 Resolutions of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2/3/4	Summary of project owner response	Validation team conclusion
CAR.1 Host Country approval is still awaited.	A 2.3/	Host Country approval received. Vide Doc. No. F No. 4/17/2006-CCC dt. 22/01/07	CAR closed satisfactorily .



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Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2/3/4	Summary of project owner response	Validation team conclusion
	A 3.2		
<p>CAR-2</p> <p>Project uses Type II D -Energy efficiency and fuel switching measures for industrial facilities.</p> <p>Justification is not adequate in the PDD. PDD needs to explain why TYPE IID was selected instead of type IIIB</p>	<p>A 4.2.3 /B.1.1/B1.2/ B.2.1</p>	<p>The applicability of the methodology AMS II.D Ver 10 is explained in PDD Ver 08. The monitoring methodology adopted is to calculate the energy saving as a result of the project activity as desired in the methodology</p>	<p>After the site visit , it was made clear to the CDM validation team. The main focus was to save the energy wasted in the flare rather than save LSHS. But the project has helped in reducing the LSHS by its partial replacement by recovered fuel gas. CAR closed satisfactorily</p>



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2/3/4	Summary of project owner response	Validation team conclusion
CAR-3 Initial training and maintenance efforts not addressed in the PDD	A.4.2.5	Extensive on-the-job training of operating personnel was required to ensure that the pressure and flow conditions required for smooth and trouble-free recovery of gases are met without compromising the safety of the plant. There is also a provision of refresher training programmes to hold the gains made due to the project. Training was imparted on the scheme of recovery of AWC Overhead stream, the related safety aspects and precautions to be taken in operation. The operating personnel were also trained on the installed safety systems and their operation. As a continuing practice, such training is organized every year as a refresher.	Records verified CAR closed satisfactorily
CAR 4 PDD does not discuss about sectoral / national policies under A.4.3.	A 4.3.1	Included in Section B 5 of PDD Ver 03	PDD revision verified , CAR closed.
CAR 5 In the absence of the project activity use of LSHS would have continued at the same rate. But B.4 section of PDD does not indicate LSHS in the diagramme. Also	B.4.1	Fig.3 in Section B.3 has been suitably modified in PDD Ver 08 to depict the change in routing of AWC O/H stream due to project activity and also includes LSHS being fed to the Heater HH-2	PDD revision verified , CAR closed



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2/3/4	Summary of project owner response	Validation team conclusion
during the site visit it was understood that the AWC stream is augmented in the existing Fuel gas system. This is not clearly depicted in the diagram.			
CAR 6 Baseline development is based on the assumption that LSHS will reduce due to the augmentation of Fuel gas. However there is the possibility that the other component of fuel gas can be replaced by AWC stream and LSHS may not be replaced. This aspect has not been considered in the baseline development.	B.5.1	The recovered stream of hydrocarbons is introduced into the Fuel Gas stream to augment the total Fuel Gas available for combustion in the Hot Oil Heater. The augmented quantity does not replace any component of the Fuel Gas, but due to higher availability of Fuel Gas, an energy equivalent quantity of LSHS is reduced from the fuel mix of Hot Oil Heater HH-2.	As per the condition available inside the heater, C ₄ cannot escape burning. Also if due to any reason fuel gas cannot be burned, then recovery would stop. The actual data also has demonstrated the reduction of LSHS with increase in recovery. CAR closed.
CAR 7 Detailed information on the demonstration of additionality and the determination of baselines, including related calculations are not provided in PDD	B.5.1.3	Information on additionality, determination of baseline, and calculation table is included in the PDD Ver08 in Section B.5 and Enclosure I. An Excel worksheet 'CER CALC_0607_006.xls' is submitted to the DOE for reference.	Details are now available in PDD. CAR closed.
CAR 8 Choice of the monitoring methodologies is	D 1.1	The applicability of the methodology AMS II.D Ver 10 is explained in Section B of PDD	CAR closed satisfactorily. Refer CAR



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2/3/4	Summary of project owner response	Validation team conclusion
indicated in the PDD as Type II D Ver 7. The monitoring methodology is not as per Type IID. I.e Energy saving due to the project is not determined. Selection of Type IID instead of Type IIIB needs to be justified.		Ver 08. The monitoring methodology adopted is to calculate the energy saving as a result of the project activity as desired in the methodology	2 also.



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2/3/4	Summary of project owner response	Validation team conclusion
CAR 9 Monitoring plan did not include determination and monitoring of Hot oil Heater efficiency.	D.3.2	At any point of time, the emission baseline is formed by emission of Carbon dioxide as a result of burning a quantity of LSHS that supplies energy equivalent to that available from combustion of the recovered stream. The fuel demand for heating oil is met by the combustion of Fuel Gas, the balance requirement being met by firing LSHS. Hence, irrespective of the efficiency of the Heater, if quantity of Fuel Gas fired is increased, the augmented quantity displaces the heat to be sourced from combustion of LSHS. If this recovered gas is flared, since the heat demand remains, it has to be met by increasing the LSHS firing, thus increasing the total heat input to the system and hence, reducing its efficiency and increasing the GHG emission.	Explanation is accepted. CAR closed
CAR 10 1. Provision for reporting the DCS on line analyzer readings for VA, EA and 1,3 BD in % weight not established. 2. Reliability of the DCS on line	D.3.3	The analysis of hydrocarbons in the recovered stream is done on the basis of laboratory analysis as mentioned in the PDD. Hence provision of reporting DCS analyser readings and the calibration of the DCS analysers are not required.	Explanation is accepted . CAR is now closed. Changes in PDD verified.



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2/3/4	Summary of project owner response	Validation team conclusion
analyzer – Calibration and frequency needs to be established.		It is now decided to estimate VA % based on the historic data analysis. Value under 95 % confidence a level is considered.	



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2/3/4	Summary of project owner response	Validation team conclusion
CAR 11 Uncertainty of flow measurement not addressed. Reliability of the on off valve to flare not ensured. It is to be noted that passing of this valve means VA flared is diverted towards Flare. This can lead to wrong accounting for CERs	D.4.1	Included in Monitoring Plan B.7.2 of PDD ver 08. The flow meter, 4FI-9311B, has already been installed and incorporated in the IP21 system. The flow measured by this flow meter will be subtracted from the value of total recovered stream to obtain the net recovery value. This flowmeter has been incorporated into the Annexure 4 in PDD Ver 08.	PDD verified accordingly. CAR is now closed
CAR 12 IPCC factor for n Butane not referred in PDD	D 5.2.2	Emission factor for butane is not required as the emission due to combustion activity of C ₄ s was present in the pre-project and the post project scenario and no CERs are claimed on the basis of emission of GHGs from n-butane. The NCV of n-Butane is sourced from 'Revision of default Net Calorific Value, Carbon Content Factor and Carbon Oxidization Factor for various fuels in 2006 IPCC GHG Inventory Guideline' Kainou Kazunari, August 2005, RIETI, IAI, Government of Japan	Explanation is accepted. CAR is now closed.
CAR 13 Project implementation is adequately	D.5.3.1 to D.5.3.12	Included in Monitoring Plan B.7.2 of PDD ver 08	PDD verified. CAR is now closed.



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2/3/4	Summary of project owner response	Validation team conclusion
properly prepared for and that critical arrangements are not adequately addressed			
CAR 14 Calculations for the values are provided in Table C of PDD are not available.	E.1.3.5	Calculation provided in Excel spreadsheet 'CER CALC_0607_006.xls'	Sheet is now made available. CAR is now closed.
CAR 15 Conservative assumptions not adequately explained and uncertainties in the baseline emissions estimates not properly addressed	E.1.3.6 – E.1.3.7	Explained and incorporated in Section B.4 & B.5 of PDD Ver 08.	PDD verified. CAR is now closed
CL 1 Typographical error “Enrgy” can be rectified. Rfer Table B-1	B.2.3	Error rectified.	PDD verified. CL is now closed
CL 2 The project mainly faces safety risk rather than operational risk . Refer page 19 of PDD. Supported by BASF (supplier) document. However during site visit it was observed that the hot oil heater is already using Fuel gas stream. This means that IPCL already had experience in handling fuel gas. On this context it is not clearly explained why this is a barrier	B.3.1	The AWC stream, in the pre-project scenario, was sent to flare for safe disposal. In the project case, the same stream is returned to the process, resulting in added risk due to the inherent instability of the components in the stream in a section of the manufacturing plant that has a large quantity of hydrocarbons circulating in close quarters. The project handles Fuel Gas. The barrier depends on risk of handling the AWC	Being a small scale project, the additionality argument based on risk barrier is acceptable. IPCL experience will help to avoid the risk envisaged. CL is now closed.



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2/3/4	Summary of project owner response	Validation team conclusion
explained why this is a barrier.		stream. A HAZOP study was done before implementing the project along with detailed study of the stream components and the risk envisaged if recycled back to process. The management approved the scheme along with the implementation of the HAZOP study report, which is mandatory in IPCL. The PG and AWC streams are essentially different, PG is Pyrolysis gasoline containing about 27% wt Benzene and a C ₄ content of only 0.28% wt, while AWC stream has about 30% wt C ₄ s.	



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2/3/4	Summary of project owner response	Validation team conclusion
CL 3 At the time of site visit, it was informed that proof for serious consideration of CDM option was available at Mumbai HO. This has to be provided to validation team.	B.3.1	Proof submitted to DOE	Energy audit review meeting minutes submitted. Hazop study and subsequent approval was also seen. CL is now closed.
CL4 It is not clear from the PDD whether relevant national and/or sectoral policies have been have been taken into account. Are the CREP requirements considered? Is there any approval from relevant regulatory authority for the modification done in the existing set-up?	B 3.3	Explained and incorporated in Section B.5 of PDD Ver 08. No approval is required from regulatory authority as the project reduces emission and there is no increase in total hydrocarbon handled in the manufacturing facility	PDD verified. CL closed Explanation is accepted.
CL 5 Expected operational life 20 years. Evidence to be provided.	C.1	The project is a process development activity and constitutes a retrofit in the existing manufacturing facility. The project proponent assumes responsibility for continuance of the project. The equipments within the project boundary are maintained as per the industry norms and may for the same reason be subject to overhauls, repairs & replacement of damaged components as and when	CL is now closed.



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2/3/4	Summary of project owner response	Validation team conclusion
		required.	
CL 6 PDD is silent about plan for calibration of monitoring equipments to ensure real measurements of achieved emission reductions.	D.2.3	Included in B.7.2 of PDD ver 08	PDD verified. CL is now closed.
CL 7 Electronic archiving is also available. Data protection system is not demonstrated.	D .3.4	Quantity of the recovered stream is automatically archived in IP21 system that directly picks up the data fro the DCS. Laboratory analysis data is archived in the 'Laboratory Information Management System', LIMS wherein the data is loaded and locked in the server.	Explanation is accepted. CL is now closed.



Appendix B

Due account of comments taken

COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS



VALIDATION REPORT

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

BUREAU VERITAS CERTIFICATION published the project documents on the UNFCCC CDM website (<http://cdm.unfccc.int>) on 12/09/2006 and invited comments within 11/10/2006 by Parties, stakeholders and non-governmental organizations. The table below describes how due account of the comments received for the CDM project Demand side energy efficiency project at IPCL-Vadodara Complex by M/s Reliance Industries Ltd. was taken by Bureau Veritas Certification

Sr. No	Details of the commenter	Date of the comment	Comment	Response by the project participants	Explanation on how account is taken by the DOE
1	Hiral Mehta 502, Raj Avenue, Bhaikakanagar road, Thaltej, Ahmedabad - 380059 079-26851321 paryavaran mitra <paryavaranmitra @yahoo.com>	10/10/2006	1) It is mentioned in the report that social status of company will be changed after implementation of this project. Please justify the statement. 2) Whether wide publicity has been done for adoption of CDM project at IPCL Vadodara? 3) Please name the stakeholders, which were consulted and appraised the project?	In the era when climate change is a major consideration in world forums, the corporate world has also responded to the call for mitigation of pollutants affecting climate change. IPCL, a pioneer in the field of petrochemicals in India, has responded to this need of humanity and all inhabitants of this planet, through a conscious effort in reducing	Evidences were provided with respect to contribution of IPCL towards improvement social status. This project will add to that. There were various forum through which IPCL interact with the public. Evidences were made available for the same. Employees of various units have been



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			4) Whether surrounding villages will get benefited from this CDM project financially, socially or any other way?	sources of carbon dioxide. The registration of this project with UNFCCC thus becomes provides IPCL with a broader canvas wherein its efforts are recognized globally. This results in improvement of the social status of the company	approached as local stakeholders. It will be difficult for IPCL to show the benefits out of this project. However the income is going to add in the benefits being given to the local villagers.
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Appendix –C

Validators' CV

Mr. R. Seshapathy	Bureau Veritas Certification India	Team Leader, GHG Validator B. Tech (Chemical) graduate with additional qualification of PG diploma in Environmental economics.13 years of experience in Energy & Manufacturing industries and 6 years in management system auditing / training
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	India	including Environmental management system. He has undergone intensive training in CDM and is involved in the validation and verification of more than 20 CDM projects.
Mr.R Sankaranarayanan	Bureau Veritas Certification India	GHG Validator B.Tech (Chemical) graduate 23 years of experience in manufacturing industries and 9 years in Management system auditing. He has undergone intensive training in CDM and is involved in the validation and verification of more than 10 CDM projects.
Mr. Saraf Shrikant	Bureau Veritas India	Sector specialist A BE (Elec) graduate with additional qualification of MBA and Energy Manager. 12 years of experience in industries including 3.5 years in renewable energy industries. He is involved in many CDM projects as a specialist.
Mr. P Srinivas	Bureau Veritas Certification India	A BE (Mech) graduate 13 years of experience in Manufacturing industries and 2 years in management system auditing / training including Environmental management system. He is now being involved in CDM project also.
Dr.Ashok Mammen	Bureau Veritas Certification India	Internal Reviewer Ph.D (Oils & Lubricants), M.Sc (Analytical Chemistry) Over 20 years of experience in petrochemical sector and management systems auditing and training. He has undergone intensive training in CDM and is involved in the validation and verification of more than 40 CDM projects.

End of Report