

Validation Report

Report for:
PT. Yudistira Energy, Indonesia

Validation of CDM project for
**Recovery and Utilization of Associated Gas at
Pondok Tengah LPG Plant – PT. Yudistira
Energy**

LRQA Reference : A20119-M
Version 06.4
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1 Executive Summary

Lloyd's Register Quality Assurance Limited has been contracted by Agrinergy Pte Ltd, the project participants (PP), to undertake validation of the proposed project activity "Recovery and Utilization of Associated Gas at Pondok Tengah LPG Plant – PT. Yudistira Energy". The validation has been performed through a process of document review based on the project design document, Version 1.0 dated 01/10/2010 initially submitted for validation and the subsequent revisions, follow-up interviews with the stakeholders, resolution of outstanding issues and issuance of the validation report.

The project intends to reduce greenhouse gas (GHG) emission by utilizing the associated gas recovered from the Pondok Tengah and Tambun oil fields. The associated gas will be dried and distilled to recover LPG, lean gas, and condensate. The recovered gas will substitute the conventional fossil fuel, thereby reducing the associated GHG emissions.

The fulfilment of the requirements as set forth in Article 12 of the Kyoto Protocol of the United Nations Framework Convention on Climate Change (UNFCCC), the modalities and procedures for a CDM (CDM M&P) and relevant decisions of the Conference of the Parties, serving as Meeting of the Parties to the Kyoto Protocol (COP/MOP) and the Executive Board of the CDM (CDM-EB) have been evaluated and conformance to the validation requirements was done based on the given information. A risk based approach was taken to conduct the validation and Corrective Action Requests (CARs) and Clarifications Requests (CLs) were raised for relevant actions by the PP.

The validation team has found through the validation process 8 CARs and 5 CLs. The PP has taken actions and submitted to LRQA revised PDD, revised emission reductions spreadsheet and project approvals. The validation team is of the opinion that the proposed project activity as described in the project design document Version 9.1 dated 11/10/2012 meets all the relevant UNFCCC requirements for the CDM, as well as the host country's national requirements and if implemented as designed, is likely to achieve the emission reductions and contribute to the sustainable development of the host country. LRQA therefore requests the registration of "Recovery and Utilization of Associated Gas at Pondok Tengah LPG Plant – PT. Yudistira Energy" to the CDM Executive Board as a CDM project activity.

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Abbreviations

BE	Baseline Emissions
BI	Central Bank of Republic of Indonesia
CARs	Corrective Action Requests
CDM	Clean Development Mechanism
CDM-EB	Executive Board of Clean Development Mechanism
CDM M&P	Modalities and Procedures for a Clean Development Mechanism
CDM VVM	CDM Validation and Verification Manual
CERs	Certified Emission Reductions
CH ₄	Methane
CLs	Clarification Requests
COP/MOP	Conference of the Parties serving as meeting of the Parties to the Kyoto Protocol
DNA	Designated National Authority
DNPI	Dewan Nasional Perubahan Iklim (Indonesian Official DNA)
DOE	Designated Operational Entity
DG	Diesel Generator
EF	Emission Factor
EIA	Environmental Impacts Assessment
FAR	Forward Action Requests
FSR	Feasibility Study Report
GHG	Greenhouse Gas
IPCC	Intergovernmental panel on climate change
IRR	Internal Rate of Return
KP	Kyoto Protocol of the United Nations Framework Convention on Climate Change
LE	Leakage Emissions
LoA	Letter of Approval
LPG	Liquefied Petroleum Gas
LR	Lloyd's Register
LRQA	Lloyd's Register Quality Assurance Limited
MMSCFD	Million Standard Cubic Feet per Day
NCV	Net Calorific Value
NGO	Non Governmental Organization
ODA	Official Development Assistance
O&M	Operation and Maintenance
PDD	Project Design Document
PE	Project Emissions
PLN	Perusahaan Listrik Negara (State Own Grid Company)
PP	Project Participant
QA/QC	Quality Assurance/Quality Control
SBLC	Stand By Letter of Credit
SCFD	Standard cubic feet per day
SKPI	Surat Kelayakan Penggunaan Peralatan (Letter of Eligibility, Use of Equipment)
SKPP	Surat Kelayakan Penggunaan Instalasi (Letter of Eligibility, Use of Installations)
tCO ₂ e	Tonnes of Carbon Dioxide Equivalent
UNFCCC	United Nations Framework Convention on Climate Change

2 Introduction

The project participants (PP) represented by Agrinergy Pte. Ltd. has contracted Lloyd's Register Quality Assurance Limited (LRQA) to undertake validation of the proposed project activity "Recovery and Utilization of Associated Gas at Pondok Tengah LPG Plant – PT. Yudistira Energy". This report summarizes the findings of the validation process that has been conducted on the basis of validation requirements of the CDM.

The validation has been undertaken by the team formed of the qualified personnel of LRQA as follows:

Names	LRQA entities	Role
Ankush Jain	LRQA Ltd. India	Team Leader, CDM Lead Validator
Cholid Bafagih	LRQA Indonesia	Team Member, CDM Validator
Dodi Budiristio	External expert	Sector Expert
Prabodha C. Acharya	LRQA Ltd. India	Technical Reviewer
Sean Cuthbert	External Expert	Sector Expert to Technical Review
Michiaki Chiba	LRQA Ltd.	Decision Maker

Personnel being engaged in a CDM project validation are qualified based on the established procedures of LRQA to assure the resource requirements satisfy all the requirements of competence criteria for an AE/DOE under CDM (CDM-Accreditation Standard version 04.0). LRQA is designated as an operational entity and holds the full responsibility of decision-making regarding the validation, in accordance with the accreditation requirements of the CDM-EB. The certificate of appointment of the team personnel is attached to this report.

2.1 Objective

Validation is the process of an independent third party evaluation of a project activity on the basis of the PDD, against the requirements of the CDM as set out in Article 12 of the Kyoto Protocol, the CDM M&P, the present annex, subsequent decisions made by the COP/MOP and CDM-EB, and other rules applicable to the proposed project activity including the host country's legislation and its specific requirements for sustainable development. The validation follows the requirements of the current version of the CDM validation and verification manual (CDM VVM) to ensure the quality and consistency of the validation work and the report.

2.2 Scope

The scope of validation is an independent and objective review of the project design. Review of the PDD is conducted against the requirements of the Kyoto Protocol, the CDM M&P and relevant decisions of the COP/MOP and the CDM-EB. LRQA follows a risk-based approach in the validation focusing on the identification of significant risks for project implementation and generation of CERs. Validation is not meant to provide any consulting towards the PP, however, the corrective actions requests (CARs) and clarifications (CLs) might provide input for improvement of the project design. A validation conclusion shall become final subject to the decision maker's review by LRQA Ltd.

2.3 GHG Project Description

The project activity involves installation of new associated gas recovery plant in the existing oil wells located at Tambun and Pondok Tengah.

The project activity is located in the existing oil wells of Tambun and Pondok Tengah, West Java, Indonesia where associated gas from these oil wells was being flared. The project activity intends to recover and process the associated gas to form LPG, condensate and lean gas. The products recovered from the project activity will be supplied to the nearby gas pipeline network of PT. Pertamina. The project activity intends to reduce GHG emissions from the substitution of fossil fuel with the recovered LPG from processing of associated gas.

The project activity reduces emissions by recovering associated gas and utilizing the recovered gas. The utilization of the recovered gas displaces the use of other fossil fuel sources and hence will effect in reduced greenhouse gas emissions.

The project activity is categorized in the sectoral scope 10 – Fugitive emissions from fuels (solid, oil and gas). The annual average estimated GHG emission reduction from the project activity is 292,708 tonnes of CO₂e per annum over 7 year twice renewable crediting period. The emission reduction is based on the gas production estimate based on the tender document and feasibility study report (FSR).

3 Methodology

3.1 Review of documents

The validation is performed primarily based on the review of the Project Design Document (PDD) and the other supporting documentation.

The PDD Version 1.0 dated 01/10/2010 was initially reviewed. LRQA requested the PP to present supporting information and documents relating to the project design and such additional information and documents were also reviewed by LRQA.

Through the process of validation, the PDD and the supporting documents of the same were evaluated to confirm the actions taken by the PP to the CARs and CLs issued by LRQA. The documents reviewed by LRQA are listed in Appendix B. LRQA reviewed the final version of the PDD Version 9.1 dated 11/10/2012 to confirm that all changes agreed had been incorporated.

3.2 Site Visit & Follow-up interviews

A site visit and follow-up interviews with the stakeholders were conducted as detailed in the schedule as below:

Date	Location/ Address	Party Interviewed	Subjects Covered	Team Members on Site
10/01/2011	Jakarta	PT. Yudistira	Investment decision making Investment analysis Benchmark Baseline/Additionality	Ankush Jain Cholid Bafagih Dodi Budiristio
11/01/2011	Jakarta	Local Environment Protection Bureau , MNLH	EIA law and its compliance	
12/01/2011	West Java	PT. Yudistira	Tour of the site Applicability of the methodology Baseline identification Monitoring	
13/01/2011	Jakarta	Indonesia DNA	Prior consideration of CDM EIA approval	
13/01/2011	Jakarta	PT. Pertamina	Applicability of methodology Baseline identification	
14/01/2011	Jakarta	PT. Yudistira Agrinergy	Discussion on issues during site visit. Closing meeting	

A full list of persons interviewed is shown in Appendix C.

For details of all the findings of the desk review and site visit, please refer to the Validation Protocol and Findings in Appendix F.

3.3 Resolution of clarification and corrective action requests

LRQA applies the risk based approach aimed at focusing on high risk issues to the validation results whilst not omitting any part of the mandatory processes.

Findings identified in the process are indicated under the titles corrective action requests (CARs) and clarification requests (CLs) and forward action requests (FARs). CARs and CLs require the PP to take relevant actions. Criteria for judging items as CAR or CL are as follows:

Corrective action request (CAR):

- the project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions
- the CDM requirements have not been met, or
- there is a risk that emission reductions cannot be monitored or calculated.

Clarification request (CL):

- information is insufficient or not sufficiently clear to determine whether the applicable CDM requirements have been met.

FARs are to be raised to highlight issues related to project implementation that require review during the first verification of the project activity. FARs do not relate to CDM requirements for registration.

CARs and CLs are to be resolved or closed out if the PP modifies the project design, rectifies the PDD or provides adequate additional explanations or evidence that satisfies the concerns. If this is not completed, the project activity cannot be recommended for registration to the CDM Executive Board.

For details of the nature of the issues raised, the nature of the responses provided, the means of validation of such responses and the resulting changes in the PDD or supporting annexes please refer to the Validation Protocol and Findings in appendix F.

3.4 Internal quality control

A technical review by a qualified person independent from the validation team and a review by an authorized decision maker were conducted prior to the submission of the validation report to the PP and prior to requesting the registration of the project activity.

4 Validation protocol and conclusions

This section provides an overview of the validation activities undertaken by LRQA in order to arrive at the final validation conclusions and opinion. It includes general conclusions based on the Clean Development Mechanism Validation and Verification Manual version 01.2. Further details in relation to each element of the protocol and each finding are shown in the Validation Protocol and Findings – Appendix F.

The protocol is structured based on the main validation requirements as follows:

- Approval by the Parties involved
- Participation requirements
- Project design document
- Project description
- Baseline and monitoring methodology
 - Applicability of the selected methodology
 - Project boundary
 - Baseline identification
 - Algorithms and/or formula used to determine emission reductions
- Additionality of a project activity
 - Prior consideration of the CDM
 - Identification of alternatives

- Investment analysis
- Barrier analysis
- Common practice analysis
- Monitoring plan
- Local stakeholder consultation
- Environmental impacts.

4.1 Approval

A CDM project shall be approved by the Parties involved.

The host Party of the proposed project is Indonesia. Indonesia has ratified the Kyoto Protocol on 03/12/2004. The Designated National Authority is the National Climate Change Board (DNPI) established by President Decree No. 46/2008. A letter of approval (LoA) from the host Party's DNA dated 27/01/2011, Ref: B 030/KNMPB/01/2011 was made available by PP. This letter of approval confirms the contribution of the project activity to the sustainable development of Indonesia.

In accordance with EB 50 Annex 48, LRQA confirms that it has entered into a contractual agreement with Agrinergy Pte Ltd for performing the validation and Agrinergy Pte Ltd is one of the project participants at the time of completion of this report.

The Annex I Party of the proposed project is the United Kingdom. United Kingdom has ratified the Kyoto Protocol on 31/05/2002. The Designated National Authority is the Department of Energy and Climate Change United Kingdom. A letter of approval (LoA) from the Annex I Party's DNA dated 7/03/2011, Ref: ALPte/04/2011 was made available by PP.

The information of the DNA has been confirmed by the validation team against the relevant information on the UNFCCC CDM website (<http://cdm.unfccc.int/DNA/index.html>).

The validation team reviewed the LoAs presented by the PP against the requirements in 'Clarification on elements of a written approval' and confirmed that the LoAs contain the elements requested by the CDM-EB, including:

- confirmation of the Party's ratification to the Kyoto Protocol
- voluntary participation
- the project activity's contribution to sustainable development of the country (host Party), and
- the precise title of the CDM project activity of the final PDD referenced.

The LoA was noted as unconditional with respect to the above elements. The copy of the LoA was verified against the original LoA issued by the host country DNA and Annex I country DNA. The contents of the LoA and the signature of the authorised issuer were also compared with those of other approval cases issued by the host country DNA and Annex I country DNA. Therefore, the team has confirmed the authenticity of the letter issued.

For details relating to this section, please refer to the Validation Protocol in Appendix F.

4.2 Participation requirements

Participation in the project activity of the PPs has been authorised, as confirmed in the LoAs issued by the DNA of the Parties concerned. The team confirmed that no entity other than the authorised entity is indicated as project participant in the PDD.

The Modalities of Communication has been signed by the project participant clearly stating the focal point in accordance with the “Procedures for modalities of communications between project participants and the executive board”, Version 01.1, (Annex 59, of CDM-EB meeting 45).

For details relating to this section, please refer to the Validation Protocol in Appendix F.

4.3 Project design document

The PDD was checked and confirmed as complete against the Guidelines for completing the Project Design Document (CDM-PDD) and the proposed new baseline and monitoring methodologies (CDM-NM) referring to the latest version applicable to the validation.

A valid form of the CDM-PDD has been used that is current form as available on the CDM website.

For details relating to this section, please refer to the Validation Protocol in Appendix F.

4.4 Project description

The proposed project of Recovery and Utilization of Associated Gas at Pondok Tengah LPG Plant – PT. Yudistira Energy (LPG Pondok Tengah, hereinafter referred to as the project activity) involves the installation of a new associated gas recovery and utilization facility. The project activity is undertaken by PT. Yudistira Energy (Yudistira), an Indonesian private company specialising in the development of Oil & Gas projects. The project activity is located at the Pondok Tengah oil field in West Java, Indonesia. The geographical coordinate set of the Pondok Tengah LPG plant is of Latitude: 6° 5'08.90" South (6.085806 South) and Longitude: 107° 2'33.23" East (107.042564 East).

The associated gas recovered in the project activity was processed to recover LPG, condensate and lean gas. The pipeline and LPG Plant have been designed to process 17 MMSCFD of associated gas.

Prior to the project activity the associated gas was being flared at Tambun and Pondok Tengah Gas Collection stations owned by Pertamina EP Station - Pertagas (Pertamina EP and Pertagas are subsidiaries of PT Pertamina, the State Owned Oil & Gas Company).

The project activity reduces the GHG emissions from the substitution of fossil fuel with gas recovered from the associated gas.

The output capacity of the proposed project activity is 17 MMSCFD (equivalent of 481,384 Sm³/day) which is categorised as Large Scale project. The project activity is expected to reduce in average of 292,708 tonnes of CO₂e per annum during the 7 year twice renewable crediting period.

Validation team confirmed the appropriateness of the crediting period from the review of tender document, local and sectoral expertise.

The project activity is currently in the construction phase and is expected to start commissioning activity during 2011.

LRQA confirms that the project description included in the PDD is accurate and complete. This description provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation.

The project description was validated by document review including PDD and supporting project documentation, official information of the host country and sector information as publicly available, interview, and the on site visit.

Sustainable development

The host Party's DNA confirmed the contribution of the project activity to the sustainable development of the host Party.

For details relating to this section, please refer to the Validation Protocol in Appendix F.

Public funding

Based on the review of financial information furnished by PP, it has been confirmed that the project activity is funded by loan (80%) and through equity (20%). LRQA therefore confirms that there is no funding from an Official Development Assistance (ODA).

For details relating to this section, please refer to the Validation Protocol in Appendix F.

4.5 Baseline and monitoring methodology

Applicability of the selected methodology to the project activity

The project activity applied the approved baseline and monitoring methodologies: AM0009 Version 06.0.0 "Recovery and utilization of gas from oil wells that would otherwise be flared or vented". This version of the methodology is active from 20/07/2012 and currently having an "active" status.

LRQA confirms unambiguously that the selected methodology is applicable to this project activity. The project applicability was confirmed against each condition in the approved methodology selected. Appendix F includes the list of each applicability condition, the steps taken to validate each one and the conclusions about its applicability to the proposed project activity.

For details relating to this section, please refer to the Validation Protocol in Appendix F.

Project boundary

The project boundary has been validated through documentation review on PDD, feasibility study report, interview and field survey that included physical site inspection. This information was substantiated via cross-check with the information obtained from the public sources by the validation team. Through the processes taken, the validation team confirmed that the identified project boundary, the selected sources and the gases were justified for the project activity and they meet the requirements of the

approved methodology.

Please refer to the Validation Protocol in Appendix F.

Baseline identification

The baseline scenario identified in the PDD has been assessed against the requirements in the approved methodology AM0009 Version 06.0.0 “Recovery and utilization of gas from oil wells that would otherwise be flared or vented”. LRQA can confirm that the procedure included in this methodology to identify the most reasonable baseline scenario, has been correctly applied.

The steps taken to assess the baseline identification are described in the Validation protocol in Appendix F.

LRQA confirms that:

- All the assumptions and data used by the project participants are listed in the PDD, including their references and sources;
- All documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the PDD;
- Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable;
- Relevant national and/or sectoral policies and circumstances are considered and listed in the PDD;
- The approved baseline methodology has been correctly applied to identify the most reasonable baseline scenario and the identified baseline scenario reasonably represents what would occur in the absence of the proposed CDM project activity.

Algorithms and/or formula used to determine emission reductions

LRQA has confirmed that the steps taken and the equations applied to calculate project emissions, baseline emissions and emission reductions comply with the requirements of the approved methodology AM0009 Version 06.0.0.

The steps taken to assess the algorithms and/or formula used to determine emission reductions are described in the Validation protocol in Appendix F.

LRQA confirms that:

- All assumptions and data used by the project participants are listed in the PDD, including their references and sources;
- All documentation used by project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PDD;
- All values used in the PDD are considered reasonable in the context of the proposed CDM project activity;
- 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.

4.6 Additionality of a project activity

The project additionality was demonstrated by the PP using the “Tool for the demonstration and assessment of additionality” Version 06.0.0.

Prior consideration of CDM

The start date of the project activity is 09/11/2009 as the date on which the Purchase order of Propane Refrigeration Package was released. LRQA has validated the start date in accordance with Glossary of CDM terms Version 06.

The date of publication of the PDD for stakeholders' comments is 26/10/2010 which is after the start date of the project activity. The start date of the project activity is after 2 August 2008. In accordance with paragraph 2 of the "Guidelines on the demonstration and assessment of prior consideration of the CDM", Version 04, the PP has submitted notification to the UNFCCC secretariat on 20/11/2009 and DNA of Indonesia on 20/11/2009. This notification is within six months of the project start date. Validation team confirmed the notification dates from UNFCCC website and website of DNA of Indonesia.

The steps taken to assess the prior serious consideration of the CDM are described in the Validation protocol in Appendix F.

Identification of alternatives

The list in the Validation Protocol – Appendix F section 6.b, shows the alternatives given in the PDD, and clearly states how LRQA has validated whether these alternatives are credible and complete.

It is the opinion of LRQA that the list of alternatives provided in the PDD are credible and complete considering the technology and circumstances of the proposed Project activity as well as the investor business.

Investment analysis

The Investment analysis option has been used to demonstrate the additionality of the proposed project activity. LRQA confirms that the PDD provides evidence that this project activity would not be economically or financially feasible, without the revenue from the sale of CERs.

The PPs have shown that the project activity is additional by demonstrating that the financial returns of the proposed CDM project activity would be insufficient to justify the required investment.

For assessing the additionality of this project activity, LRQA has referring to the latest version of the "Guidelines on the Assessment of Investment Analysis" as provided by the CDM Executive Board and with other relevant guidance including the latest Version of "Guidelines for the reporting and validation of plant load factors".

For details about the validation of the parameters used in the financial calculations and assessment of the benchmark applied, please refer to the Validation Protocol in Appendix F.

LRQA confirms that the underlying assumptions for the investment analysis are appropriate and that the financial calculations are correct.

Common practice analysis

LRQA confirms that the proposed CDM project activity is not widely observed and commonly carried out in Indonesia.

For details about the validation of the geographical scope, the assessment of the existence of similar projects and also the assessment of the essential distinctions between the proposed project activity and any similar projects, please refer to the

Validation protocol in Appendix F.

4.7 Monitoring Plan

The PDD includes a Monitoring Plan based on the approved monitoring methodology AM0009 Version 06.0.0 "Recovery and utilization of gas from oil wells that would otherwise be flared or vented".

LRQA confirms that the Monitoring Plan described in the PDD complies with the requirements in the Monitoring Methodology and that the PPs will be able to apply this Monitoring Plan following the monitoring arrangements described in it.

For details about the validation of the Monitoring Plan, please refer to the Validation protocol in Appendix F.

4.8 Local stakeholder consultation

The PPs invited Local Stakeholders to comment on the proposed project activity on the 29/04/2010 at Babelan Village, Bekasi prior to the publication of the PDD on the UNFCCC website. The meeting was attended by local villagers, and local officials.

LRQA confirms that the stakeholder consultation process targeted stakeholders and was appropriate for identifying stakeholders' opinions about the project and collecting their views.

For details about the steps taken to assess the adequacy of the Stakeholder consultation, please refer to the Validation protocol in Appendix F.

4.9 Environmental impacts

LRQA has confirmed that the PP has undertaken an Environmental Impact Assessment together with Pertamina in compliance with the latest regulation of the Indonesian Environmental Ministry, Regulation No. 11 in 2006¹. This documentation has been approved by the EIA Central Assessment Commission on 12/11/2008.

The PPs have submitted documentation to LRQA on the analysis of the environmental impacts of this project activity in accordance with paragraph 37 (c) of the CDM modalities and procedures.

For details about the document review and determination of whether the PPs have undertaken the analysis of environmental impacts, please refer to the Validation protocol in Appendix F.

4.10 Summary of Changes

Significant changes made to the original PDD published for Global Stakeholder Consultation Process are summarized below. The PDD version 1.0 dated 01/10/2010 was modified and several changes occurred due to the result of validation process. The PDD Version 9.1 dated 11/10/2012 include all these changes.

For details about the results of the responses to CARs and CLs, discussions on revisions to project documentation and the detailed changes to the PDD coming from the validation process, please refer to the Validation Findings Log in the Validation Protocol in Appendix F.

1. Emissions from the gas compressor used for transportation was included in the monitoring plan in closure of CAR-03.
2. Monitoring plan was improved in closure of CAR-08, CL-04.

¹ <http://www.menlh.go.id/popup.php?cat=201&id=2531>

3. IRR was improved from 6.38% to 7.16% in closure of CL-03.
4. Benchmark was revised from 13.85% to 13.95% in closure of CAR-05.
5. Crediting period type changed from 10 year fixed crediting period to 07 years twice renewable.
6. Emission reduction has been revised from 2,669,132 tCO₂e to 2,048,960 tCO₂e. Emission reduction is directly related to availability of associated gas available which decreases over time. Therefore, change of crediting period from 10 years fixed to 07 years renewable has caused the increase in ex-ante emission reduction estimate.

5 Comments by parties, stakeholders and NGOs

In accordance with the requirement of the Procedures for Processing and Reporting on Validation of CDM project activities, the PDD is to be made publicly available for 30 days subject to confidentiality provisions agreed with the PP, to enable comments to be received from Parties, stakeholders and UNFCCC accredited NGOs on the validation and registration requirements.

The PDD was made publicly available in accordance with the requirements of the procedure for the period of 26/10/2010-24/11/2010 as per

<http://cdm.unfccc.int/Projects/Validation/DB/EI447BW4DIOTR1P6IZ1ETL6TDU7JWG/view.html>

No comment was received during this period.

6 Validation Opinion

LRQA has undertaken the validation of the proposed project activity “Recovery and Utilization of Associated Gas at Pondok Tengah LPG Plant – PT. Yudistira Energy” based on the requirements of CDM as set out in Article 12 of the Kyoto Protocol, the CDM M&P, the present annex, subsequent decisions made by the COP/MOP and CDM-EB, and the other rules applicable to the proposed project activity including the host country’s legislation and its specific requirements for sustainable development.

The project activity involves installation of new LPG recovery and processing plant in the existing oil wells located at Tambun and Pondok Tengah. The project activity intends to process the associated gas and recover LPG, lean gas and condensate. The products recovered from the project activity will be supplied to the PT. Pertamina. The project activity intends to reduce GHG emission from the substitution of fossil fuel from the LPG processed from associated gas.

In order to arrive at the final validation conclusions and opinion, LRQA carried out review of project documents, assessment of compliance with and application of the approved baseline and monitoring methodology as well as the approved methodological tools, field survey and physical on site assessment of the project site and interviewing the local stakeholders. There was no project component or issues excluded from the validation.

Through the process of validation the team has identified 8 CARs and 5 CLs. The PP has taken necessary actions and all CARs and CLs have been successfully closed. The PP has taken action on the raised issues and submitted to LRQA the revised PDD and other supporting evidence. LRQA reviewed the response and actions taken by the PP, and all the findings were closed through the process.

The validation team is of the opinion that the proposed project activity conforms to all the relevant UNFCCC requirements for the CDM as well as the host country’s national requirements, and if implemented as designed, is likely to achieve the validated estimated emission reductions of 292,708 tCO₂e² as annual average during the renewable crediting period of 07 years and contribute to the sustainable development of the host country. Therefore LRQA requests the registration of “Recovery and Utilization of Associated Gas at Pondok Tengah LPG Plant – PT. Yudistira Energy” to the CDM Executive Board as a CDM project activity.

Decision Maker



Michiaki Chiba

Climate Change Manager – Asia & Pacific

Date 10/12/2012

² 292,708 tCO₂e is the annual average emission reduction over the crediting period. The emission reduction varies from 327,570 in the first year to 336,746 in second year and then decreases to 181,416 in the final year. This variation in the emission reduction is due to gas availability estimate.

7 Appendices

7.1 Appendix A: Letter of approval for the project by the host and investing country DNA

Letter of Approval from Department of Energy and Climate Change United Kingdom dated on 7/03/2011.

Letter of Approval from National Climate Change Board (DNPI) dated 27/01/2011.

7.2 Appendix B: List of documents reviewed

Category A documents (documents prepared by the PP)

S. No.	Name
1.	Project Design Document, Version 1.0 dated 01/10/2010
2.	Project Design Document, Version 2 dated 09/05/2011
3.	Project Design Document, Version 3 dated 24/06/2011
4.	Project Design Document, Version 4 dated 05/08/2011
5.	Project Design Document, Version 4 dated 21/10/2011
6.	Project Design Document, Version 5 dated 21/10/2011
7.	Project Design Document, Version 6 dated 05/01/2012
8.	Project Design Document, Version 7 dated 02/04/2012
9.	Project Design Document, Version 8 dated 13/08/2012
10.	Project Design Document, Version 9 dated 30/08/2012
11.	Project Design Document, Version 9.1 dated 11/10/2012
12.	Investment analysis Spreadsheet, Version 01
13.	Investment analysis Spreadsheet, Version 02
14.	Investment analysis Spreadsheet, Version 03
15.	Emission reduction Spreadsheet, Version 01
16.	Emission reduction Spreadsheet, Version 02
17.	Emission reduction Spreadsheet, Version 03
18.	Emission reduction Spreadsheet, Version 04
19.	Emission reduction Spreadsheet, Version 05
20.	Emission reduction Spreadsheet, Version 06
21.	WACC Spread sheet
22.	Agreement on Cilamaya project dated 27 September 2002
23.	LoA from department of Energy and Climate Change United Kingdom dated 7 March 2011
24.	LoA from DNPI Government of Indonesia dated 27 January 2011
25.	Feasibility Study Report
26.	ABB Conformity GC Certificate
27.	Draft Procedure for Monitoring TPO-P-02
28.	Act PP 31 number 2003 on change the entity of Pertamina
29.	Steel Price sheet
30.	Act number 8 year 1971 on entity of Pertamina
31.	Handbook of Economy and Energy Statistic of Indonesia
32.	The Development of Global Energy Market issued by Oxford Institute for Energy Studies year 2004

33.	Law 28 Minister Energy year 2008 regarding LPG price
34.	International Natural Gas price January 2007 to December 2010.
35.	Offering letter on loan from Mandiri Bank dated 01 April 2010
36.	Public invitation for CDM Stake holder dated 21/04/ 2010
37.	Tender Document from Pertamina dated June 2009.
38.	Yudistira Bid Letter dated 07/09/ 2009
39.	EIA letter from Ministry of Environment dated 6/12/2010
40.	IPCC Guidelines Chapter 1 year 2006
41.	Equipment data sheet and detail specifications
42.	Statement on ODA dated 4 October 2010
43.	Consortium Notary dated 8 October 2009
44.	Purchase Order Major Equipment 09 November 2009
45.	Agreement for Build Operate Own between Pertamina and Yudistira Energy, dated: 04/11/2009
46.	Minuted on Board Meeting dated 15 September 2009
47.	Prior Consideration of the CDM Form, 20/11/2009, Communication to UNFCCC notifying the project activity
48.	Prior Consideration of the CDM Form, 23/11/2009, Notice letter to DNA
49.	News Paper advertisement on Bisnis Indonesia dated 21 April 2010 for stake holder consultation
50.	Minutes of Meeting on Stake Holder Consultation dated 29 April 2010
51.	Statement on commitment of CSR expense, including details
52.	Sample invoices raised by O&M contractor for the month of August, September and October 2011.
53.	O&M agreement dated: 20/05/2010
54.	Declaration from the PP on summary of indirect labour cost dated: 13/07/2012
55.	Gas production profile from Pondok Tengah and Tambun oil fields
56.	All purchase orders for the project activity
57.	Warta (Pertamina monthly magazine) for the month of January 2009
58.	Signed commitment on CSR by the PP and head of local villages
59.	Signed statement by the PP on personnel employed for the project activity dated: 13/07/2012
60.	Payment receipt towards SKPP and SKPI, dated: 31/01/2011

Category B documents (other documents referenced)

S. No.	Name
1.	Approved baseline and monitoring methodology AM0009/Version 06.0.0 "Recovery and Utilization of gas from oil wells that would otherwise be flared"
2.	Approved baseline and monitoring methodology AM0009/Version 04 "Recovery and Utilization of gas from oil wells that would otherwise be flared"
3.	Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion Version 02
4.	Tool for demonstration and assessment of additionality (Version 06.0.0)
5.	Tool for demonstration and assessment of additionality (Version 05.2.1)
6.	Sustainable Development Criteria and Indicators National Commission for Clean Development Mechanism

7.	IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories
8.	2006 IPCC Guidelines for National Greenhouse Gas Inventories
9.	Guidelines on the assessment of investment analysis, Version 05
10.	Guidelines on common practice Version 01
11.	Clean Development Mechanism Project design document form (CDM-PDD)
12.	Guidelines for completing the Project Design Document (CDM-PDD) and the proposed new baseline and monitoring methodologies (CDM-SSC-NM) Version 07
13.	Guidelines on the Demonstration and Assessment of prior consideration of the CDM (Version 04)
14.	Clean Development Mechanism Validation and Verification Manual version 1.2 (Annex 01, EB 55)
15.	Law 25 year 2007, (Clause 15 and 34, relating to CSR expense)
16.	Law 40 year 2007, (Clause 74 relating to CSR)
17.	Law 7 year 2005, (Article 40 relating to SKPP and SKPI)
18.	Decree No. 84.K/38/DJM/1998 issued by department of mines and energy (Article 5 relating to validity of SKPP and SKPI certificates)
19.	Hays "The oil & gas global salary guide 2012"

7.3 Appendix C: List of persons interviewed

S. No.	Name	Designation, Organization
1.	Mr. Iwan Ruwiyadi	Operation Director PT. Yudistira Energy
2.	Mr. Pudjianto	Project Manager PT. Yudistira Energy
3.	Mr. Faizal Al Fariz	Project Control PT. Yudistira Energy
4.	Mr. Uki Hendro Nugroho	General Affair PT. Yudistira Energy
5.	Ms Santy Dermawi	Project Analyst, Agrinergy
6.	Mr. Bernardus Widodo	Project Analyst, Agrinergy
7.	Mr. Ary Sudjianto, MSE	Acting Director for EIA, Ministry of Environment Republic of Indonesia
8.	Mr. Harjana Kodyat	Director of PT. Pertamina
9.	Mr. A Samyanugraha	DNPI, Indonesia DNA
10.	Mr. Ardiyanto Aryoseno	DNPI, Indonesia DNA
11.	Mr. Baehaki	Local Stakeholder – villager Hurip Jaya
12.	Mr. Supri	Head Village Secretary Hurip Jaya
13.	Mr. Sapidi	Local Stakeholder – villager Hurip Jaya

7.4 Appendix D: How due account has been taken to the public input made to the validation requirements

The PDD was made publicly available in accordance with the requirements of the procedure for the period of 26/10/2010-24/11/2010 as per

<http://cdm.unfccc.int/Projects/Validation/DB/EI447BW4DIOTR1P6IZ1ETL6TDU7JWG/view.html>

No comment was received during this period.

7.5 Appendix E: Certificate of Appointment

Validation of “Recovery and Utilization of Associated Gas at Pondok Tengah LPG Plant – PT. Yudistira Energy”

Name of Person

Ankush Jain
Cholid Bafagih
Dodi Budiristio
Prabodha C Acharya
Sean Cuthbert
Michiaki Chiba

Assigned Roles

Team Leader
Team Member
External Sector Expert
Technical Reviewer
Sector Expert for Technical Reviewer
Decision Maker

Decision Maker



Michiaki Chiba
Climate Change Manager – Asia & Pacific
Date 10/12/2012

7.6 Appendix F: Validation Protocol and findings log

LLOYDS REGISTER QUALITY ASSURANCE Clean Development Mechanism Validation Protocol and Findings

This document has been produced by the LRQA Validation Team following the completion of the desk review and the site visit. It outlines the validated situation in relation to a number of criteria, including those defined in the Validation and Verification Manual (VVM) produced by the CDM Executive Board.

The questions within this document must be completed in full and in your own words. The purpose of this protocol is to record LRQA's opinion and LRQA's findings.

Where LRQA has identified issues requiring corrective action or clarification, a reference is made in the 'Conclusion' column, and details **are stated in the section marked 'Findings'**.

	Validated situation	Conclusion
SECTION 1. Approval		
Host Country Approval		
1. Has the Host country DNA provided a written approval?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> ³ CAR-01 was raised as LoA from host country DNA was not available. The resolution is detailed in the findings section of this protocol.	CAR-01 (Closed)
2. Confirm that the letter has been issued by the Party's DNA and is valid for the proposed CDM project activity under validation	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> The LoA is issued on 27/01/2011 by the National Climate Change Board (DNPI), which is the designated national authority (DNA) of the host country Party as per http://cdm.unfccc.int/DNA/index.html . The LoA is issued for the proposed project activity.	✓

³For each section and question where a YES/NO/NA answer is required, explain your choice.

	Validated situation	Conclusion
3. Mention the means of validation employed to assess the authenticity of the Letter of Approval. Indicate the source of the LoA (e.g. PP or directly from the DNA)	The LoA was made available by the PP. Comparison with other approved projects by the DNA was also conducted to check the authenticity of the letter.	✓
4. Does the written Letter of Approval confirm the following: (a) The Party is a Party to the Kyoto Protocol (including ratification); (b) Participation is voluntary; (c) The proposed CDM project activity contributes to the sustainable development of the country; (d) It refers to the precise proposed CDM project activity title in the PDD being submitted for registration.	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> The LoA confirms: (a) The host country Party ratified the Kyoto Protocol on 28/07/2004. (b) The participation is voluntary. (c) The proposed project activity will assist the host country in achieving sustainable development. (d) The LoA indicates the precise title of the proposed project activity as indicated in the PDD.	✓
5. Is the letter of approval unconditional with respect of (a) to (d) above	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> The LoA does not add any specific condition to the points stated therein.	✓
6. Does the LoA from the host party acknowledge the bundle activity (if applicable)	Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input checked="" type="checkbox"/> Not applicable as the project activity is not a bundle activity.	✓
Annex I Party Approval		
7. Has the Annex I country DNA provided a written approval?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> CAR-01 was raised as LoA from Annex I country DNA was not available. The resolution is detailed in the findings section of this protocol.	CAR-01 (Closed)
8. Confirm that the letter has been issued by the Party's DNA and is valid for the proposed CDM project activity under validation	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>	✓

	Validated situation	Conclusion
9. Mention the means of validation employed to assess the authenticity of the Letter of Approval Indicate the source of the LoA (e.g. PP or directly from the DNA)	LoA has been submitted by the PP. The authenticity of the LoA has been checked through review of similar cases from other projects.	✓
10. Does the written Letter of Approval confirm the following: (e) The Party is a Party to the Kyoto Protocol (including ratification); (f) Participation is voluntary; (g) It refers to the precise proposed CDM project activity title in the PDD being submitted for registration.	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> The LoA confirms: <ul style="list-style-type: none"> • The Annex-I Party has ratified the Kyoto Protocol on 31/05/2002. • The participation is voluntary. • The LoA indicates the precise title of the proposed project activity as indicated in the PDD. 	✓
11. Is the letter of approval unconditional with respect of (a) to (c) above	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>	✓
Host Country and Annex I Party Approval		
12. Do any of the Letters of Approval contain additional specification of the project activity? Like: <ul style="list-style-type: none"> - PDD Version number - Validation report version number Make sure that the request for registration is made on the basis of the documents specified in any of the letters.	The LoAs do not refer to a specific version number of the PDD or validation report.	✓

		Validated situation		Conclusion
SECTION 2. Participation				
1	Confirm that the PPs are listed in a tabular form in section A.3 of PDD and that this information is consistent with the contact details provided in Annex 1 of the PDD and with the contact details in the MoC.	Host Party PP name in PDD/ A.3	PT. Yudistira Energy	✓
		Host Party PP name in PDD/ Annex 1	PT. Yudistira Energy	
		Host Party PP name in MoC	PT. Yudistira Energy	
		Annex 1 Party PP name in PDD/ A.3	Agrinergy Pte Ltd	
		Annex 1 Party PP name in PDD/ Annex 1	Agrinergy Pte Ltd	
		Annex 1 Party PP name in MoC	Agrinergy Pte Ltd	
2	Confirm that each of the PPs has been approved by at least one Party involved	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> PT. Yudistira Energy has been approved by Indonesia Agrinergy Pte Ltd has been approved by UK		✓
3	Confirm that no entities other than those approved as PPs are included in section A.3 of PDD.	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>		✓
4	Ensure that the approval of participation has been issued from the relevant DNA and if in doubt verify this with the corresponding DNA.	LoAs have been issued from the relevant DNA. Validation team has also compared the LoAs with other approvals issued by the same DNAs. Therefore, nothing has come across validation team which has made us to doubt the LoAs.		✓

	Validated situation	Conclusion
<p>5 Has the MoC been completed as per the latest “Procedures for MoC between the project participants and the Executive Board”?</p> <ul style="list-style-type: none"> - No modifications to the template/form should be made and each document should be clearly dated - Title of the project and names of project participants and focal points should be fully consistent with those indicated in all other project documentation - Focal point scopes should be clearly and correctly indicated - Contact details and specimen signatures of focal point entities including those of project participants in Annex 1 should be correctly entered. Only one telephone, fax, e-mail contact should be entered per authorized signatory. In cases where additional contact details are included, only the first indicated information will be taken into account and only the official business address of the proposed entity should be provided on the F-CDM-MOC form. - The Statement of Agreement in Section 3 should be signed by one authorized signatory for each project participant; signatures made available in Section 3 should correspond to those indicated in the related Annex 1 document; focal point entities who are not designated as project participants should not sign Section 3. 	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/></p> <p>MoC is consistent with the PDD. The PPs, PT. Yudistira Energy and Agrinergy Pte Ltd., consistent between PDD and the MoC. In addition, the information in accordance with the MoC form F-CDM-MOC and the requirements of the procedures.</p>	<p>✓</p>

	Validated Situation	Conclusion
SECTION 3. Project design document		
1. Is the project activity Small Scale or Normal Scale	Normal Scale <input checked="" type="checkbox"/> Small Scale <input type="checkbox"/> Bundled Small Scale <input type="checkbox"/> (cross as appropriate)	✓
2. Has the PDD used the latest template and guidance from the CDM Executive Board available on the UNFCCC CDM Website? Check outputs from the completeness check.	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> CDM-PDD template Version 03 and Guidelines for Completing CDM-PDD version 07, which are the current versions available in UNFCCC CDM website, are used.	✓

	Validated situation	Conclusion
SECTION 4. Project description		
1. Describe the process undertaken to validate that the description of the proposed CDM project activity as contained in the PDD sufficiently covers all relevant elements, is accurate and that it provides the reader with a clear understanding of the nature of the proposed CDM project activity.	<p>The project activity involves installation of new associated gas processing plant to recover and utilize the associated gas from the existing Tambun and Pondok Tengah oil wells. The gas processing plants further processes the associated gas into usable LPG, lean gas and condensate. These gases recovered from the associated gas will be supplied to PT. Pertagas.</p> <p>Validation team confirmed the project capacity, net gas produced, from the approved feasibility study report, and investment licence for setting up of LPG Plant project. Situation existing prior to the implementation project activity has been confirmed from the site visit and relevant document.</p> <p>CAR-02, was raised and project description was not presented in accordance with the Guidelines for completing CDM-PDD and CL-01 were raised in relation to this requirement. The resolution is detailed in the findings section of this protocol.</p>	CAR-02 (Closed) & CL-01 (Closed)

	Validated situation	Conclusion
<p>2. Confirm that the exact project location is provided in the PDD with Geographical coordinates and check the accuracy of them.</p> <p>Please include here the Geographical coordinates:</p>	<p>The project activity is located at the Pondok Tengah oil field, Babelan Sub District, Huripjaya Village in West Java, Bekasi district of Indonesia. The project activity will source associated gas from Tambun and Pondok Tengah oil fields. Another associated gas recovery plant by PT. Odira Energy is also registered CDM project (Ref: 1144) is located near the project recovering gas from the same oil fields, Tambun and Pondok Tengah. Team also confirmed from the site visit and interview of PT. Pertamina, owner of oil asset, that surplus gas is available in these oil wells, more than the processing capacity of Odira Energy project; therefore, a new project was required. Team further confirmed from the interview of officials from PT. Pertamina that supply of gas to project activity will not impact gas supply to previously registered project for the same oil well (Ref: 1144).</p> <p>The geographical coordinates of the project activity is 6° 5'08.90" South (6.085806 South) and 107° 2'33.23" East (107.042564 East).</p>	✓
<p>3. Confirm that the physical site inspection reflects the description in the PDD of the proposed CDM project activity.</p>	<p>The validation team conducted a physical site visit and confirmed consistency of the described project activity in the PDD and the actual implementation.</p> <p>During the site visit, validation team confirmed that the project activity involves recovery and transportation of associated gas from the oil fields in Tambun and Pondok Tengah; the associated gas will be dried; and processed & distilled to extract LPG, condensate and lean gas from the associated gas. Validation team also confirmed that the LPG processing plant was under erection. Further, validation team confirmed from the operation of flare system at Pondok Tengah and Tambun that associated gas was being flared.</p>	✓
<p>4. If the team did not undertake a physical site inspection, describe the justification as approved by the CDM Quality Manager. (VVM 01.2: 60-61)</p> <p>Describe briefly the physical site inspection: Travel details and installations, facilities and buildings visited.</p>	<p>Not Applicable, the site visit for this project was conducted from 10/01/2011 to 14/01/2011</p>	✓

	Validated situation		Conclusion
	Pre-project	Project activity	
5. If the proposed CDM project activity involves the alteration of an existing installation or process, ensure that the project description clearly states the differences resulting from the project activity compared to the pre-project situation.	N.A. The project is a Greenfield activity.	N/A	✓
6. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance (ODA).	From the interview of the PP it was confirmed that the project does not involve diversion of ODA. The validation team reviewed the agreements on funding, interviewed the PP and the stakeholders and confirmed that the project activity is funded by equity of the private investor (PT. Yudistira Energy) and loan from the commercial bank (PT. Bank Mandiri).		✓
7. If the project activity is a small scale one, confirm that it is not a de bundled component of a large scale project, in accordance with appendix C of the simplified M&P for SSC CDM project activities and the Guidelines for assessment of de-bundling for SSC project activities.	Not applicable.		✓

	Validated situation	Conclusion
SECTION 5. Baseline and monitoring methodology		
1. Has the baseline and monitoring methodologies selected by the project participants been previously approved by the CDM Executive Board, i.e. does it appear on the methodologies page of the UNFCCC website?	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/></p> <p>Approved baseline and monitoring methodology AM0009, "Recovery and utilization of gas from oil wells that would otherwise be flared or vented" (Version 06.0.0) is applied. This version of the methodology is valid from 20/07/2012 and currently having an "active" status:</p> <p>The methodology refers to the below methodological tools:</p> <ul style="list-style-type: none"> • "Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion"; • "Tool to calculate baseline, project and/or leakage emissions from electricity consumption"; • "Tool for the demonstration and assessment of additionality". <p>The project activity follows the Tool for the demonstration and assessment of additionality (Additionality tool), Version 06.0.0, (this version of additionality tool is valid from 25/11/2011 and currently having an "active" status) and Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion, Version 02.</p>	✓
2. If the project activity is a Small Scale one; does it qualify within the threshold of the three possible types of small scale projects? Confirm information provided in the PDD.	Not applicable.	✓
3. If the project activity is a Small Scale one; which approved small scale methodology does the project apply? Confirm that the SSC meth is applied in conjunction with the general guidelines to SSC CDM methodologies.	Not applicable.	✓

	Validated situation	Conclusion
<p>4. Determine whether the methodology selected is applicable to the project activity including that the used version is valid</p> <p>Describe steps taken to assess the relevant information contained in the PDD in the table below</p>	<p>The project activity applies following methodology:</p> <p>AM0009, "Recovery and utilization of gas from oil wells that would otherwise be flared or vented", Version 06.0.0. This version is valid from 20/07/2012 and currently having an "active" status.</p> <p>The project activity also refers to following tools:</p> <ol style="list-style-type: none"> 1. "Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion" Version 02. This version is the latest version and is currently active. 2. "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" Version 01. This version is the latest version and is currently active. 3. "Tool for the demonstration and assessment of additionality" Version 06.0.0. This version is the latest version and is currently active. 	✓

No.	Applicability conditions in the methodology AM0009, Version 06.0.0	Information in the PDD	Steps taken to assess PDD information	Conclusion
1.	<p>Under the project activity the recovered gas is:</p> <ul style="list-style-type: none"> - Consumed on-site to meet energy demands; and/or - Transported to a gas pipeline without prior processing; and/or - Transported to a processing plant where it is processed into hydrocarbon products (e.g. dry gas, liquefied petroleum gas (LPG) and condensates). The dry gas is either: (i) transported to a gas pipeline directly; or (ii) compressed to CNG first, then transported by trailers/trucks/carriers 	<p>The recovered gas is transported to a processing plant where it is processed into LPG, lean gas and condensate. The dry gas is transported to a gas pipeline directly.</p>	<p>Validation team review the project activity was confirmed as processing plant where it is processed into LPG, lean gas and condensate by reviewing the power purchase agreement, technical agreements, and site visit.</p>	✓

No.	Applicability conditions in the methodology AM0009, Version 06.0.0	Information in the PDD	Steps taken to assess PDD information	Conclusion
	and then decompressed again, before it finally enters the gas pipeline.			
2.	The project activity does not lead to changes in the process of oil-production, such as an increase in the quantity of quality of oil extracted, in the oil-wells within the project boundaries.	The project activity does not lead to changes in the process of oil production in the oil wells within the project boundaries.	Validation team confirmed from the review of feasibility study report, interview of the PP and PT. Pertamina that processing of associated gas does not lead to change in the process of oil-production.	✓
3	The injection of any gases into the oil reservoir and its production system is allowed in the project activity only for the purpose of the gas-lift process.	The project activity does not involve the injection of any gases into the oil reservoir and its production system.	Validation team confirmed that the project does not inject any gas from the review of feasibility study report, interview of the PP and PT. Pertamina	✓
4	All recovered gas comes from oil wells that are in operation and are producing oil at the time of the recovery of the associated gas and/or gas-lift gas.	The project activity recovers gas from oil wells that are in operation and are producing oil at the time of the recovery of the associated gas.	Validation team confirmed that the oil wells at Tambun and Pondok Tengah are operational from the review of feasibility study report, interview of the PP and PT. Pertamina	✓
5	<p>The methodology is only applicable if the identified baseline scenario is :</p> <ul style="list-style-type: none"> - The continuation of the current practice of either venting (scenario G1) or flaring (scenario G2) of the associated gas and/or gas lift gas or on-site use of the partial amount of associated gas and/or gas-lift gas to meet on-site energy demands and rest of the gas are either vented or flared (scenario G3); and - The continued operation of the existing oil and gas infrastructure without any other significant changes (scenario P4); and - In the case where gas-lift is used under the project activity: the gas –lift under the 	The identified baseline scenario of the project activity is the continuation of the current practice of flaring of the associated gas and the continued operation of the existing oil and gas infrastructure without any other significant changes, as detailed in the Section B.4.	Based on the review of the PDD, investment analysis submitted by the PP, and site visit, validation team confirms that the baseline scenario for the project activity is continuation of the current scenario of flaring of associated gas.	✓

No.	Applicability conditions in the methodology AM0009, Version 06.0.0	Information in the PDD	Steps taken to assess PDD information	Conclusion
	baseline uses the same source as under the project activity and the same quantity as under the project activity (scenario 01).			

	Validated situation	Conclusion
5. Confirm that any specific guidance provided by the CDM Executive Board in respect to an approved methodology has been correctly applied.	The methodology sets the clear criteria to check the applicability conditions and each condition is checked as detailed above.	✓
6. If a determination regarding the applicability of the selected methodology to the proposed CDM project activity can not be made, request clarification of the methodology in accordance with the guidance provided by the CDM Executive Board. Describe the clarification request and response.	No such issues have been identified	✓
7. If the Validation Team determines that the proposed CDM project activity does not comply with the applicability conditions of the methodology the Team may proceed by means of requesting revision to or deviation from the methodology in accordance with the guidance provided by the CDM Executive Board. Describe the request for revision or deviation and approval by the CDM Executive Board.	No such issues have been identified	✓

	Validated situation	Conclusion
8. If there are any GHG emissions occurring within the proposed CDM project activity boundary, which are not addressed by the applied methodology and which are expected to contribute more than 1% of the overall expected average annual emissions reductions as a result of the implementation of the project but a determination is made that the approved methodology(ies) is/are applicable to the project activity, provide here information about them in relation to the applicability criteria and justify the determination.	No such issues have been identified	✓

	Validated situation	Conclusion
SECTION 5a. Project boundary		
1. Does the project boundary include physical, geographical site of the industrial facility, processes or equipment that are affected by the project activity?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> The project boundary includes, the oil well where associated gas is collected, the site where associated gas is flared in the absence of the project activity, gas recovery, pre-treatment, and transportation including compressor.	✓
2. Confirm that all sources and GHGs required by the methodology have been included within the project boundary. Describe here if any emission source that will be affected by the project activity and is not addressed by the approved methodology, has been identified. In such case request clarification of, revision to or deviation from the methodology in accordance with EB guidance. Use the table below for this purpose:	The project boundary covers the project that satisfies the requirements of the applied methodology. CO ₂ emissions in the baseline scenario are the associated gas that is recovered emission source included in the project boundary minus the energy use for the recovery, pre-treatment, transportation, and if applicable, compression of the recovered gas. This was confirmed appropriate as below detailed. CAR-03 was in relation to this requirement. The resolution is detailed in the findings section of this protocol.	CAR-03 (Closed)

Gases And Sources Included In The Project Boundary						
	Source	Gas	Inc./Exc. Pdd	Justification PDD	Steps Taken To Assess PDD Justification	Conclusion
BASELINE	Combustion of fossil fuels at end-users that are produced from non-associated gas or other fossil sources	CO ₂	Included	Main source of emissions in the baseline	As CO ₂ is the main emission source, hence inclusion of this gas in project boundary is appropriate.	✓
		CH ₄	Excluded	Minor source, neglecting this source is conservative	Review of the approved methodology, AM0009, Version 06.0.0 and site visit	✓
		N ₂ O	Excluded	Minor source,	The project activity will also reduce CH ₄ and N ₂ O emissions from combustion of fossil fuels	✓

Gases And Sources Included In The Project Boundary						
	Source	Gas	Inc./Exc. Pdd	Justification PDD	Steps Taken To Assess PDD Justification	Conclusion
				neglecting this source is conservative	but the emissions are minor in volume and reasonable to be excluded for simplification and it is more conservative	
PROJECT	Energy use for the recovery, pre-treatment, transportation, and if applicable, compression of the recovered gas	CO ₂	Included	Main source of emissions in the project	The project activity needs compressor to maintain the pressure and would be the main source of emissions from the project activity.	✓
		CH ₄	Excluded	Assumed negligible. Excluded for simplification.	Negligible and therefore excluded for simplification following the applied methodology.	✓
		N ₂ O	Excluded	Assumed negligible. Excluded for simplification.		✓

	Validated situation	Conclusion
SECTION 5b. Baseline identification		
1. Determine whether the PDD provides a verifiable description of the identified baseline scenario, including a description of the technology that would be employed and/or the activities that would take place in the absence of the proposed CDM project activity.	The PDD describes the baseline scenario as the flaring of associated gas. Baseline scenario is identified and described in the PDD satisfies the requirements of the applied methodology and tool as detailed below.	✓
2. Confirm that any procedure contained in the methodology to identify the most reasonable baseline scenario, has been correctly applied.	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> According to the applied methodology, project activity has identified the most economical alternative for the associated gas, and infrastructure for associated gas. Among other alternative scenarios, flaring of associated gas and continued operation of the existing infrastructure is considered as a credible and feasible alternative that satisfies the requirement of the methodology.	✓
3. Check each step in the procedure described in the PDD to identify the baseline scenario against the requirements of the methodology. (Note that if the methodology requires use of tools, i.e. such as the tool for the demonstration and assessment of additionality and the combined tool to identify the baseline scenario and demonstrate additionality, the guidance in the methodology shall supersede it in the tool.)	Validation team confirmed from the review of the PDD and applied methodology that all the relevant steps have been correctly applied.	✓

	Validated situation	Conclusion
4. Based on financial expertise and local and sectoral knowledge, determine whether all scenarios that are considered by the project participants and are supplementary to those required by the methodology, are reasonable in the context of the proposed CDM project activity and that no reasonable alternative scenario has been excluded. Use the table below for this purpose:	<p>As confirmed above, flaring of associated gas and sourcing fossil fuel from the continuation of existing oil and gas infrastructure without processing of recovered associated gas is considered as a credible and feasible alternative that satisfies the requirement of the methodology/tool.</p> <p>CL-02 was in relation to this requirement. The resolution is detailed in the findings section of this protocol.</p>	CL-02 (Closed)

Alternative Scenario Ref.	Description in the PDD	Cross-checked with	Validation Opinion
G1	Release of the associated gas and/or gas-lift gas into the atmosphere at the oil production site (venting).	Not plausible. Venting of the associated gas is prohibited by Indonesian Law since it is life threatening due to likelihood of explosion and negative environmental health issues. Alternative (G1) is therefore not a plausible baseline scenario and will not be considered further.	Validation team confirmed from the review of the Indonesian law "Law Permen Lingkungan Hidup 13 Tahun 2009" which prohibits the venting of associated gas.
G2	Flaring of the associated gas and/or gas-lift gas at the oil production site.	Plausible. Prior to the implementation of the project activity the associated gas from Pondok Tengah & Tambun oil fields was flared. Alternative (G2) is a plausible baseline scenario and will be considered further.	This alternative forms the baseline scenario. Validation team also confirmed that this was the scenario existing prior to the site visit from the review of FSR, interview of PT. Pertamina and field survey.
G3	On-site use of the partial amount of associated gas and/or gas-lift gas to meet on-site energy and rest of the gas are either vented (G1) or flared (G2);	Not Plausible. On site power generation from the associated gas, without processing, would not have been feasible due to	From the review of the feasibility study report and sectoral expertise, validation team confirms that use of associated gas for power generation is not feasible.

Alternative Scenario Ref.	Description in the PDD	Cross-checked with	Validation Opinion
		its high moisture content. Moreover, the captive consumption of the plant would only require less than 5% of the associated gas being processed in Pondok Tengah Plant. Alternative (G3) is not a plausible baseline scenario and will not be considered further.	
G4	Injection of the associated gas and/or gas-lift gas into an oil or gas reservoir.	Not Plausible. Injection of the associated gas into the oil reservoir would not have been required due to sufficient pressure. Furthermore gas injection is considered costly due to its unpredictable effectiveness ⁴ . Alternative (G5) is not a plausible baseline scenario and will not be considered further.	From the review of the feasibility study report, interview of PT. Pertamina and sectoral expertise, validation team confirms that injection of oil is not required for maintaining production in the Tambun and Pondok Tengah.
G5	The proposed project activity without being registered as a CDM project activity.	Plausible. This scenario represents the project activity without CDM revenues. However as shown in Step3 below this scenario would not be financially. Alternative (G6) is a plausible baseline scenario and will be considered further.	The project can be technically installed without considering CDM benefits. Economic feasibility of this alternative has been described in the investment analysis presented in additionality section below.
G6	Recovery, transportation and utilization of the associated gas and/or gas-lift gas as feedstock for manufacturing of useful products.	Not plausible. Recovery, transportation and utilization of the associated gas and/or gas-lift gas as feedstock for	From the review of the FSR and sectoral expertise, validation team confirms that the associated gas cannot be directly used as feedstock.

⁴ <http://fossil.energy.gov/programs/oilgas/eor>

Alternative Scenario Ref.	Description in the PDD	Cross-checked with	Validation Opinion
		manufacturing of useful products would not have been feasible without prior processing, due to the composition of gas. The composition of associated gas which is lower in methane number and hence is not preferred since the industries require higher methane number in gas composition. Alternative (G8) is not a plausible baseline scenario and will not be considered further	
P1	Construction of a processing plant for the purpose of processing the recovered gas, in the same way as in the project activity, without being registered as a CDM project activity.	Plausible. This is a plausible alternative baseline scenario of the proposed project. However as shown in Step 3 below this scenario is not be financially attractive without being registered as a CDM project activity. Alternative (P1) is a plausible baseline scenario and will be considered further.	The project can be technically installed without considering CDM benefits. Economic feasibility of this alternative has been described in the investment analysis presented in additionality section below.
P2	Construction of a processing plant of a lower capacity than under the project activity, which processes only non-associated gas and no recovered gas.	Not plausible. The project activity has been designed for the capacity of 17 MMSCFD (equivalent 481384.89 m ³). All of the feed gas comes from oil wells, which is associated gas, so there is no non-associated gas. Since the non-associated gas is not available on site, this scenario is not applicable.	It was confirmed from the review of feasibility study and field survey that no non-associated gas is supplied to the project activity.

Alternative Scenario Ref.	Description in the PDD	Cross-checked with	Validation Opinion
		Alternative (P2) is not a plausible baseline scenario and will not be considered further	
P3	Supplying recovered gas to an existing gas processing plant and constructing the necessary infrastructure, without being registered as a CDM project activity.	Not Plausible. The only existing gas processing plant at the region is owned by a different entity and that plant is not able to deal with increased associated gas, as it has been designed to fulfil its own gas allocation only. Therefore, supplying recovered gas to an existing gas processing plant and constructing the necessary infrastructure is not an applicable scenario. Alternative (P3) is not a plausible baseline scenario and will not be considered further	From the review of FSR and interview of PT. Pertamina that associated gas was being flared as it could not be supplied to any existing gas processing plant.
P4	Continuation of the operation of the existing oil and gas infrastructure without processing of any recovered associated gas and/or gas-lift gas and without any other significant changes.	Plausible. In the absence of the project activity, the operation of the existing oil and gas infrastructure would have continued without processing of any recovered associated gas and/or gas lift and there would have been no other significant changes. Alternative (P4) is a plausible baseline scenario and will be considered further.	This alternative forms the baseline scenario. Validation team also confirmed that this was the scenario existing prior to the project activity from the review of FSR, interview of PT. Pertamina and field survey.
P5	Supplying recovered gas to a gas pipeline without prior processing and without being registered as a CDM project activity.	Not plausible. Without prior processing, the composition of associated gas is lower in methane number and is not a preference to be compressed	From the review of the feasibility study report, and sectoral expertise, LRQA confirms that the associated gas cannot be used directly in the gas pipeline.

Alternative Scenario Ref.	Description in the PDD	Cross-checked with	Validation Opinion
		directly to pipeline since the industries require high methane content in gas composition. Moreover, the heavy components from the associated gas could cause condensation and clogging in the pipeline if the associated gas is to be transported into pipeline over long period, compared to only the processed gas is transported. Alternative (P5) is not a plausible baseline scenario and will not be considered further	

5. Determine whether the baseline scenario identified is reasonable by validating the assumptions, calculations and rationales used, as described in the PDD. It shall be ensured that documents and sources referred to in the PDD are correctly quoted and interpreted. Cross check the information provided in the PDD with other verifiable and credible sources, such as local expert opinion. The table above may be used for this purpose.	The baseline identified for the project activity has been determined by the alternatives of fate of associated gas and fate of fossil fuel as described above. Validation team confirms that baseline scenario described in the PDD is reasonable. Please refer to table above.	✓
6. Is the identified baseline scenario in line with regulatory or legal requirements and takes into account relevant national and/or sectoral policies?	The identified baseline scenario is in line with the regulatory / legal requirements.	✓

<p>7. Is this identification supported by official and/or verifiable documents (e.g. studies, web pages, certificates, etc)?</p>	<p>Indonesia Associated gas survey report prepared by the World Bank mentions that flaring of associated gas is commonly done in Indonesia, supporting the baseline determined above.</p>	<p>✓</p>
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	Validated situation	Conclusion						
SECTION 5c. Algorithms and/or formulae used to determine emission reductions								
1. Compare the equations and parameters in the PDD to those in the selected approved methodology and determine if they have been correctly applied to calculate project emissions, baseline emissions, leakage and emission reductions.	<p>For calculation of emission reduction the methodology AM0009, Version 06.0.0 has been applied. This methodology also includes <i>Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion</i> version 02; <i>Tool to calculate baseline, project and/or leakage emissions from electricity consumption</i> version 01.</p> <p>The project activity is a Greenfield associated gas processing plant. The baseline emissions are determined through the energy supplied by the processed gas and the emission factor methane. Emissions from the energy required, either from the combustion of fossil fuel or from electricity, for the recovery, pre-treatment, transportation and if applicable, compression of the recovered gas will be the part of project emissions. In accordance with the applied methodology no leakage emissions has been considered.</p> <table border="1"> <thead> <tr> <th>Equation as per applied methodology</th><th>Corresponding equation in PDD</th><th>Evaluation</th></tr> </thead> <tbody> <tr> <td> <p>Baseline</p> <p>Baseline emissions are calculated as follows:</p> $BE_y = V_{F,y} \cdot NCV_{RG,F,y} \cdot EF_{CO_2,Methane} \quad (1)$ <p>Where:</p> <p>BE_y Baseline emissions during the period y, (tCO₂e)</p> </td><td> <p>Baseline</p> $BE_y = V_{F,y} \cdot NCV_{RG,F,y} \cdot EF_{CO_2,Methane} \quad (1)$ <p>Where:</p> <p>BE_y = Baseline emissions during the period y, (tCO₂e)</p> <p>$V_{F,y}$ = Volume of total recovered gas measured at point F in Figure B.1, after</p> </td><td> <p>The baseline emissions are computed in accordance with the applied methodology</p> </td></tr> </tbody> </table>	Equation as per applied methodology	Corresponding equation in PDD	Evaluation	<p>Baseline</p> <p>Baseline emissions are calculated as follows:</p> $BE_y = V_{F,y} \cdot NCV_{RG,F,y} \cdot EF_{CO_2,Methane} \quad (1)$ <p>Where:</p> <p>BE_y Baseline emissions during the period y, (tCO₂e)</p>	<p>Baseline</p> $BE_y = V_{F,y} \cdot NCV_{RG,F,y} \cdot EF_{CO_2,Methane} \quad (1)$ <p>Where:</p> <p>BE_y = Baseline emissions during the period y, (tCO₂e)</p> <p>$V_{F,y}$ = Volume of total recovered gas measured at point F in Figure B.1, after</p>	<p>The baseline emissions are computed in accordance with the applied methodology</p>	CAR-07 (Closed)
Equation as per applied methodology	Corresponding equation in PDD	Evaluation						
<p>Baseline</p> <p>Baseline emissions are calculated as follows:</p> $BE_y = V_{F,y} \cdot NCV_{RG,F,y} \cdot EF_{CO_2,Methane} \quad (1)$ <p>Where:</p> <p>BE_y Baseline emissions during the period y, (tCO₂e)</p>	<p>Baseline</p> $BE_y = V_{F,y} \cdot NCV_{RG,F,y} \cdot EF_{CO_2,Methane} \quad (1)$ <p>Where:</p> <p>BE_y = Baseline emissions during the period y, (tCO₂e)</p> <p>$V_{F,y}$ = Volume of total recovered gas measured at point F in Figure B.1, after</p>	<p>The baseline emissions are computed in accordance with the applied methodology</p>						

Validated situation				Conclusion
	$V_{F,y}$ Volume of total recovered gas measured at point F in Figure 2, after pre-processing and before the part of the recovered gas may be used on-site, during the period y , (Nm ³) $NC_{V_{RG},F,y}$ Average net calorific value of recovered gas measured at point F in Figure 2 during the period y , (TJ/Nm ³) $EF_{CO_2,Methane}$ CO ₂ emission factor for methane (tCO ₂ /TJ)	pre-processing and before the part of the recovered gas may be used on-site, during the period y , (Nm ³) $NCV_{RG,F,y}$ = Average net calorific value of recovered gas measured at point F in Figure B.1 during the period y , (TJ/Nm ³) $EF_{CO_2Methane}$ = CO ₂ emission factor for methane (tCO ₂ /TJ)		
	Project emissions Project emissions are calculated as follows: $PE_y = PE_{CO_2,fossilfuels,y} + PE_{CO_2,elec,y}$ Where: PE_y Project emissions in the period y , (tCO ₂ e) PE_C CO ₂ emissions due to consumption of fossil fuels for the recovery, pre-treatment, transportation, and, if applicable, compression of the recovered gas up to the	Project emissions The following sources of project emissions are accounted in this methodology: - CO ₂ emissions due to consumption of fossil fuels for the recovery, pre-treatment, transportation, and, if applicable, compression of the recovered gas. In this project activity, the source of these emissions for the project activity comes from fuel gas	The project emissions are computed in accordance with the applied methodology.	

Validated situation				Conclusion
	<p>points A and C in Figure 2 during the period y, (tCO₂e)</p> <p>PE_C CO₂ emissions due to the use of electricity for recovery, pre-treatment, transportation and, if applicable, compression of the recovered gas up to the points A and C in Figure 2 during the period y, (tCO₂e)</p> <p>Project emissions $PE_{CO2, fossil fuels, y}$ due to the consumption of fossil fuels, including the recovered gas, if applicable for the recovery, pre-treatment, transportation and, if applicable, compression of the recovered gas are calculated applying the latest approved version of the “Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion” where process j corresponds to a source of fuel combustion (e.g. a compressor, etc). All applicable emission sources should be documented transparently in the CDM-PDD and in monitoring</p>	<p>combustion of compressor.</p> <p>CO₂ emissions due to the use of electricity for the recovery, pre-treatment, transportation, and, if applicable, compression of the recovered gas. In this project activity, these emissions do not occur as there is no electricity used for the recovery, pre-treatment, transportation and compression of the recovered gas.</p> <p>$PE_y = PE_{FC, j, y}$ (2)</p> <p>Where:</p> <p>PE_y = Project emissions in the period y, (tCO₂e)</p> <p>$PE_{FC, j, y}$ = CO₂ emissions due to consumption of fossil fuels for the recovery, pre-treatment, transportation, and, if applicable, compression of the recovered gas during the period y, (tCO₂e)</p> <p><i>Project emissions from the consumption of fossil fuels</i></p>		

Validated situation			Conclusion
	<p>reports.</p> <p>In accordance with the tool, the project emissions are calculated as:</p> $PE_{FC,j,y} = \sum FC_{i,j,y} \times COEF_{i,y}$ <p>Where:</p> <p>$PE_{FC,j,y}$ Are the CO₂ emissions from fossil fuel combustion in the process j during the year y, (tCO₂/yr)</p> <p>$FC_{i,j}$ Is the quantity of fuel type i combusted in the process j during the year y (mass or volume unit/yr)</p> <p>COE_i Is the CO₂ emission coefficient if the fuel type i in the year y (tCO₂/mass or volume unit)</p> <p>i Are the fuel types combusted in the process j during the year y</p> <p>Option A: The CO₂ emission coefficient $COEF_{i,y}$ is calculated based on the chemical composition of the fossil fuel type i, using the following approach:</p> <p>If $FC_{i,j,y}$ is measured in a mass</p>	<p>Project emissions $PE_{CO_2, fossil fuel, y}$ due to the consumption of fossil fuels, including the recovered gas, if applicable for the recovery, pre-treatment, transportation and, if applicable, compression of the recovered gas are calculated applying the latest approved version 2 of the <i>Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion</i> where process j corresponds to a source of fuel combustion (e.g. a compressor, etc). The CO₂ emissions from fossil fuel combustion in process are calculated based on the quantity of fuels combusted and the CO₂ emission coefficient of those fuels, as follows:</p> $PE_{FC,j,y} = \sum FC_{i,j,y} \times COEF_{i,y} \quad (3)$ <p>Where:</p> <p>$PE_{FC,j,y}$ = The CO₂ emissions from fossil fuel</p>	

Validated situation			Conclusion
	<p>unit: $COEF_{i,y} = w_{C,i,y} \times 44/12$ If $FC_{i,j,y}$ is measured in a volume unit: $COEF_{i,y} = w_{C,i,y} \times \rho_{i,y} \times 44/12$</p> <p>Option B: The CO_2 emission coefficient $COEF_{i,y}$ is calculated based on net calorific value and CO_2 emission factor of the fuel type i, as follows: $COEF_{i,y} = NCV_{i,y} \times EF_{CO_2,i,y}$</p> <p>Project emissions $PE_{CO_2,elec,y}$ due to the use of electricity for the recovery, pre-treatment, transportation, and, if applicable, compression of the recovered gas are calculated applying the latest approved version of the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption". All applicable sources of electricity consumption should be documented transparently in the CDM-PDD and in monitoring reports.</p>	<p>combustion in process j during the year y (tCO_2/yr) $FC_{i,j,y}$ = The quantity of fuel type i combusted in process j during the year y (mass or volume unit/yr); $COEF_{i,y}$ = The CO_2 emission coefficient of fuel type i in year y ($tCO_2/mass$ or volume unit) i = The fuel types combusted in process j during the year y The CO_2 emission coefficient of fuel, $COEF_{i,y}$, calculated using option B regarding data availability, and calculated as follows:</p> <p>Option B : The CO_2 emission coefficient $COEF_{i,y}$ is calculated based on net calorific value and CO_2 emission factor of the fuel type i, as follows: $COEF_{i,y} = NCV_{i,y} \times EF_{CO_2,i,y}$</p> <p style="text-align: right;">(4)</p> <p>Where:</p>	

Validated situation				Conclusion
		$COEF_{i,y}$ = The CO ₂ emission coefficient of fuel type <i>i</i> in year <i>y</i> (tCO ₂ /mass or volume unit) $NCV_{i,y}$ = The weighted average net calorific value of the fuel type <i>i</i> in year <i>y</i> (GJ/mass or volume unit) $EF_{CO_2,i,y}$ = The weighted average CO ₂ emission factor of fuel type <i>i</i> in year <i>y</i> (tCO ₂ /GJ) <i>i</i> = fuel types combusted in process <i>j</i> during the year <i>y</i>		
	Leakage Leakage emissions shall be accounted for project activities where the recovered gas is transported to a processing plant where it is processed into hydrocarbon products (e.g. dry gas, LPG and condensates) and the dry gas is compressed to CNG first, then transported by trailers/trucks/carriers and then decompressed again, before it finally enters the gas pipeline. For other types of project activities, leakage emissions need not to be	Leakage Leakage emissions shall be accounted for project activities where the recovered gas is transported to a processing plant where it is processed into hydrocarbon products (e.g. dry gas, LPG and condensates) and the dry gas is compressed to CNG first, then transported by trailers/trucks/carriers and then decompressed again, before it finally enters the	Validation team confirmed from the review of the PDD, FSR, and site visit that the project activity does not involve compression of dry gas to CNG. Therefore, no	

Validated situation			Conclusion
	considered.	gas pipeline. For other types of project activities, leakage emissions need not to be considered. Since the project does not involve compression of dry gas to CNG, no leakage emission is considered	leakage emissions have been considered in accordance with the applied methodology.
	ER calculation Emission reductions are calculated as follows: $ER_y = BE_y - PE_y - LE_y$	ER calculation Emission reductions are calculated as follows: $ER_y = BE_y - PE_y - LE_y$	Emission reduction is calculated by deducting project emissions, and leakage emissions from baseline emissions. It may be noted that leakage emission is considered nil as per above justification.
	Validation team confirmed from the feasibility study report, field survey and interview of the PP that this project activity involves emissions only from the compressor which consumes fossil fuel. These emissions are part of the project emissions in accordance with the "Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion", Version 02.		

	Validated situation	Conclusion																				
	<p>CAR-07 was raised as notations were inconsistently used in the PDD. In response to the finding, the PP has revised the notations. Further, it was not justified how emission reduction estimates in the PDD are based on the survey used for defining the terms of underlying oil production project as per production sharing agreement. Validation team reviewed the changes and confirmed that notations are now consistent and in compliance with the monitoring methodology. Validation team could conclude from the review of FSR, tender document, and interview of PT. Pertamina officials that emission reductions are based on underlying oil production estimate from production sharing contract. The resolution is detailed in the findings section of this protocol.</p>																					
<p>2. Verify the justification given in the PDD for the choice of data and parameters used in the equations to determine estimated emission reductions.</p> <p>If data and parameters will not be monitored throughout the crediting period and will remain fixed, assess that all data sources and assumptions are appropriate and calculations are correct, applicable to the proposed CDM project activity and will result in a conservative estimate of the emission reductions.</p> <p>If data and parameters will be monitored on implementation and hence become available only after validation of the project activity, confirm that the estimates provided in the PDD for these data and parameters are reasonable.</p> <p>List all data and parameters provided in the PDD in the tables in next column.</p>	<table><tr><th>Data/Parameter title: EF_{CO2,Methane}</th><th>Comments</th></tr><tr><td>Title in line with methodology?</td><td>Yes</td></tr><tr><td>Fixed throughout the crediting period?</td><td>Yes (54.834 tCO₂/TJ)</td></tr><tr><td>Data unit correctly expressed?</td><td>Yes, tCO₂/TJ</td></tr><tr><td>Appropriate description of parameter?</td><td>Yes, CO₂ emission factor for methane</td></tr><tr><td>Source clearly referenced?</td><td>Yes, the has been sourced from the applied methodology. The applied methodology calculates the data in accordance with ISO 6976.</td></tr><tr><td>Value provided is considered reasonable?</td><td>Yes, default value as per the methodology.</td></tr><tr><td>Has this value been verified?</td><td>Yes, applied methodology AM0009, Version 06.0.0.</td></tr><tr><td>Choice of data correctly justified?</td><td>Yes, Default value as per the applied methodology.</td></tr><tr><td>Measurement method correctly described?</td><td>N/A</td></tr></table>	Data/Parameter title: EF _{CO2,Methane}	Comments	Title in line with methodology?	Yes	Fixed throughout the crediting period?	Yes (54.834 tCO ₂ /TJ)	Data unit correctly expressed?	Yes, tCO ₂ /TJ	Appropriate description of parameter?	Yes, CO ₂ emission factor for methane	Source clearly referenced?	Yes, the has been sourced from the applied methodology. The applied methodology calculates the data in accordance with ISO 6976.	Value provided is considered reasonable?	Yes, default value as per the methodology.	Has this value been verified?	Yes, applied methodology AM0009, Version 06.0.0.	Choice of data correctly justified?	Yes, Default value as per the applied methodology.	Measurement method correctly described?	N/A	✓
Data/Parameter title: EF _{CO2,Methane}	Comments																					
Title in line with methodology?	Yes																					
Fixed throughout the crediting period?	Yes (54.834 tCO ₂ /TJ)																					
Data unit correctly expressed?	Yes, tCO ₂ /TJ																					
Appropriate description of parameter?	Yes, CO ₂ emission factor for methane																					
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Value provided is considered reasonable?	Yes, default value as per the methodology.																					
Has this value been verified?	Yes, applied methodology AM0009, Version 06.0.0.																					
Choice of data correctly justified?	Yes, Default value as per the applied methodology.																					
Measurement method correctly described?	N/A																					

	Validated situation		Conclusion
	Data/Parameter title: $V_{F,y}$	Comments	
	Title in line with methodology?	Yes	
	Fixed throughout the crediting period?	No, ex-post determined	
	Data unit correctly expressed?	Yes, Nm ³	
	Appropriate description of parameter?	Yes, Volume of total recovered gas measured at point F in Figure B1 in year y	
	Source clearly referenced?	Yes, On site measurement at point F as described in Figure B1 using Flow meter	
	Value provided is considered reasonable?	Yes, This has been estimated from the associated gas available and process simulation.	
	Has this value been verified?	Yes, This value has been verified from the available gas mentioned in the tender document and process simulation.	
	Choice of data correctly justified?	Yes.	
	Measurement method correctly described?	Yes	
	Data/Parameter title: $NCV_{RG,F,y}$	Comments	
	Title in line with methodology?	Yes	
	Fixed throughout the crediting period?	No ex-post determined	
	Data unit correctly expressed?	Yes, TJ/Nm ³	
	Appropriate description of parameter?	Yes, Net calorific value of recovered gas measured at point F in Figure B1 in the PDD during the period y	
	Source clearly referenced?	Yes, On site sampling of recovered gas at point F in	

Validated situation		Conclusion
	Figure B1 in the PDD for laboratory analysis. (Chemical analysis of gas samples taken at point F in Figure B.1)	
Value provided is considered reasonable?	Yes, Value of data applied for the purpose of calculating expected emission reductions is based on process simulation of the available associated gas.	
Has this value been verified?	Yes, The values have been verified from the process simulation spreadsheets.	
Choice of data correctly justified?	Yes, the Gross Calorific Value (GCV) will be measured monthly at point F in the Figure B.1 in the PDD Version 7 using Online Gas Chromatography (GC) and Net calorific value shall be calculated from data of gross calorific value by multiplying it with 90% (as per guidelines in the 2006 IPCC Volume 20).	
Measurement method correctly described?	Yes	

Validated situation			Conclusion
	Data/Parameter title: $FC_{i,j,y}$	Comments	
	Title in line with methodology?	Yes	
	Fixed throughout the crediting period?	No ex-post determined	
	Data unit correctly expressed?	Yes, $m^3/year$	
	Appropriate description of parameter?	Yes, Quantity of gas fuel combusted in process j during the year y	
	Source clearly referenced?	Yes, On site measurement using flow comp	
	Value provided is considered reasonable?	Yes, Value of data applied for the purpose of calculating expected emission reductions in section B.5 of PDD, appropriate based on design capacity and availability of resources.	
	Has this value been verified?	Yes, The value of data applied for the purpose of calculating expected emission reduction in section B 5 (of PDD) is value has been verified from the capacity, tender document and design process.	
	Choice of data correctly justified?	Yes, Quantity of fuel gas combusted will be measured from consumption of fuel gas for Compressor. Operator is responsible to collect the data and the data result will be reviewed and validated by the Supervisor.	
	Measurement method correctly described?	Yes	

	Validated situation	Conclusion																		
	<table><tr><th>Data/Parameter title: $NCV_{i,y}$</th><th>Comments</th></tr><tr><td>Title in line with methodology?</td><td>Yes</td></tr><tr><td>Fixed throughout the crediting period?</td><td>No. ex-post determined</td></tr><tr><td>Data unit correctly expressed?</td><td>Yes, GJ/m³</td></tr><tr><td>Appropriate description of parameter?</td><td>Yes, Net calorific value of gas fuel in year y for combustion</td></tr><tr><td>Source clearly referenced?</td><td>Yes, Monthly on site collection and laboratory measurement. Calculated using 90% of gross calorific values provided in the laboratory analysis.</td></tr><tr><td>Value provided is considered reasonable?</td><td>Yes, Value of data applied for the purpose of calculating expected emission reductions in section B.5 (of PDD) appropriate based on design capacity and availability of resources.</td></tr><tr><td>Has this value been verified?</td><td>Yes, The value of data applied for the purpose of calculating expected emission reduction in section B 5 (of PDD) is value has been verified from the capacity, tender document and design process.</td></tr><tr><td>Choice of data correctly justified?</td><td>Yes, Measurements should be undertaken in line with national or international fuel standards. The NCV will be</td></tr></table>	Data/Parameter title: $NCV_{i,y}$	Comments	Title in line with methodology?	Yes	Fixed throughout the crediting period?	No. ex-post determined	Data unit correctly expressed?	Yes, GJ/m ³	Appropriate description of parameter?	Yes, Net calorific value of gas fuel in year y for combustion	Source clearly referenced?	Yes, Monthly on site collection and laboratory measurement. Calculated using 90% of gross calorific values provided in the laboratory analysis.	Value provided is considered reasonable?	Yes, Value of data applied for the purpose of calculating expected emission reductions in section B.5 (of PDD) appropriate based on design capacity and availability of resources.	Has this value been verified?	Yes, The value of data applied for the purpose of calculating expected emission reduction in section B 5 (of PDD) is value has been verified from the capacity, tender document and design process.	Choice of data correctly justified?	Yes, Measurements should be undertaken in line with national or international fuel standards. The NCV will be	
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	Validated situation		Conclusion
		calculated in monthly basis, weighted average annual values will be calculated.	
	Measurement method correctly described?	Yes	
	Data/Parameter title: EF _{CO2,I,y}	Comments	
	Title in line with methodology?	Yes	
	Fixed throughout the crediting period?	No , ex-post determined	
	Data unit correctly expressed?	Yes, tCO ₂ /GJ	
	Appropriate description of parameter?	Yes, Weighted average CO ₂ emission factor of lean gas fuel in year y for combustion	
	Source clearly referenced?	Yes, IPCC default values at the upper limit of the uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter1 of Vol. 2(Energy) of the 2006 IPCC Guidelines on National GHG Inventories	
	Value provided is considered reasonable?	Yes, Value of data applied for the purpose of calculating expected emission reductions in section B.5 of PDD is considered reasonable as lean gas is mainly methane, from gas composition in process simulation.	
	Has this value been verified?	Yes, The value of data applied for the purpose of calculating expected	

Validated situation			Conclusion
		emission reduction in section B 5 of PDD is value has been verified from the design simulation.	
	Choice of data correctly justified?	Yes, Any future revision of the IPCC Guidelines should be taken into account	
	Measurement method correctly described?	Yes	
3. Confirm that all assumptions and data used by PPs are listed in the PDD including their references and sources, and that the documentation used as the basis for these assumptions and source of data is correctly quoted and interpreted in the PDD.	<p>As per AM0009 version 06.0.0, the CO₂ emission factor for methane is included in the parameters that are not monitored. PDD has referred this into The Energy Information Administration (EIA), Department of Energy, USA as referred in the methodology.</p> <p>The fossil fuel combustion estimate was based on the compressor used for compression and transportation of associated gas. Further, it was confirmed from the interview that lean gas will be used as fuel in the compressor. The NCV of the fossil fuel was confirmed from the NCV of the lean gas in the process simulation. The volume of fossil fuel (lean gas) combustion was estimated based on the technical specification of the compressor.</p> <p>From the review of FSR, tender document and interview, validation team could conclude that gas production estimate and NCV are based on production sharing agreement. Gas reservoir study was conducted by PT. Pertamina in 2008 for the oil fields at Pondok Tengah and Tambun to assess the gas oil ratio in these fields. Result of this study was also included in the tender document. It was confirmed from the interview of officials from PT. Pertamina that gas production estimate was based on production sharing agreement for Pondok Tengah and Tambun oil fields.</p> <p>The upstream oil field operator and oil producer is PT. Pertamina. PT. Pertamina is having a production sharing agreement specifying the oil production estimates.</p>		✓

	Validated situation	Conclusion
4. Confirm that all estimates of the baseline emissions can be replicated using the data and parameter values provided in the PDD.	The spreadsheet used for calculation of baseline emissions has been provided during initial review. The spreadsheet has been provided and is found to be correctly estimating the baseline emissions using the data and parameter values provided in the PDD.	✓

	Validated situation	Conclusion
SECTION 6. Additionality of a project activity		
1. Does the PDD clearly describe how the proposed CDM project activity is additional?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	✓
2. List the documents and tools provided by the CDM Executive Board used to demonstrate the additionality	The project activity utilises "Tool for the demonstration and assessment of additionality" Version 06.0.0	✓

	Validated situation	Conclusion
SECTION 6a. Prior consideration of the clean development mechanism		
1. Does the PDD clearly indicate the start date of the project activity in format: dd/mm/yyyy and it is in accordance to the Glossary of CDM Terms?	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>The PDD describes the start date as 09/11/2009 as the date of signing Purchase order of Propane Refrigeration Package.</p> <p>The feasibility study report of the project was prepared on 09/09/2009 thereafter investment decision was made on 15/09/2009. The PP has signed CDM consultancy agreement with Agrinergy on 12/10/2009. Agreement with Pertagas on processing of associated gas was signed on 04/11/2009. Validation team confirms that agreement with Pertagas is non binding in nature for the Yudistira, therefore, cannot be considered as start date. Later, the PP has signed the purchase order agreement for supplying propane refrigeration package. During the site visit it was confirmed that only PO contract was signed.</p> <p>The detailed chronology has been provided in the section B.5 of the PDD.</p>	✓

	Validated situation	Conclusion
<p>If the PDD was published for Global Stakeholder Consultation process after the start date, check that the CDM benefits were considered necessary in the decision to undertake the project activity as a CDM project, following the below queries.</p> <p>The PDD was made publicly available for GSP on 26/10/2010 that was after the start date of the project activity.</p>		
<p>2. For a project activity with a start date on or after the 2nd August 2008, confirm that the PPs have informed the host party DNA and the UNFCCC secretariat in writing of their intention to seek CDM Status</p> <p>If such a notification has not been provided by the PPs within six months of the project activity start date, determine that the CDM was not seriously considered in the decision to implement the project activity</p>	<p>The start date of the project activity is after 02/08/2008. The notice of prior CDM consideration was made to the UNFCCC secretariat and to the DNA of the host country on 20/11/2009. The validation team confirmed the display on the UNFCCC CDM website and copy of the letter submitted to DNA.</p> <p>The notification has been submitted within six months of the start date of the project activity.</p>	<p>✓</p>

	Validated situation	Conclusion
<p>3. For a project activity with a start date before the 2nd August 2008, check the following requirements through document reviews to assess the PPs prior consideration of the CDM:</p> <ul style="list-style-type: none"> (a) Evidence that must indicate that awareness of the CDM prior to the project activity start date, and that the benefits of the CDM were a decisive factor in the decision to proceed with the project. (b) Reliable evidence from project participants that must indicate that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation. <p>The time gap between the documented evidence of prior CDM consideration and continuing and real actions shall be within the period required by the Guidance on prior consideration of the CDM</p> <p>If evidence to support the serious prior consideration of the CDM as indicated above that is authentic is not available, determine that the CDM was not considered in the decision to implement the project activity.</p>	Not applicable	✓

	Validated situation	Conclusion									
SECTION 6b. Identification of alternatives											
<p>1. Does the PDD identify credible alternatives to the project activity, in order to determine the most realistic baseline scenario?</p> <p>Assess this list of alternatives and ensure that:</p> <p>(a) The list of alternatives includes as one of the options that the project activity is undertaken without being registered as a proposed CDM project activity;</p> <p>(b) The list contains all plausible alternatives considered to be viable means of supplying the outputs or services that are to be supplied by the proposed CDM project activity;</p> <p>(c) The alternatives comply with all applicable and enforced legislation.</p>	<p>Based on the alternatives discussed in section 5b, the possible alternatives are:</p> <p>For the fate of associated gas</p> <p>Alternative G2: Flaring of the associated gas at the oil production site.</p> <p>Alternative G5: The proposed project activity without being registered as CDM project activity.</p> <p>For oil and gas infrastructure:</p> <p>Alternative P1: Construction of a processing plant for the purpose of processing the recovered gas, in the same way as in the project activity, without being registered as a CDM project activity.</p> <p>Alternative P4: Continuation of the operation of the existing oil and gas infrastructure without any other significant changes.</p> <p>From the above alternatives the possible scenarios are</p> <table border="1"> <thead> <tr> <th colspan="3">LIST OF SCENARIO</th></tr> <tr> <th>No</th><th>Description in the PDD</th><th>Describe why it is credible and complete</th></tr> </thead> <tbody> <tr> <td>1</td><td>Combination G2 and P4, i.e. Flaring of the associated gas and/or gas-lift gas at the oil production site and Continuation of the operation of the existing oil and gas infrastructure without processing of any recovered associated gas and/or gas-lift gas and without any other</td><td> <p>This scenario is the scenario existing prior the project activity. Validation team confirms that this scenario is inline with the existing regulations in Indonesia.</p> <p>This scenario is no investment in the project activity. Therefore, benchmark analysis is considered appropriate to justify the baseline.</p> </td></tr> </tbody> </table>	LIST OF SCENARIO			No	Description in the PDD	Describe why it is credible and complete	1	Combination G2 and P4, i.e. Flaring of the associated gas and/or gas-lift gas at the oil production site and Continuation of the operation of the existing oil and gas infrastructure without processing of any recovered associated gas and/or gas-lift gas and without any other	<p>This scenario is the scenario existing prior the project activity. Validation team confirms that this scenario is inline with the existing regulations in Indonesia.</p> <p>This scenario is no investment in the project activity. Therefore, benchmark analysis is considered appropriate to justify the baseline.</p>	✓
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Validated situation			Conclusion
		significant changes.	
	2	<p>Combination G5 and P1, i.e. Recovery, transportation, processing of the associated gas and/or gas-lift gas and distribution of products thereof to end-users without being registered as a CDM project activity and construction of a processing plant for the purpose of processing the recovered gas, in the same way as in the project activity, without being registered as a CDM project activity.</p>	
Validation team confirms that the above alternatives are complete.			

	Validated situation	Conclusion
SECTION 6c. Investment analysis		
<p>1. Verify the accuracy of financial calculations carried out for the investment analysis:</p> <ul style="list-style-type: none"> (a) Conduct a thorough assessment of all parameters and assumptions used in calculating the relevant financial indicator, and determine the accuracy and suitability of these parameters; (b) Cross-check the parameters against third-party or publicly available sources, such as invoices or price indices; (c) Review feasibility reports, public announcements and annual financial reports related to the proposed CDM project activity and the project participants; 	<p>Assessment of all the parameters and assumptions has been provided below.</p> <p>LPG price was determined based on the tendering process, where PT. Yudistira was selected. The tender document mentions two phases process for selection. In the first phase, administrative and technical evaluation was conducted. The criteria include completeness of application, technical assessment including process diagram, parameters, losses in the system, company experience etc.</p> <p>In the second phase, the commercial evaluation was made. In commercial evaluation, the bid document fixes condensate handling fee of USD 17/bbl, fuel gas consumption priced at USD 4.00/MMBTU.</p> <p>CAR-04 was raised as data used in investment analysis was not presented in the PDD. The CAR was closed as data was presented in the revised PDD. The resolution is detailed in the findings section of this protocol.</p> <p>CL-03 was raised asking justification on the investment analysis. The resolution is detailed in the findings section of this protocol.</p>	<p>CAR-04 (Closed)</p> <p>CL-03 (Closed)</p>

	Validated situation	Conclusion
2. Assess the correctness of computations carried out and documented by the project participants	<p>In the investment analysis validation team confirms:</p> <ul style="list-style-type: none"> ○ Project IRR has been correctly presented for 10 years, i.e. gas availability period,. PP has appropriately added back the residual value of the project activity assets in the final year. ○ Fair value of the assets that remains at the end of the project lifetime has been correctly added back. ○ Depreciation deducted for computing taxable profits has been added back to net profits. ○ Cost of financing expenditures, like loan repayments and interest, has not been included in the calculation of project IRR ○ Taxation calculation has been correctly done and in accordance with the host country rules. <p>The PP has also presented WACC calculations to support the benchmark value used in investment analysis. The WACC is presented as after considering the cost of debt as the prime lending rate published by Bank of Indonesia, cost of equity calculated from CAPM and the average debt equity ratio of the infrastructure index. The cost of equity has been correctly computed from the beta of infrastructure index which is having risk profile similar to that in the project activity. Validation team confirms that computation of WACC has been correctly done. Further, the WACC computed as 14.71% which is higher than that considered at the time of investment decision, i.e. 13.95% sourced from prime lending rate published by bank of Indonesia. Therefore, conservatively benchmark value of 13.95% is considered appropriate for the project activity.</p> <p>The investment analysis spreadsheet is found to be inline with the recent version of Guideline on the assessment of investment analysis.</p>	✓

	Validated situation	Conclusion																								
3. Assess the sensitivity analysis by the project participants to determine under what conditions variations in the result would occur, and the likelihood of these conditions	<p>The sensitivity analysis of the investment analysis is as follows:</p> <table><tr><th>Yudistira</th><th>-10%</th><th>10%</th><th>Cross over point</th></tr><tr><td>Volume of Production</td><td>-1.21%</td><td>13.48%</td><td>10.81%</td></tr><tr><td>Investment cost</td><td>10.73%</td><td>4.13%</td><td>-17.69%</td></tr><tr><td>O&M cost</td><td>10.45%</td><td>3.03%</td><td>-22.59%</td></tr><tr><td>LPG Processing Fee</td><td>0.06%</td><td>12.77%</td><td>12.30%</td></tr><tr><td>Condensate Processing Fee</td><td>6.29%</td><td>8.00%</td><td>89.54%</td></tr></table> <p>Assessment on likelihood of changes in input values:</p> <p>Volume of production: The assessment of associated gas is based on the technical study and production sharing agreement. This was also the basis of tendering. Therefore, further increase in associated gas is not highly likely.</p> <p>Investment cost: The firm purchase order of the project has been placed. The investment cost is also considered suitable based on the local and sectoral expertise of the validation team. Validation team further compared the investment cost with other similar project (UNFCCC Ref: 1144) and found to be conservative. These projects are located in Indonesia at the Pondok Tengah and Tambun oil wells; and of similar capacity (gas processing capacity of the project 1144 is 15 mmscfd and project activity is 17mmscfd). Therefore, decrease in project cost is highly unlikely.</p> <p>O&M cost: O&M cost is also considered suitable based on the local and sectoral expertise of the validation team. Validation team further compared with the O&M cost with other similar project (UNFCCC Ref: 1144) and found to be conservative. Further, the actual O&M cost is USD 2,233,500. Therefore, a decrease of more than 22.59% is not likely to happen.</p> <p>LPG and condensate processing fee: Firm agreement has been signed by the PP on LPG and condensate processing fee. Therefore, any change in this fee is not likely.</p>	Yudistira	-10%	10%	Cross over point	Volume of Production	-1.21%	13.48%	10.81%	Investment cost	10.73%	4.13%	-17.69%	O&M cost	10.45%	3.03%	-22.59%	LPG Processing Fee	0.06%	12.77%	12.30%	Condensate Processing Fee	6.29%	8.00%	89.54%	✓
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Use the table below to list all the inputs to the investment analysis and to describe how each parameter has been validated:

Parameter/input	Symbol/Unit	Value	Source	Means of validation	Conclusion
Annual Projected Volume of associated gas	Nm ³ /year	140,168,408 and decline become 61,487,208	Feasibility study report	<p>Validation team confirmed the project capacity from the review of FSR, tender document, interview of officials from PT. Pertamina and site visit interviews.</p> <p>Validation team further confirmed from the review of FSR, tender document, and interview of officials from PT. Pertamina that associated gas volume was based on the oil production estimate.</p> <p>Team concluded based on following: From the review of FSR, tender document and interview, validation team could conclude that gas production estimate and NCV are based on production sharing agreement. The detail of the validation is described as follows. Gas reservoir study was conducted by PT. Pertamina in 2008 for the oil fields at Pondok Tengah and Tambun to assess the gas oil ratio in these fields. Result of this study was also included in the tender document. It was confirmed from the interview of officials from PT. Pertamina that gas production estimate was based on production sharing agreement for Pondok Tengah and Tambun oil fields. The upstream oil field operator and oil producer is PT. Pertamina. PT. Pertamina is having a production sharing agreement specifying the oil production estimates.</p>	✓
Total investment cost	USD	18,650,946	Feasibility Study report	Validation team confirmed the project cost from the review of FSR, loan documents.	✓

Parameter/input	Symbol/Unit	Value	Source	Means of validation	Conclusion
				<p>The total investment cost comprises of purchase order cost, interest during construction and bank fee. Suitability of the total investment cost was also confirmed from the review of purchase orders and loan documents. Details are as below:</p> <p>The actual equipment cost as mentioned in the purchase order is 17,579,754 USD same as considered for investment decision making.</p> <p>Interest during construction was confirmed from the review of bank loan application dated: 24/09/2009, which describes the interest during construction of USD 844,545. This is same as that considered during investment decision.</p> <p>Bank cost was confirmed from the bank offering document, dated: 01/04/2012 which mentions provisioning fee of 0.75%, servicing fee of 0.25% processing fee of Rupiah 25,000,000 (or USD 2725), management fee of Rupiah 30,000,000 (or USD 3270), and commitment fee of 0.5%. Bank cost can be calculated as USD 227,300 whereas USD 226,647 was considered during decision making. This actual cost is about 0.3% higher than that considered during investment decision.</p> <p>From above team confirms the suitability of total investment cost.</p> <p>Validation team has also compared the investment cost with similar project (UNFCCC Ref: 1144) and found it to be conservative.</p> <p>Validation team further confirms from its sectoral expertise that the project cost considered in the investment decision</p>	

Parameter/input	Symbol/Unit	Value	Source	Means of validation	Conclusion
				is reasonable.	
Total annual O&M cost	USD/year	2,922,278	Feasibility study report	<p>Validation team confirmed the O&M cost from the review of FSR, interview of the PP, sectoral expertise and field survey.</p> <p>O&M cost comprises of two components, O&M cost with no inflation and O&M cost subject to inflation.</p> <p>O&M cost with no inflation includes cost of standby letter of credit issued by the PP to Pertamina for gas consumption.</p> <p>O&M cost subject to inflation includes cost related to maintenance of plant, staff, and others.</p> <p>Detailed validation of these components is provided below.</p> <p>Validation team has also compared the total O&M cost with similar project (UNFCCC Ref: 1144) and found it to be conservative.</p>	✓
O&M cost with no inflation	USD/year	32,883	Feasibility Study Report	<p>Team confirmed the O&M cost with no inflation from the review of FSR.</p> <p>Team confirmed that this cost comprises of cost of standby letter of credit to bank. This cost was about 3% of the fuel gas cost required for operation of plant.</p> <p>Validation team confirms from the interview of the PP and review of FSR that SBLC refers to Standby letter of credit which is required to maintain working capital. Validation</p>	✓

Parameter/input	Symbol/Unit	Value	Source	Means of validation	Conclusion
				team further confirms from its host country expertise that 3% towards letter of credit is reasonable.	
O&M cost subject to inflation	USD/year	2,667,278	Feasibility Study Report	<p>Team confirmed O&M cost subject to inflation from the review of FSR.</p> <p>Suitability of overall O&M cost subject to inflation was confirmed from the following:</p> <p>Signed O&M agreement dated: 20/05/2010 which mentions firm O&M price of USD 0.43/MSCF with annual increase of 7.25%. This is equivalent to USD 2,128,500 . Declaration from the PP that on the personnel employed amounting to USD 527,132/year which is higher than that considered during investment decision, i.e. USD 504,736/year. Team confirmed from the suitability of the subsequent section below.</p> <p>SKPP and SKPI have been compared with the actual receipt dated: 31/01/2011.</p> <p>The actual O&M cost subject to inflation confirmed from the firm cost is USD 2,738,236/year is about 6.30% lower than that considered during investment decision i.e. USD 2,922,278/year. Impact of lower O&M cost has already been considered in the sensitivity analysis above.</p>	✓
The total O&M cost subject to inflation consists of the followings:					
Direct Labour cost	USD/year	853,361	Feasibility study report	Validation team confirms the labour cost from the review of FSR. Validation team further confirms the labour cost involved in the project from sectoral and host country expertise of the team. Direct labour cost is a part of overall O&M cost which is in accordance with the signed O&M agreement.	✓

Parameter/input	Symbol/Unit	Value	Source	Means of validation	Conclusion
Indirect Labour cost	USD/year	504,736	Feasibility study report	<p>Validation team confirms the indirect labour cost from the review of FSR. Indirect labour cost involves indirect labour in managing the project, fringe benefits to the employees, which includes, lunch, and other allowances.</p> <p>Actual indirect labour cost was confirmed from the review of declaration given by the PP on actual number of personnel employed including their salaries.</p> <p>Team further confirmed the suitability of labour cost from the review of Hays The oil & gas Global Salary Guide 2012⁵, that local average annual salary in oil and gas industry is USD 45,000/year. The project activity has considered USD 33,649/year, which is reasonable.</p>	✓
Spare parts and regular maintenance	USD/year	664,444	Feasibility study report	<p>Validation team confirms the cost of spare parts and regular maintenance from the review of FSR. Validation team further confirms this cost from its sectoral expertise.</p> <p>Spare parts and regular maintenance cost is a part of overall O&M cost which is in accordance with the signed O&M agreement.</p>	✓
Overhead	USD/year	566,000	Feasibility study report	<p>Validation team confirms the overhead from the review of FSR. Validation team further confirms this cost from its sectoral expertise.</p> <p>Overhead cost is a part of overall O&M cost which is in</p>	✓

⁵ <http://www1.hays.com/library/pdf/Oil%20Gas%20Salary%20Guide%202012%20-%20Web.pdf> (Salary information section on Page 6)

Parameter/input	Symbol/Unit	Value	Source	Means of validation	Conclusion
				accordance with the signed O&M agreement. The depreciation cost of the furniture and fixtures are not included.	
SKPP	USD	50,000	Feasibility study report	Validation team confirms the SKPP from the review of FSR. Validation team confirms SKPP needs to be conducted once in three years is in accordance with the local regulations ⁶ .	✓
SKPI	USD	100,000	Feasibility study report	SKPP has been compared with the actual receipt dated: 31/01/2011. Validation team confirms the SKPI from the review of FSR. Validation team confirms SKPI needs to be conducted once in five years is in accordance with the local regulations ⁶ .	✓
Calibration of equipments used for billing	USD/year	5,000	Feasibility study report	SKPI has been compared with the actual receipt dated: 31/01/2011. Validation team confirms the calibration cost from the review of FSR. Validation team confirms from host country expertise that calibration cost considered is reasonable.	✓
Building maintenance	USD/year	13,737	Feasibility study report	Validation team confirms the building maintenance cost from the review of FSR. Validation team confirms from the host country expertise that building maintenance cost is reasonable. Building maintenance cost is a part of overall O&M cost which is in accordance with the signed O&M agreement.	✓

⁶ Article 40 of Law No. 0007 of 2005 about requirements and guidelines of business license in downstream oil and gas , issued by Ministry of Energy and Mineral resources and Article 5 of Decree No. 84.K/38/DJM/1998 by department of mines and energy.

Parameter/input	Symbol/Unit	Value	Source	Means of validation	Conclusion
Others	USD/year	60,000	Feasibility study report	<p>Validation team confirms from the interview of the PP and review of FSR that other costs include costs towards security of plant and other contribution to local people. Validation team confirms the other cost from the review of FSR. Validation team from its host country expertise confirms that the other costs considered are reasonable.</p> <p>Other cost is a part of overall O&M cost which is in accordance with the signed O&M agreement.</p>	✓
Fuel gas	USD/MMBTU	4	Feasibility study report	Validation team confirmed the fuel gas price from the review of FSR and agreement between PT. Yudistira and PT. Pertamina	✓
Expense for CSR	%	3.5	Feasibility study report	<p>Validation team confirmed the CSR expense from the review of FSR and approved CSR agreement with head of local villagers. The CSR agreement with head of local villagers mentions the CSR cost to be 3.5% of net profit.</p> <p>The Indonesian law, Act 25, year 2007, clause 15 gives obligation for the investor to implement CSR. Further, the same act, clause 34, mentions that CSR expense needs to be approved from the authorised agency and the implication of not implementing CSR, which includes revocation of business facility. LRQA confirms based on its host country expertise that CSR expense used for the project activity is reasonable and in accordance with the local laws.</p>	✓
Increase in labour cost	%	7.25	Feasibility study report	<p>Validation team confirms the increase from the review of FSR. Validation team further confirms the increase from the review of general inflation published by Bank of Indonesia.</p> <p>Validation team further confirms the annual increase in</p>	✓

Parameter/input	Symbol/Unit	Value	Source	Means of validation	Conclusion
				labour cost from the review of signed O&M agreement.	
Preparation period (engineering & Procurement)	days	433	Feasibility study report	Validation team confirmed the preparation period from the review of FSR, interview of the PP and field survey.	✓
Construction period	Years	1 (361 days)	Feasibility study report	Validation team confirmed the construction period from the review of FSR, interview of the PP, sectoral expertise and field survey.	
Project lifetime	Years	10	Feasibility study report	<p>Validation team confirmed the lifetime of the project from the period of availability of associated gas for processing as described in the tender document, and feasibility study report.</p> <p>Validation team also confirmed the review of FSR, interview of the PP, Decree of Ministry of Finance Decree No 96 year of 2009, sectoral expertise and field survey that equipment lifetime is more than gas availability period. Validation team further confirms that remaining lifetime of the equipment has been correctly added back in the final year.</p>	✓
LPG processing fee	USD/ton	175	Feasibility study report	<p>Validation team confirmed from the publicly available data. The validation of LPG processing fee and its sources has been referred below.</p> <p>Validation team confirmed the suitability of LPG processing fee by comparing the LPG price that from the project activity to average prices in Indonesia.</p> <p>Average LPG market prices in Indonesia are determined by adding the government subsidy over the LPG price. According to the decree of Minister of Energy and Mineral Resource No 28 year of 2008, the LPG price in Indonesia is maintained at IDR 4,250/kg (Ref: http://prokum.esdm.go.id/permen/2008/Permen-esdm-28-</p>	✓

Parameter/input	Symbol/Unit	Value	Source	Means of validation	Conclusion
				<p>2008.pdf, page 2 refers to IDR 12,750 for 3kg LPG). This is equivalent to IDR 3,863.64/kg of LPG on pre-vat basis. The government subsidy ranges from IDR 2,099/kg to IDR 9,026/kg. Therefore, the pre-tax market price ranges from IDR 5,693/kg to IDR 12,890/kg at retail.</p> <p>The LPG cost from the project activity is determined by adding the cost of feed gas, processing fee and distribution & margin for retailing.</p> <p>The feed gas has a range of component ranges from C1 to C4. Though the NCV of feed gas will be higher, but its economic value will be at least equivalent to that of natural gas. The average international natural gas price is USD 3.9/MMBTU, or IDR 5,814/kg. The LPG processing fee quoted is USD 175/ton or IDR 1,653.92/kg. Distribution and margin cost was IDR 1,797.3/kg determined based on the data of Ministry of Energy and Mineral Resources. Therefore, the pre-tax market price from the project activity is IDR 9,265.22/kg or USD 980/Ton which is within the range of market price of LPG in Indonesia.</p> <p>Therefore, LPG price is considered appropriate.</p>	
Condensate price	USD/ton	17	Feasibility study report	<p>Validation team confirmed the condensate price from the review of FSR. Further, the actual condensate price was checked from the agreement between PP and PT. Pertamina.</p> <p>It may be noted that condensate from associated gas recovery is generally not traded, therefore no reference is available.</p>	✓

Parameter/input	Symbol/Unit	Value	Source	Means of validation	Conclusion
				Validation team confirms the reasonableness of the condensate price from the sectoral expertise.	
Inflation Rate	% per year	7.25	Feasibility Study report	Validation team confirmed the inflation rate of 7.25 % from the feasibility study report. Validation team cross verified this inflation figure with that published by of bank of Indonesia (central bank of Indonesia). The geometric mean of inflation rate recorded by Bank of Indonesia ⁷ from January 2003 to August 2009 is 8.64%. Therefore, validation team concludes that inflation rate used in the investment analysis is conservative and appropriate.	✓
Income tax	%	25	Feasibility study report	Validation team confirmed the income tax from the available taxation laws in Indonesia ⁸ .	✓

⁷ <http://www.bi.go.id/web/en/Moneter/Inflasi/Data+Inflasi/> (Select the period from the drop down box below. Inflation rate refers to year-on-year change, therefore, geometric average is considered suitable over simple average.

⁸ <http://www.taxrates.cc/html/indonesia-tax-rates.html> (Income tax law no. 36 Year 2008)

	Validated situation	Conclusion
<p>4. Confirm the suitability of any benchmark applied in the investment analysis:</p> <p>(a) Determine whether the type of benchmark applied is suitable for the type of financial indicator presented;</p> <p>(b) Ensure that any risk premiums applied in determining the benchmark reflect the risks associated with the project type or activity;</p> <p>(c) Determine whether it is reasonable to assume that no investment would be made at a rate of return lower than the benchmark by, for example, assessing previous investment decisions by the project participants involved and determining whether the same benchmark has been applied or if there are verifiable circumstances that have led to a change in the benchmark.</p>	<p>The project can be developed by any entity therefore, benchmark based on parameters that are standard in the market is considered suitable.</p> <p>Validation team confirmed during the site visit that the benchmark considered at the time of investment decision was annual average local investment lending rate charged by commercial banks in Indonesia, 13.95%. This benchmark has been compared with post-tax project IRR. Though the appropriate benchmark for post-tax project IRR is WACC, however, benchmark value of commercial lending rate is considered appropriate based on conservativeness of additionality. The appropriateness of the benchmark has been described below.</p> <p>The PP has also presented WACC calculations to support the benchmark value used in investment analysis. The WACC is presented as after considering the cost of debt as the prime lending rate published by Bank of Indonesia, cost of equity calculated from CAPM and the average debt equity ratio of the infrastructure index. The cost of equity has been correctly computed from the beta of infrastructure index which is having risk profile similar to that in the project activity. Validation team confirms that computation of WACC has been correctly done.</p> <p>Further, the WACC computed as 14.71% which is higher than that considered at the time of investment decision, i.e. 13.95% sourced from prime lending rate published by bank of Indonesia. Therefore, conservatively benchmark value of 13.95% is considered appropriate for the project activity.</p> <p>An average 1 year local investment lending rate before the investment decision for the project activity has been used for the benchmark. All financial information used for the benchmark determination is publicly available.</p> <p>CAR-05 was raised as post-tax project IRR was compared with commercial lending rate, pre-tax benchmark. The resolution is detailed in the findings section of this protocol.</p>	<p>CAR-05 (Closed)</p>

	Validated situation	Conclusion
<p>5. In case the project participants rely on values from a Feasibility Study Report (FSR) approved by any national authority, the team is required to ensure that:</p> <p>(a) The FSR has been the basis of the decision to proceed with the investment in the project, i.e. that the period of time between the finalization of the FSR and the investment decision is sufficiently short for the DOE to confirm that it is unlikely in the context of the underlying project activity that the input values would have materially changed;</p> <p>(b) The values used in the PDD and associated annexes are fully consistent with the FSR, and where inconsistencies occur the DOE should validate the appropriateness of the values;</p> <p>(c) On the basis of its specific local and sectoral expertise, confirmation is provided, by cross-checking or other appropriate manner, that the input values from the FSR are valid and applicable at the time of the investment decision.</p> <p>Use the table below to cross-check input values and describe here the results of the comparison.</p>	<p>LRQA confirmed that the Feasibility Study Report (FSR) dated 09/09/2009 has been the basis of the decision to proceed with the investment in the project activity on 15/09/2009.</p> <p>The investment decision for the project was taken on 15/09/2009 and start date for the project activity is 09/11/2009 (purchase order of propane refrigeration package). Hence, it is unlikely in the context of the project that the input values would have materially been changed and it is reasonable to assume that the FSR has been the basis for the decision to proceed with the investment in the project. LRQA confirms that the values used for performing the investment analysis are fully consistent with the FSR. The input values are further confirmed and cross checked as detailed in the table above</p>	✓

Comparison to similar registered project in the region:

CDM Ref	Investment cost	Tariff	O&M cost	Capacity	Output	Investment cost per capacity	Load factor	O&M relative to investment	O&M per output
Units	Million USD	USD/T	Million USD	Mmscfd feed gas	NA	USD/scfd	NA	%	NA
Project	18.650946	250	2.66728	15	Different values	1.243396	NA	14.30%	NA
1144	29.980586	300	2.80243	12	Different values	2.498382	NA	9.35%	NA

		Validated situation			Conclusion
SECTION 6d. Barrier analysis					
<p>1. Does the PDD demonstrate that the proposed project activity faces barriers that prevent its implementation and do not prevent at least the implementation of one of the alternatives? Provide here an overall determination of the credibility of the barrier analysis. Use the below table to list each barrier considered in the PDD and to describe how the team undertake their validation.</p>		Not applicable.			-
Barriers are issues in project implementation that could prevent a potential investor from pursuing the implementation of the proposed project activity. The identified barriers are only sufficient grounds for demonstration of additionality if they would prevent potential project proponents from carrying out the proposed project activity undertaken without being registered as a CDM project activity.					
Type of Barrier	Description in the PDD	Determination			Conclusion
		Barriers are real	Prevent implementation of PA	Do not prevent implementation of BL	
Access to finance	NA				NA
Risks related barriers	NA				NA
Technological	NA				NA
Due to prevailing practice	NA				NA
Other	NA				NA
First of its kind	NA				NA

	Validated situation	Conclusion
SECTION 6e. Common practice analysis		
1. Describe how the geographical scope of the common practice analysis has been validated. Assess whether the geographical scope (e.g. the defined region) of the common practice analysis is appropriate for the assessment of common practice related to the project activity's technology or industry type.	<p>PP has applied the stepwise approach of Guidelines on common practice analysis Version 01</p> <p>In step 1 the selected output range varies from 8.5 to 25.5 mmscfd.</p> <p>In step 2 for determination of parameter N_{all} PP has selected the host country, Indonesia as the applicable geographical scope. Further, in absence of relevant data only projects with Pertamina has been considered for N_{all}. The projects outside Pertamina are in a different regulatory environment as PT. Pertamina is the only Indonesian state owned company. Therefore, choosing a lower scope in N_{all} will be conservative for factor F. Further, the other factor $N_{all} - N_{diff}$ will not be affected by excluding associated gas recovery projects, as those will be covered in N_{all} and N_{diff} pertaining to different investment climate. N_{all} in this step has been calculated as 3.</p> <p>CAR-06 was raised as common practice analysis was not presented in accordance with the guidelines. The resolution is detailed in the findings section of this protocol.</p>	CAR-06 (Closed)
2. Determine to what extent similar and operational projects (e.g. using similar technology or practice), other than CDM project activities, have been undertaken in the defined region.	<p>In step 3 N_{diff} has been calculated considering major policy difference of Public Service Obligation (PSO) introduced by Government of Indonesia based on Presidential regulation No. 104 year 2007. In this policy the LPG needs to be supplied to local consumers at subsidized rate. LPG was one of the key out put from the project activity, therefore, any impact on the price of LPG will have direct impacts on returns of the project activity. Therefore, the projects before this regulation was announced were in different investment climate and are included in N_{diff}.</p> <p>Value of N_{diff} is 3.</p> <p>In step 4, F factor has been calculated as 0, which is less than 0.2; and the difference of $N_{all} - N_{diff}$ is 0, which is less than 3; therefore, the project is not a common practice.</p>	✓

	Validated situation	Conclusion
3. If similar and operational projects, other than CDM project activities, are already widely observed and commonly carried out in the defined region, assess whether there are essential distinctions between the proposed CDM project activity and the other similar activities.	Not applicable	✓

			Validated situation	Conclusion
SECTION 7. Monitoring plan				
1. <i>Compliance of the monitoring plan with the approved methodology.</i> Confirm that the MP contains all the necessary parameters and that they are monitored in accordance to the approve Methodology using the following table:				
Parameter	Monitoring Meth description	PDD description	Validated situation	Conclusion
$V_{F,y}$	Data Unit: Nm3 Description: Volume of total recovered gas measured at point F in Figure B1 after pre-processing and before the part of the recovered gas may be used on-site, during the period y Source of data: Flow meter (e.g., diaphragm gauge) Measurement procedures (if any): Data should be measured using calibrated flow meters. Measurements should be taken at the point(s) where recovered gas exits the pretreatment Plant	Data Unit: Nm3 Description: Volume of total recovered gas measured at point F in Figure B1 in year y Source of data: On site measurement at point F as described in Figure B1 in the PDD using Flow Meter Description of measurement methods and procedures to be applied: For the purpose of monitoring plan, the total feed gas input will be measured continuously at point F of Figure B1 using calibrated flow comp in MMSCF and the unit will be converted to Nm ³ . Volume	Data unit and description are described correctly. As the the total feed gas input will be measured continuously at point F of Figure B1 using calibrated flow comp in MMSCF and the unit will be converted to Nm ³ .	✓

Validated situation			Conclusion
	<p>Monitoring frequency: Continuously</p> <p>QA/QC procedures: Volume of gas should be completely metered with regular calibration of metering equipment. The measured volume should be converted to the volume at normal temperature and pressure using the temperature and pressure at the time to measurement.</p>	<p>would be converted to Nm³ at normal temperature and pressure using the temperature and pressure at the time of measurement. Calibration will be taken annually and will be done by Metrology Department under Ministry of Trade or by accredited third party laboratory.</p> <p>Operator is responsible to collect the data and the data result will be reviewed and validated by the Supervisor.</p> <p>Monitoring frequency: Continuously</p> <p>QA/QC Procedures: Calibration will be taken annually. Accuracy of the meter is +/- 1%. In case of emergency when main metering can not be used, Barton Chart as backup meter is used and used as crosscheck.</p>	

			Validated situation	Conclusion
$NCV_{RG,F,y}$	<p>Data Unit: TJ/Nm3</p> <p>Description: Net calorific value of recovered gas measured at point F in Figure 2 during the period y</p> <p>Source of data: <i>On site measurement</i></p> <p>Measurement procedures (if any): Measurements should be undertaken in line with national or international fuel Standards</p> <p>Monitoring frequency: At least monthly</p> <p>QA/QC Procedures: The laboratories performing NCV measurements should have ISO17025 accreditation or justify that they can comply with similar quality standards</p>	<p>Data Unit: TJ/Nm3</p> <p>Description: Net calorific value of recovered gas measured at point F in Figure B1 in the PDD during the period y</p> <p>Source of data: On site sampling of recovered gas from Tambun and Pondok Tengah at point F in Figure B1 .</p> <p>Description of measurement methods and procedures to be applied: Measurements should be undertaken in line with national or international fuel standards. Gas samples should regularly be taken at point F in Figure B.1 and the molar composition of each gas sample should be determined through chemical analysis following the procedures for QA/QC. Based on the molar composition, the Net Calorific Value on a volumetric basis should be</p>	<p>Validation team confirmed that the Gross Calorific Value (GCV) will be measured monthly at point using Online Gas Chromatography (GC) and Net calorific value shall be calculated from data of gross calorific value by multiplying it with 90% (as per Chapter 1 2006- IPCC Guidelines on National GHG Inventories Volume 2).</p>	✓

Validated situation			Conclusion
		<p>determined for each sample in line with ISO 6976 or an equivalent standard for a combustion reference temperature of 25°C and the same metering reference condition used for parameter $V_{F,y}$. The average NCV during the period y is defined as the arithmetic average of NCVs for the samples taken during the same period. Sampling and compositional analysis and calculation of net calorific value at least monthly..</p> <p>Monitoring frequency: Monthly</p> <p>QA/QC Procedures: Sampling in accordance with ISO 10715 or equivalent standard. Compositional analysis in accordance with ISO 6974 or equivalent standard. Routine maintenance and calibration in accordance with ISO 10723 or equivalent standard. GC</p>	

			Validated situation	Conclusion
		calibration gases certified to ISO 6141 or equivalent standard. Annual manufacturer servicing and calibration to ISO17025 or equivalent standard. In case third party laboratories are used, these should as a minimum have ISO17025 accreditation or justify that they can comply with similar quality standards		
$FC_{i,j,y}$	<p>Data Unit: Mass or volume unit per year (e.g. ton/yr or m³/yr)</p> <p>Description: Quantity of fuel type <i>i</i> combusted in process <i>j</i> during the year <i>y</i></p> <p>Source of data: Onsite measurements</p> <p>Measurement procedures (if any): Use either mass or volume meters. In cases where fuel is supplied from small daily tanks, rulers can be used to determine mass or volume of the fuel consumed, with the following conditions: The ruler gauge must be part of the daily tank and</p>	<p>Data Unit: m³/year</p> <p>Description: Quantity of gas fuel combusted in process <i>j</i> during the year <i>y</i></p> <p>Source of data to be used: On site measurement will be in MMSCF unit and will be converted to m³.</p> <p>Description of measurement methods and procedures to be applied: Quantity of fuel gas combusted will be continuously measured using flow meter and will be monthly aggregated. The gas fuel is used for Compressor. Operator is</p>	Validation team confirmed from the interview of the PP that Quantity of fuel gas combusted will be measured using flow comp. The fuel gas is used for Compressor.	✓

Validated situation			Conclusion
	<p>calibrated at least once a year and have a book of control for recording the measurements (on a daily basis or per shift); Accessories such as transducers, sonar and piezoelectronic devices are accepted if they are properly calibrated with the ruler gauge and receiving a reasonable maintenance; In case of daily tanks with pre-heaters for heavy oil, the calibration will be made with the system at typical operational conditions.</p> <p>Monitoring frequency: Continuously</p> <p>QA/QC Procedures: The consistency of metered fuel consumption quantities should be cross-checked by an annual energy balance that is based on purchased quantities and stock changes. Where the purchased fuel invoices can be identified specifically for the CDM project, the metered fuel</p>	<p>responsible to collect the data and the data result will be reviewed and validated by the Supervisor.</p> <p>QA/QC Procedures: Accuracy of the meter is +/- 1%.</p>	

		Validated situation		Conclusion
	consumption quantities should also be cross-checked with available purchase invoices from the financial records.			
$NCV_{i,y}$	<p>Data Unit: GJ per mass or volume unit (e.g. GJ/m³, GJ/ton)</p> <p>Description: Weighted average net calorific value of fuel type i in year y</p> <p>Source of data: The following data sources may be used if the relevant conditions apply: a) Value provided by the fuel supplier in invoices b) Measurements by the project participants c) Regional or national default values d) IPCC default values at the upper limit of uncertainty at a 95% confidence interval as provided in table 1.2 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG inventories</p>	<p>Data Unit: GJ/m³</p> <p>Description: Net calorific value of gas fuel in year y for combustion</p> <p>Source of data to be used: IPCC default values at the upper limit of the uncertainty of a 95% confidence interval as provided in Table 1.2 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories.</p> <p>Description of measurement method and procedures to be applied: Any future revision of the IPCC Guidelines should be taken into account</p> <p>QA/QC procedures to be applied: Verify if the values</p>	<p>Validation team confirmed from the interview of the PP that this will be monitored in line with national or international fuel standards. The NCV will be calculated in monthly basis, and the average annual values will be calculated. Gross Calorific Value (GCV) will be measured using Online Gas Chromatography (GC) and Net calorific value shall be calculated from data of gross calorific value by multiplying it with 90% (as per Chapter 1 -2006 IPCC Guidelines on National GHG Inventories Volume 2).</p>	✓

Validated situation			Conclusion
	<p>Measurement procedures (if any): For a) and b): Measurements should be undertaken in line with national or international fuel standards.</p> <p>Monitoring frequency: For a) and b): The NCV should be obtained for each fuel delivery, from which weighted average annual values should be calculated. For c): Review appropriateness of the values annually For d): Any future revision of the IPCC Guidelines should be taken into account</p> <p>QA/QC Procedures: Verify if the values under a), b), and c) are within the uncertainty range of the IPCC default values as provided in Table 1.2 Vol. 2 of the 2006 IPCC Guidelines. If the values fall</p>	<p>are within the uncertainty range of the IPCC default values as provided in Table 1.2, Vol. 2 of the 2006 IPCC Guidelines. If the values fall below this range collect additional information from the testing laboratory to justify the outcome or conduct additional measurements. The laboratories performing NCV measurements should have ISO 17025 accreditation or justify its compliance with similar quality standards. The Gas Chromatograph complies with ISO 9001 as standard for quality management.. Accuracy of the GC is +/- 1%.</p>	

		Validated situation		Conclusion
	below this range collect additional information from the testing laboratory to justify the outcome or conduct additional measurements. The laboratories in a), b), or c) should have ISO 17025 accreditation or justify that they can comply with similar standards.			
$EF_{CO_2,i,y}$	<p>Data Unit: tCO₂/GJ</p> <p>Description: Weighted average CO₂ emission factor of fuel type i in year y</p> <p>Source of data: The following sources may be used if relevant conditions apply: a) Values provided by the fuel supplier in invoices b) Measurements by the project participants c) Regional or national default values d) IPCC default values at the upper limit of the uncertainty at a 95% confidence interval as</p>	<p>Data Unit: tCO₂/GJ</p> <p>Description: Weighted average CO₂ emission factor of lean gas fuel in year y for combustion</p> <p>Source of data to be used: IPCC default values at the upper limit of the uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter1 of Vol. 2(Energy) of the 2006 IPCC Guidelines on National GHG Inventories</p>	<p>Validation team confirmed from the interview of the PP that IPCC default values at the upper limit of the uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter1 of Vol. 2(Energy) of the 2006 IPCC Guidelines on National GHG Inventories IPCC default values at the upper limit of the uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter1 of Vol. 2(Energy) of the 2006 IPCC Guidelines on National GHG Inventories and any future revision of the IPCC Guidelines should be taken into account.</p>	✓

		Validated situation		Conclusion
	<p>provided in table 1.4 of Chapter 1 Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories.</p> <p>Measurement procedures (if any): For a) and b): Measurements should be undertaken in line with national or international fuel standards.</p>			
<p>2. <i>Implementation of the plan.</i> confirm that the monitoring arrangements described in the monitoring plan are feasible within the project design.</p> <p>Described the steps undertaken to assess this.</p>		<p>The monitoring plan describes the objective, organisational structure, roles and responsibility, the monitoring instruments, data monitoring procedures and the management system.</p> <p>On site review and field interview were conducted and it confirmed that the monitoring is planned in a reasonable manner and considered feasible to be implemented by the PP.</p> <p>CL-04 was in relation to this requirement. The resolution is detailed in the findings section of this protocol.</p>		CL-04 (Closed)
<p>3. <i>Implementation of the Plan:</i> confirm that the means of implementation of the MP, including the data management and quality assurance and quality control procedures, are sufficient to ensure that the emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified</p>		<p>The monitoring plan includes the internal quality control and assurance process, data control system and regular calibration of the monitoring instruments as appropriate that will ensure reliable monitoring and reporting of the ERs.</p> <p>CAR-08 was raised regarding the implementation of the monitoring plan. The resolution is detailed in the findings section of this protocol.</p>		CAR-08 (Closed)

	Validated situation	Conclusion
SECTION 8. Local stakeholder consultation		
1. Determine whether comments by local stakeholders that can reasonably be considered relevant for the proposed CDM project activity, have been invited	Validation team confirmed from the review of minutes of meeting and interview of local villagers, Environment Protection Bureau, that relevant stakeholders' were invited for the meeting. Further, from the interview it was also confirmed that the agenda of the meeting includes comments on the proposed project activity. CL-05 was raised as process of inviting the local stakeholders were not clearly described in the PDD. The resolution is detailed in the findings section of this protocol.	CL-05 (Closed)
2. Confirm that the summary of the comments received as provided in the PDD is complete	The PDD has correctly described the summary of comments. The summary of comments was confirmed from the interview of the local stakeholders interviewed during site visit.	✓
3. Confirm that the project participants have taken due account of any comments received and have described this process in the PDD	Confirmed from the interview of local stakeholders that no negative comments were received.	✓

	Validated situation	Conclusion
SECTION 9. Environmental Impacts		
1. Is an EIA required by the environmental legislation of the host country? Describe the legislation applicable.	<p>LRQA has confirmed that the PPs have undertaken an Environmental Impact Assessment together with Pertamina in compliance with the latest regulation of the Indonesian Environmental Ministry, Regulation No. 11 in 2006⁹. This documentation has been approved by the EIA Central Assessment Commission on 12/11/2008.</p> <p>The PPs have submitted documentation to LRQA on the analysis of the environmental impacts of this project activity in accordance with paragraph 37 (c) of the CDM modalities and procedures.</p>	✓
2. Confirm whether the project participants have undertaken an analysis of environmental impacts and, if required by the host Party, an environmental impact assessment	Confirmed from the review of environmental impact assessment (EIA) report interview of the PP, Official from Environment Bureau and local villagers.	✓
3. Confirm that environmental impacts considered significant by the PPs or the Host country are described in the PDD, including mitigation measures.	Validation team confirmed from the review of the PDD and EIA report that environmental impacts along with mitigation measures have been appropriately presented in the PDD.	✓

⁹ <http://www.menlh.go.id/popup.php?cat=201&id=2531>

Findings¹⁰

1. Grade / Ref:	CAR 01	2. Date:	31/01/2011	3. Status:	Closed
4. Requirement:	Para 44 of CDM-VVM, Version 01.2				
5. Nature of the Issue Raised:	LoA from the DNA of the host country and the Annex-I country for the project has not been made available for validation.				
6. Nature of responses provided by the project participants:	LoA by the DNA of the host country dated 27/01/2011 and LoA by UK-DNA as the Annex-I country dated 7/03/2011 have been provided to the DOE.				
7. Assessment of such responses:	PP has presented LoAs from the host party and Annex I party to the validation team. The title of the project and the name of the PP mentioned in the LoAs matches exactly with that in the PDD. LoAs meet the requirement of written approval, stating that the party is the party to the Kyoto Protocol, voluntary participation, and confirmation on contribution of the project towards sustainable development. Therefore, finding has been closed.				
8. References to resulting changes in the PDD or supporting annexes:	Supporting to section A.3				

¹⁰ Explanation of the Findings Log structure:

1. Grading and Sequential Number of the finding	2. Date of Original Finding	3. New, Open, Closed	4. Requirement (VVM, PDD-CDM, etc)	5. Reference to Protocol
6. Details of PP's response	7. Evaluation from the Validation team		8. List of changes made as a result of the finding	

1. Grade / Ref:	CAR 02	2. Date:	31/01/2011	3. Status:	Closed
4. Requirement:	Para 58 of CDM-VVM, Version 01.2; Guideline for completing CDM-PDD, Version 07				
5. Nature of the Issue Raised:	<p>The followings are not included in the section A.4.3 and A.2 in accordance with the Guidelines for completing the CDM-PDD, Version 07:</p> <ol style="list-style-type: none"> 1. Description of how the technology used in the project is environmentally safe and sound. 2. Description of age and average lifetime of the equipments 3. Load factor and efficiency. 4. The monitoring equipment and location in the system 5. The emission sources and gases involved in the project activity 6. The existing and forecast energy and mass flows and balances of the system 7. The equivalent SI format/units for the values mentioned in non-S.I. format. 8. The project flow diagram does not clearly presents whether entire or part of the extracted lean gas will be consumed in the system. 				
6. Nature of responses provided by the project participants:	<p>The PDD was revised to include the description of technology as environmentally safe and sound; age and average lifetime of equipments; efficiency; monitoring equipments and their locations; emission sources and gases; existing and forecast energy and mass flows and balances; equivalent SI units.</p> <p>Inclusion of load factor is not relevant as the loading is always limited by the availability of associated gas from the oil wells, therefore only efficiency is included.</p> <p>Project flow diagram was revised to represent that only a part of lean gas will be consumed and remaining will be supplied further.</p>				
7. Assessment of such responses:	<p>Validation team confirmed the revised PDD correctly includes the following.</p> <p>Description of the technology is included in the revised PDD and the technology is environmentally safe and sound as confirmed from the sectoral expertise of LRQA.</p> <p>Description on age and average lifetime are included in the revised PDD and validated from review of the decree of ministry of finance, decree no. 96 of the year 2009 and from the sectoral expertise of LRQA.</p> <p>Description of efficiency is included in the revised PDD and validated from the process simulation and sectoral expertise of LRQA.</p> <p>Description of monitoring equipment and their location in the system is correctly described in the revised PDD and has been confirmed from the site visit and interview of the PP.</p> <p>Description of the emission sources and gases involved in the project activity and validated from the site visit, sectoral expertise and review of the applied methodology.</p> <p>Description of existing and forecast energy and mass flows and balances of the system is correctly included in the revised PDD and validation team confirmed from the review of FSR, simulation and based on the LRQA sectoral expertise.</p> <p>All the values are provided in the equivalent SI units in the revised PDD.</p>				

Revised flow diagram correctly presents that only a part of the lean gas is used in the system. Validation team confirmed this from the review of FSR, site visit and sectoral expertise of LRQA.

8. References to resulting changes in the PDD or supporting annexes:

Section A.2 and A.4.3

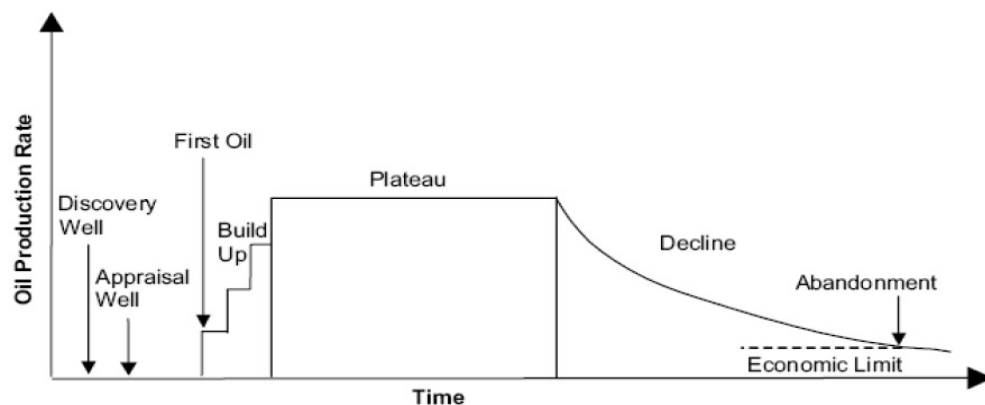
1. Grade / Ref:	CAR 03	2. Date:	31/01/2011	3. Status:	Closed
4. Requirement:	Paragraph 78 of the CDM-VVM, Version 01.2				
5. Nature of the Issue Raised:	It was noted that compressor to be used for delivering of associated gas from the oil well to the project site, which is not included in the project boundary and the emissions from the compressors has not been accounted for emission reduction calculation.				
6. Nature of responses provided by the project participants:	Emissions from the compressors have been accounted for emission reduction calculation in the section B.6 in the revised PDD.				
7. Assessment of such responses:	Validation team confirms that the project emissions from the fossil fuel consumption have been correctly applied in the ex-ante emission reduction estimate from the review of technical specification of the compressor. Validation team also confirms that monitoring plan now correctly includes the monitoring of project emissions, i.e. fossil fuel consumption, its NCV and emission factor, in accordance with the Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion, Version 02.				
8. References to resulting changes in the PDD or supporting annexes:	Section A.4.4, B.6, B.7 and emission reduction spreadsheet				

1. Grade / Ref:	CAR 04	2. Date:	31/01/2011	3. Status:	Closed
4. Requirement:	Paragraph 110 of VVM Version01.2; and Guideline for completing CDM-PDD, Version 07				
5. Nature of the Issue Raised:	All the data used in financial analysis has not been presented in section B.5 of the PDD for additionality demonstration in accordance with the Guideline for completing CDM-PDD, Version 07.				
6. Nature of responses provided by the project participants:	All the major data used in financial analysis have been described in section B5, please see revised PDD.				
7. Assessment of such responses:	Validation team confirmed from the review of the investment analysis spreadsheet that revised PDD correctly includes all the major input values in section B.5 of the PDD.				
8. References to resulting changes in the PDD or supporting annexes:	Section B.5				

1. Grade / Ref:	CAR 05	2. Date:	31/01/2011	3. Status:	Closed
4. Requirement:	Paragraph 109(c) and 112 (a) of the CDM-VVM, Version 01.2				
5. Nature of the Issue Raised:	<p>The applied benchmark of commercial interest rate is the gross earnings excluding the impact of local taxation, i.e. pre-tax earning and has been compared against post-tax project IRR. PP to clarify how the applied benchmark is appropriate to the type of IRR calculated.</p> <p>Further, the commercial lending rate was provided for a period of November 2008 to October 2009. PP to clarify how this information was available at the investment decision date of 15/09/2009.</p>				
6. Nature of responses provided by the project participants:	<p>Though commercial lending rate is pre-tax benchmark, however, during the investment decision post-tax project IRR was compared with commercial lending rate. In response to the finding, WACC computed for the investment in oil and gas sector in Indonesia gives the return of about 14.71%. The WACC is based on the return on equity calculated for Indonesia from the historical stock prices, average risk in infrastructure business, government bond rates and commercial lending rate. Therefore, the benchmark value using commercial lending rate is conservative.</p> <p>The benchmark has been revised to one year average commercial lending rate used as a benchmark which was available at the time of investment decision-making, i.e. September 2008 to August 2009. The benchmark has been revised in the PDD to the value that was available at the time of investment decision-making, i.e. 13.95%.</p>				
7. Assessment of such responses:	<p>In response to the finding, the PP has presented the WACC spreadsheet. Validation team confirms that WACC has been correctly carried out considering the weighted average of cost of debt and cost of equity. Cost of equity has been computed through CAPM model where similar risk investment in infrastructure business which is similar to the project activity. Cost of debt has been computed by correctly considering interest rate and deducting taxation rates. Validation team confirms that computation of WACC has been correctly computed.</p> <p>Further, the value of commercial lending rate of one year period available at the time of investment decision making is 13.95%.</p> <p>Validation team considers that it is conservative, thus appropriate to compare one year average commercial lending rate as published by bank of Indonesia when compared to WACC. Therefore, comparison of post-tax project IRR with commercial lending rate is considered conservative, thus appropriate. Therefore, finding was closed.</p>				
8. References to resulting changes in the PDD or supporting annexes:	WACC spreadsheet, investment analysis spreadsheet, and PDD section B.5				

1. Grade / Ref:	CAR 06	2. Date:	31/01/2011	3. Status:	Closed
4. Requirement:	Paragraph 119 of CDM-VVM, Version 01.2 and Tool for demonstration and assessment of additionality, Version 05.2				
5. Nature of the Issue Raised:					
Section B.5 of the PDD Version 01, does not justify how the common practice analysis in accordance with 'Guidelines on common practice' (Version 01)					
The weblink (http://Pertamina.pertamina.com/contents.php?option=webpage&menu=504&page_id=40&menu=504&page_id=40) provided for the list of similar project in the PDD could not be accessed.					
6. Nature of responses provided by the project participants:					
The common practice analysis has now been presented in accordance with the 'Guidelines on common practice' (Version 01). The value of Nall is sourced from the list of all the associated gas recovery projects in PT. Pertamina oil wells. Further, the parameter Ndiff has been justified in accordance with the guidelines.					
The weblink of the associated gas recovery projects at PT. Pertamina's oil and gas assets has been corrected.					
7. Assessment of such responses:					
Validation team confirms that the revised web-link correctly presents all the associated gas recovery projects at PT. Pertamina's oil and gas asset.					
The parameter Nall considered as only the associated gas recovery projects in PT. Pertamina oil wells. Though there may be other associated gas recovery projects located in other oil companies, however, those projects are under different regulatory environment as PT. Pertamina is the only public sector (government) company in the upstream oil and gas business operating in Indonesia. Hence, if those projects were considered in Nall, then it should also be reflected in Ndiff. Therefore, not considering these projects will give a conservative estimation of 'F' Factor (F Factor is 1-Ndiff/Nall), and will not have any impact of Nall – Ndiff and thus, conservative assessment of common practice analysis. Therefore, validation team consider that the common practice analysis has been correctly and conservatively presented. Therefore, finding was closed.					
8. References to resulting changes in the PDD or supporting annexes:					
Section B.5 and Annex 3					

1. Grade / Ref:	CAR 07	2. Date:	31/01/2011	3. Status:	Closed
4. Requirement:	Paragraph 122 of CDM-VVM and Guidelines for completing of CDM-PDD, Version 07				
5. Nature of the Issue Raised:	<p>Following notations has been interchangeably used in the PDD, Version 01</p> <ul style="list-style-type: none"> • $PE_{CO2,fossilfuel,y}$ and $PE_{FC,j,y}$ • $FC_{i,j,y}$ and $FC_{leangas,j,y}$ • $COEF_{i,y}$ and $COEF_{leangas,y}$ • $NCV_{i,y}$ and $NCV_{leangas,y}$ • $EF_{CO2,i,y}$ and $EF_{CO2,leangas,y}$ • $PE_{CO2elec,y}$ and $PE_{EC,y}$ • $FC_{n,i,t}$ and $FC_{n,leangas,t}$ • $NCV_{i,t}$ and $NCV_{leangas,t}$ • $EF_{CO2,i,t}$ and $EF_{CO2,leangas,t}$ <p>PP is requested to use consistent notations throughout the PDD.</p> <p>PP to justify how the emission reduction estimates in the PDD are based on the survey used for defining the terms of underlying oil production project as per the production sharing contract.</p>				
6. Nature of responses provided by the project participants:	<p>Notations have been changed for consistency. Please refer to the revised PDD.</p> <p>Baseline emissions are based on the volume of total recovered gas measured at point F in Figure B.1. This gas would be flared in absence of the project activity. There is a level of uncertainty with regards to the amount of associated gas since it is directly linked to the oil production. Such uncertainty would ultimately be taken into account since the emission reductions are calculated based on actual data of the associated gas recovered. With this in mind and considering that there will be necessary monitoring in place, an over estimate of the emissions reductions based upon the predicted data, would not present a problem.</p> <p>At current, the associated gas production forecast in the PDD is based on the survey by Pertamina in 2008 and is directly related to the oil production, i.e. a gas to oil ratio (GOR) of the oil produced. The initial GOR of Pondok Tengah Oil Field was estimated at approximately 3,855 scf/bbl and the gas deliverability would be declining in accordance to the declining curve analysis as shown by the typical production profile for a large field and life cycle reservoir below.</p>				



The same declining profile is expected for Tambun oil field, as explained by M. Bunyamin, Pertamina Enhanced Oil Recovery General Manager, that the decline rate of oil production from Tambun wells was approximately 20% in 2004 – 2008, before applying EOR technology, and with EOR technology the decline rate of oil production is expected to be 12%.¹¹

The forecast of quantity and composition of associated gas from Pondok Tengah and Tambun oil field based on the study and agreement are presented in Annex 3.

As such, while forecast are used in the PDD, the quantity and composition of the recovered gas are monitored ex-post and baseline and project emissions are actual emissions that are monitored as described in Section B.7

7. Assessment of such responses:

The revised PDD uses consistent notations and in conformance with the applied methodology.

The emission reductions are calculated based on the gas production estimate mentioned in the tender document and FSR. The gas production estimated in the tender document was based on the reservoir study conducted in 2008 and oil production estimate by state owned PT. Pertamina. PT. Pertamina is the upstream oil producer and operator for Pondok Tengah and Tambun oil fields.

From the review of FSR, tender document and interview, validation team could conclude that gas production estimate and NCV are based on production sharing agreement. The detail of the validation is described as follows.

Gas reservoir study was conducted by PT. Pertamina in 2008 for the oil fields at Pondok Tengah and Tambun to assess the gas oil ratio in these fields. Result of

¹¹ Warta Pertamina, Edition No. 01/ Year XLIV/January 2009

this study was also included in the tender document. It was confirmed from the interview of officials from PT. Pertamina that gas production estimate was based on production sharing agreement for Pondok Tengah and Tambun oil fields.
The upstream oil field operator and oil producer is PT. Pertamina. PT. Pertamina is having a production sharing agreement specifying the oil production estimates.
Therefore, it can be reasonably assumed that gas production estimates as given in the tender document and FSR are based on production estimate.

8. References to resulting changes in the PDD or supporting annexes:	
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Section B.6

1. Grade / Ref:	CAR 08	2. Date:	31/01/2011	3. Status:	Closed
4. Requirement:	Paragraph 123 of CDM-VVM and Guidelines for completing of CDM-PDD, Version 07				
5. Nature of the Issue Raised:					
<div>i. It was noted that the parameter “Average technical transmission and distribution losses for providing electricity ‘TDL_{j,y}’ “ will not be monitored and conservatively considered as Zero. However, the parameter TDL_{j,y}’ has been included in section B.7.1 as a monitoring parameter and not in the section B.6.2 of the PDD.</div> <div>ii. For the monitoring parameters, the following description have not been provided in accordance with the Guideline:<ul style="list-style-type: none">Measurement method and proceduresMeasurement equipmentCalibration procedures to be employedAccuracy of the measurement methodResponsible person/entity to undertaken the measurementMeasurement interval</div> <div>iii. It was confirmed during the site visit that the NCV of the feed gas and the lean gas will be measured in-house through online gas chromatograph. However, it is not clarified whether the in-house laboratory would have ISO 17025 accreditation or how the laboratory can comply with similar quality standard.</div> <div>iv. It was noted that lean gas is distilled from the feed gas and therefore not purchased. How the QA/QC procedures for the parameters ‘FC_{leangas,j,y}’ and ‘FC_{n,leangas,t}’ will be implemented with specific reference to ‘<i>annual energy balance that is based on purchase quantities and stock changes</i>’ has not been provided.</div>					
6. Nature of responses provided by the project participants:					
<p>Since the project activity does not require electricity for the recovery, pre-treatment, transportation, and the compression of the recovered gas, thus no project emissions have been accounted from the electricity consumption. The section B.7.1 of the PDD has been revised to remove the parameter Average technical transmission and distribution losses for providing electricity ‘TDL_{j,y}’ and other parameters related to the electricity consumption.</p> <p>The table in section B.7.1 is revised to include the measurement method, equipment, calibration procedures, accuracy of the meters, measurement interval and responsible entity.</p> <p>As per the clarification above, the NCV measurement will be undertaken for associated gas and the gas fuel used in compressors for transportation. The measurement of these gases for emission reduction will done through a laboratory which have ISO17025 standard or justify these standards. ISO 17025 is a</p>					

management systems certificate focusing on laboratories. Laboratories with similar management systems can also justify that they are complying with ISO 17025 requirement. During verification either a certificate of ISO 17025 or justification to those standards will be submitted during verification.

The QA/QC procedures for associated gas and fuel gas includes regular calibration in accordance with the local regulations.

As per the clarification above, the measurement of lean gas is not required. The measurement of associated gas will be the part of transaction with PT. Pertamina. Further, the measurement of associated will be cross verified from the Barton-chart method which is also installed for cross-checking.

7. Assessment of such responses:

In response to the finding, the PP has revised the PDD. The revised PDD now correctly presents the measurement method and procedures; measurement equipment and its accuracy; monitoring frequency; calibration procedures; responsible entity to undertake measurement in the revised monitoring plan. Validation team further confirmed that as per the applied methodology, project boundary includes only gas recovery, pre-treatment, and transportation infrastructure and does not include gas processing plant. Therefore, monitoring of electricity consumption at gas processing plant is not required. Further, measurement of products at gas processing plant, like LPG, lean gas etc is not required by the applied methodology. The revised monitoring plan correctly presents the monitoring of amount and NCV of associated gas supplied to the gas processing plant and gas used in compressor which will be used for transportation. The NCV measurement will be done by laboratories which can justify the applicability of ISO 17025 management system standard, through certificate or justification to the DOE performing verification. Quantity of associated gas and gas fuel used in compressor will be measured through flow meters.. QA/QC procedures have been correctly included in revised monitoring plan. Validation team confirmed the revised monitoring plan is correct from the review of the applied methodology, field survey and host country laws. Therefore, finding was closed.

8. References to resulting changes in the PDD or supporting annexes:

Section B.7 and Annex 4

1. Grade / Ref:	CL 01	2. Date:	31/01/2011	3. Status:	Closed
4. Requirement:	Paragraph 58 of CDM-VVM, Version 01.2				
5. Nature of the Issue Raised:	In section A.4.1.4, of the PDD Version 01, it was stated that the project is 50m away from the gas distribution network, however, during the site it was noted that there was no LPG distribution line near the project site.				
6. Nature of responses provided by the project participants:	Gas distribution network that located 50 m away from the project activity is lean gas distribution pipeline owned by Pertamina and has been added in the revised PDD. LPG product is distributed using LPG truck that is weighted by weigh-bridge at project activity. Site visit was taken place before Commercial Operation Date of the project activity, hence there was no LPG distribution activity could be observed.				
7. Assessment of such responses:	In response to the finding, the PP has correctly revised the PDD to remove the statement that distribution network is 50m away from the project activity. Validation team confirmed these corrections were inline with the information confirmed during the site visit. Therefore, finding was closed.				
8. References to resulting changes in the PDD or supporting annexes:	Section A.2				

1. Grade / Ref:	CL 02	2. Date:	31/01/2011	3. Status:	Closed
4. Requirement:	Paragraph 81 of CDM-VVM, Version 01.2				
5. Nature of the Issue Raised:	It was noted that the alternatives 'G4' and 'P2' has been eliminated from being credible alternatives due to economies of scale. Though the 'evaluation of economic attractiveness of alternatives' should be done in step 3 of the methodology AM0009, Version 04, clarification is requested to justify why elimination of alternatives G4 and P2 is appropriate in step 1.				
6. Nature of responses provided by the project participants:	Elimination of Alternative G4 has been explained more in the revised PDD to present that LNG will be used to transport gas over large distances, however, in the project case gas network is available nearby. Alternative P2 required non associated gas to be supplied to processing plant, whilst the project activity involves associated gas only, no non associated gas involved. Therefore, this alternative is not considered real.				
7. Assessment of such responses:	<p>Validation team confirmed from the its sectoral and local expertise that LNG is used for transportation over large distances and in the project case the gas will be transported through the existing pipe network located near the project activity. Validation team also confirmed from the local expertise that the gas from the project activity will be supplied to the local people in accordance with the Public Service Obligation of PT. Pertamina. Therefore, transportation of gas over a long distance cannot be considered as a feasible alternative.</p> <p>Validation team further confirmed from its sectoral expertise that no non-associated gas will be processed in the project activity. Therefore, installing a gas processing plant to process only non-associated gas is not a real alternative.</p> <p>Therefore, finding was closed.</p>				
8. References to resulting changes in the PDD or supporting annexes:	Section B.4				

1. Grade / Ref:	CL 03	2. Date:	31/01/2011	3. Status:	Closed
4. Requirement:	Paragraph 108 of CDM-VVM, Version 01.2				
5. Nature of the Issue Raised:					
PP to justify the appropriateness of the input values of the following parameters:					
<div>1. It was noted that the pricing formula for LPG processing fee has been proposed by the PP and won this project through tendering process and therefore justification on the suitability of the LPG price to be provided.</div> <div>2. Clarification is required on why the sunk cost has been included as cash outflow in calculation of IRR in accordance with paragraph 6 of Guidelines on the assessment of investment analysis, Version 05.</div> <div>3. Justify the appropriateness of Stand-By Letter of Credit (SBLC) and Surat Kelayakan Penggunaan Peralatan (SKPI).</div> <div>4. Justify the appropriateness of depreciation rates.</div> <div>5. Evidence of applied interest rate not provided</div> <div>6. Justify the appropriateness of overhead and general expense</div> <div>7. Why sensitivity over LPG and condensate tariff rate has not been done.</div>					
6. Nature of responses provided by the project participants:					
<div>1. Tender winner is determined based on qualification of technical aspect of LPG Plant and quotation fee. The technical aspect of LPG plant covers below parameters :</div> <div><div>a. Process and Utilities Flow Diagram</div><div>b. Sensitivity for LPG Plant Process Simulation, with variable of C₃ and C₄ as the main hydrocarbon components for LPG.</div></div> <div>It is stated in the Tender Document (page 31) that LPG product recovery from LPG Plant shall be 92% at minimum. Pertamina as the tender committee prefers tender participant who has best recovery of LPG Plant. PP has ability to achieved 99.5% of recovery on LPG Plant (please refer to CAR 3 no. 3), hence the tender committee considered it as strong point to qualify the PP as the tender winner.</div>					
<div>Suitability of LPG price was confirmed as below:</div> <div>The historical LPG price in Indonesia was confirmed from The Decree of Minister of Energy and Mineral Resource No 28 year of 2008 about subsidised LPG price. The Decree states that subsidized LPG price is IDR 4,250 / kg (pre-VAT is IDR 3,863.64). (Ref: http://prokum.esdm.go.id/permen/2008/Permen-esdm-28-2008.pdf, page 2 refers IDR 12,750/3Kg LPG, equivalent to IDR 4,250/kg).</div> <div>These prices were maintained through the subsidy provided by the Government. The subsidy was given to support the government programme “Kerosene – LPG conversion”. The subsidy on LPG prices ranges as below:</div>					
Month	Subsidy (IDR)	Month	Subsidy (IDR)		
December	2,099	June	8,883		

November	4,898	May	8,107
October	8,296	April	7,423
September	7,796	March	7,549
August	8,269	February	7,277
July	9,026	January	8,496

Source: <http://ermi-indonesia.org/2009/01/03/ubah-harga-patokan-lpg-3-kg-untuk-tahun-2009/>

The pre-tax historical market price of LPG in Indonesia, therefore, ranges from IDR 5,963 – 12,890/kg.

The average LPG price from the project activity can be estimated as the sum of price of feed gas, processing fee and average distribution and margin cost. The feed gas to the LPG plant contains a mixture of C1 – C4 components. Though the feed gas is having higher carbon chain products, however, the economic value of it will be at least that of natural gas. Average international price of natural gas during the year 2009 is USD 3.9/MMBTU, which is equivalent to IDR 5,814/kg.

LPG processing fee quoted and agreed by the PP is USD 175/ton which is IDR 1,653.92/kg.

Average distribution and margin cost is IDR 1,797.3/kg based on data derived from the Ministry of Energy and Mineral Resources.

Therefore, the average LPG price from the project activity is IDR 9,265.22/kg. This price is within the range of LPG prices in Indonesia.

2. The components of sunk cost mentioned in the spreadsheet actually refer to intangible asset. The terms of sunk cost here was not correct and has been corrected. According to PSAK (Indonesian Accounting Standar) Number 19 Revision 2009 on Intangible Asset, the intangible asset is ammortized. Hence the intangible asset in the procurement and construction cost is ammortized. The financial modelling has been revised accordingly.
3. The supporting document for SBLC and SKPI have been provided.
4. The depreciation rate is applied as the appendix to Ministry of Finance's Regulation Number 96 Year 2009 and Government of Indonesia Law Number 36 Year 2008. Both documents have been provided.
5. The loan sanction from the bank is provided to confirm the interest rate applied.
6. The cost of repair of furniture and fixtures was not mentioned in the FSR and conservatively removed in the investment analysis.
7. Sensitivity over LPG and condensate tariff has been included in the revised PDD.

7. Assessment of such responses:

In response to the finding, the PP has provided additional justification of the pricing mechanism used for estimation of LPG processing fee as the difference between the price of associated gas (equivalent of methane) and domestic LPG price. The actual processing fee from the project is also within the range and validation team

confirms from its host country expertise that justification provided by the PP is correct.
 The historical LPG prices were confirmed from the review of "Multi data riset Indonesia" (2009) Table 4.8.2 to confirm the historical LPG prices. The historical prices are IDR 4,250/kg
 The revised investment analysis spreadsheet now correctly mentions the intangible cost and correctly amortizes the intangible cost in accordance with the local accounting standard. Validation team confirms the computation from its local and sectoral expertise.
 The PP presents the evidence for SBLC and SKPI costs; depreciation rates in accordance with the host country rules. Validation team confirms the SBLC, SKPI and depreciation rates from its local expertise. PP has justified overhead and general expenses from the FSR. Cost of repair of furniture and fixtures was not included in the FSR, therefore, has been conservatively removed. Validation team confirms the suitability of the overhead and general expenses from its local and sectoral expertise. Validation team also confirmed the suitability of the total O&M cost by comparing with other similar project.
 Further, from the review of revised investment analysis validation team confirms that sensitivity over LPG and condensate tariff rate has been correctly applied.

8. References to resulting changes in the PDD or supporting annexes:	
Section B.5 and investment analysis spreadsheet	

1. Grade / Ref:	CL 04	2. Date:	31/01/2011	3. Status:	Closed
4. Requirement:	Paragraph 122 of CDM-VVM, Version 01.2				
5. Nature of the Issue Raised:	<ol style="list-style-type: none"> 1. Clarification is required on how the emergency preparedness procedures in case of failure of the main meter would be followed. 2. In QA/QC procedures for the parameter 'volume of total gas recovered' also includes the requirement of calibration when measuring equipment show deviation from its tolerated fair value. Clarification is required on how fair value is determined. 				
6. Nature of responses provided by the project participants:	<ul style="list-style-type: none"> • Emergency preparedness procedures in case of failure of the main meter already added in the revised PDD, please see section B.7 in the revised PDD. • Deviation from tolerated fair value can be identified by energy mass balance between feed gas as input and sum up of LPG, lean gas, condensate, and fuel gas. 				
7. Assessment of such responses:	<p>The PDD is amended to include clarification that Barton chart system will be used as a backup system to main meter. Validation team also confirmed the use of barton chart system during the site visit and found to be appropriate.</p> <p>Validation team also confirmed the procedure for evaluation of tolerated fair value. Validation team also confirmed that these procedures were also inline that confirmed during the site visit. Therefore, finding was closed.</p>				
8. References to resulting changes in the PDD or supporting annexes:	Section B.7				

1. Grade / Ref:	CL 05	2. Date:	31/01/2011	3. Status:	Closed
4. Requirement:	Paragraph 128 of CDM-VVM, Version 01.2				
5. Nature of the Issue Raised:	During the site visit it was noted that local villagers of the Pondok Tengah were informed about the stakeholders' meeting through invitation letter. Clarification is requested on why the process of information of the meeting to the local villagers has not been included in section E.1 of the PDD Version 01. The invitation letter submitted to the local villagers are to be provided for review of the validation team.				
6. Nature of responses provided by the project participants:	Invitation letter submitted to the local villagers has been provided to the DOE and the process of information of the meeting through invitation letters has been included in the section E.1. of the revised PDD.				
7. Assessment of such responses:	In response to the finding, the PP has revised the PDD. The revised PDD now correctly includes the detailed comments received during the stakeholders' consultation process. Validation team confirmed from the review of minutes of meeting, and field survey that comments included in the revised PDD were actual comments received during the local stakeholders' consultation meeting. PP has also presented the invitation letter submitted to local villagers which was reviewed and found appropriate. The revised PDD now correctly include the date of invitation of the meeting. Therefore, finding was closed.				
8. References to resulting changes in the PDD or supporting annexes:	Section E				