



Voluntary Carbon Standard 2007.1

VALIDATION REPORT OF

JILIN RICE HUSK

THERMAL ENERGY

GENERATION PROJECT

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Validation of Jilin Rice Husk Thermal Energy Generation Project	
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Wilmar International Ltd.	Jilin Rice Husk Thermal Energy Generation Project

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Summary:

Bureau Veritas Certification has performed the validation of Jilin Rice Husk Thermal Energy Generation Project owned by Yihai Kerry (Jilin) Bio-Cogeneration Co., Ltd, which is located in Jilin City, Jilin Province, P.R. China, on the basis of Voluntary Carbon Standard 2007.1, as well as criteria given to provide for consistent project operations, monitoring and reporting.

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

The Project involves installation of a green-field rice husk based thermal energy generation system at Yihai Kerry (Jilin) Bio-Cogeneration Co., Ltd. The system includes two boilers each with the capacity of 15MT/hour capable of generating medium pressure (3.82MPa) superheated steam at 450°C. The aim of the Project is the installation of a biomass fired project to meet the demand of steam. The purpose of the Project is to reduce the GHG emissions using renewable fuels.

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

In summary, it is BVC's opinion that the Project correctly applies the approved small-scale CDM baseline and monitoring methodology AMS-I.C version 16 and meets the relevant VCS 2007.1 requirements for the CDM and the relevant host country criteria.

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Abbreviations

AFCE	Authorized Financial Capital Expenditure
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CL	Clarification Request
DOE	Designated Operational Entity
EF	Emission Factor
EPC	Engineer, Procure, Construct
FAR	Forward Action Request
GHG	Green House Gas(es)
KPMG	KPMG Advisory Services Pte Ltd, in Singapore
NCV	Net Calorific Value
PD	Project Description
PP	Project Proponent
UNFCCC	United Nations Framework Convention for Climate Change
VCS	Voluntary Carbon Standard
VCS 2007.1	Voluntary Carbon Standard 2007.1
VCU	Voluntary Carbon Unit

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1 Introduction

Wilmar International Ltd. has commissioned Bureau Veritas Certification (hereafter referred to as “BVC”) to validate the VCS project of Jilin Rice Husk Thermal Energy Generation Project (hereafter referred to as “the Project”), owned by Yihai Kerry (Jilin) Bio-Cogeneration Co., Ltd. (the Project Proponent, hereafter referred to as “the PP”), which is located in Jilin City, Jilin Province, P.R. China.

This report summarizes the findings of the validation of the Project, performed on the basis of Voluntary Carbon Standard (VCS) 2007.1 criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

1.1 Objective

The validation serves as project design verification and is a requirement of all projects. The validation is an independent third party assessment of the project design. In particular, the project's baseline, the monitoring plan (MP), and the project's compliance with relevant Voluntary Carbon Standard 2007.1 are validated in order to confirm that the project design, as documented, is sound and reasonable, and meets the stated requirements and identified criteria. Validation is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the Project and its intended generation of Voluntary Carbon Units (VCU).

1.2 Scope and Criteria

The validation scope is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against VCS 2007.1 and associated interpretations.

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

The criteria used in validation were to assess the project description (PD) against the requirements of VCS 2007.1, VCS Program Guidelines dated on 18/11/2008 and associated documents.

1.3 VCS project Description

The Project involves installation of a green-field rice husk based thermal energy generation system to produce steam. The PP will purchase rice husks from the “Yihai Kerry (Jilin) Oils, Grains and Foodstuffs Industries Co., Ltd” that is also the consumer of steam (“steam customer”)^{[10][11]}. The project includes two boilers each with the capacity of 15MT/hour capable of generating medium pressure (3.82 MPa)

superheated steam at 450°C. During the commissioning of Phase I (since 10/12/2009), one boiler is operational and the Project is designed to generate 15 MT/hour steam. It could be increased to 30 MT/hour steam during commissioning of Phase II (assuming two years from commissioning of Phase I) when the other boiler starts operation.

The aim of the Project is the installation of a biomass fired thermal energy plant to meet steam demand and avoid consumption of fossil fuel. Project details were verified during site visit and BVC confirms that project details are correct.

1.4 Level of assurance

The validation has been carried out by reviewing the PD and ascertaining that it meets the VCS 2007.1. On-site visit was carried out from 28/01/2010 to 29/01/2010, and client and stakeholders were interviewed. Documents such as Authorized Financial Capital Expenditure (AFCE)^[21], main equipment contract, steam sale contract^[11], etc were reviewed to verify the information given in PD. The validation opinion is assured provided the credibility of all above.

2 Methodology

The validation is as a desk review and on-site visit including discussions and interviews with selected experts and stakeholders.

The validation including:

- Desk review with client (Wilmar International Ltd.) and consultant (KPMG Advisory Services Pte Ltd, in Singapore, hereafter referred to as “KPMG”) on 21/01/2010 in Beijing
- Site visit and conducted discussions and interviews with client, consultant and stakeholders from 28/01/2010 to 29/01/2010

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

2.1 Review of Document

The PD submitted by the client and additional background documents related to the project design and baseline, i.e. Approved methodology, Voluntary Carbon Standard 2007.1 were reviewed.

The validation findings presented in this report relate to the Project as described in the PD version 0 dated 14/12/2009^[1].

To address BVC corrective action and clarification requests, the PD was revised and resubmitted on 27/08/2010^[2].

The list of documents reviewed is presented in Annexure-I.

2.2 Follow-up Interviews

BVC performed site visit and interviews with client, consultant and project stakeholders to confirm selected information and to resolve issues identified in the document review. On-site visit was carried out from 28/01/2010 to 29/01/2010. Meeting was also held with client and consultants from KPMG in Beijing on 21/01/2010. Representatives from the client, consultants and project stakeholders were interviewed. The main topics of the interviews are summarized in Table 1 and personnel interviewed are given in Table 2.

Table 1 Interview Topics

Interviewed Organization	Interview Topics
Yihai Kerry (Jilin) Bio-Cogeneration Co., Ltd. (the PP)	➤ Project Design and Implementation ➤ Project background information. ➤ Project technology, operation, maintenance and monitoring capability. ➤ Project monitoring and management plan. ➤ Stakeholder consultation process. ➤ Project approval status (incl. EIA approval, CDM project approval status) ➤ Biomass residue utilization in the area
Wilmar International Ltd (Parent Company of the PP)	
KPMG (the Consultant)	➤ Applicability of selected methodology. ➤ Baseline determination. ➤ Emission reductions calculation. ➤ Monitoring plan.
Local Stakeholders	➤ Project background in details ➤ Stakeholder comments ➤ Social and environmental impact of the Project

Table 2: Name of Person Interviewed.

Interviewed Organization	Person Interviewed
Yihai Kerry (Jilin) Bio-Cogeneration Co., Ltd.	Mr. Li Chao
Wilmar International Ltd	Mr. Joshua Lim Chian Yieh
KPMG	Mr. Rahul Kar Ms. Catherine Yeo
Local Stakeholders	Mr. Yunjiang Xi

Ms. Xiuxia Wang

2.3 Resolution of any material discrepancy

The objective of this phase of the validation is to raise the requests for corrective actions and clarification and any other outstanding issues that needed to be clarified for Bureau Veritas Certification positive conclusion on the project design. List of corrective action request, clarifications is presented in Annexure-II of the report.

Corrective Action Request (CAR) is issued, where:

- i) There are mistakes in PD that have direct impact on project results.
- ii) Validation protocol requirements have not been met.
- iii) There is a risk that the Project would not be able to deliver (high quality) VCUs.

BVC may also use the term Clarification Request (CL), if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

Forward Action Request (FAR) is issued, for actions if the design and reporting require attention and/or adjustment for the verification period.

3 Validation Findings

3.1 Project Design

BVC recognizes the initiative of PP in helping country fulfill its goals of promoting sustainable development. The Project employs installation of two boilers each with the capacity of 15MT/hour. The Project is designed to generate 15 MT/hour steam with one boiler in Phase I (since 10/12/2009), and then increased to 30 MT/hour steam during Phase II (expected to start from the end of 2011).The Project contributes to GHG emissions by using renewable energy to produce thermal energy.

Project start date is the date on which project began reducing or removing GHG emissions i.e commissioning of the Project 10/12/2009. The crediting period is 10 years and the start date is 10/12/2009. The Project is expected to be operational for at least 15 years. The average annual emission reductions are expected to be 59,533 tCO₂e.

The PP has provided the evidence of proof of title through the right of use arising by virtue of the “in-principal approval to operate the Project”^[4] and steam sale contract^[11]. BVC reviewed these documents and confirms the ownership.

The Project has not created any other forms of environmental credits. In China, the other environmental credit that could have been created is Certified Emission Reductions (CER) under the CDM process. By checking the database of CDM

projects^[18] and regulation of CDM in China^[19], BVC confirmed that the Project has not and will not be involved in the CDM program.

As per VCS 2007.1, the scope of VCS program includes:

- All six Kyoto Protocol greenhouse gases;
- All technologies supported by an approved VCS Program methodology, including AFOLU project types as set out on www.v-c-s.org;
- Any approved GHG Programs;
- Project category (ies) which is part of an approved GHG Program;
- Project methodologies, not part of an approved GHG Program, when approved under the VCS program under double approval process;

The Project is installation of biomass based thermal energy generation plant. The project uses CDM approved methodology AMS-I.C (Version 16) (Thermal energy production with or without electricity). The Project started from 10/12/2009, hence it is eligible under VCS 2007.1.

3.2 Baseline

3.2.1 Baseline Methodology

The Project uses CDM approved methodology AMS-I.C (Version 16) Thermal energy generation with or without electricity. The project falls under Type I, Renewable energy projects, C: Thermal energy for the user, as per Appendix B to the simplified modalities and procedures for small scale Clean Development Mechanism (CDM) project activities. As per AMS-I.C (Version 16), the project boundary is the physical, geographical site of the project equipment producing the renewable energy. The boundary also extends to facilities consuming energy generated by the system.

The applicability of the chosen baseline methodology has been adequately addressed in the Project description. The applicability conditions of AMS I.C. are satisfied as given below.

- 1) The Project will exclusively use rice husk (with a new renewable energy based technology) to produce thermal energy thereby displacing the use of coal as the most likely fossil fuel.

BVC has checked the technical parameter of the boiler^[8] and found it applies the rice husk as fuel, hence the Project satisfied the condition.

- 2) The total thermal energy generation capacity of the project equipment is 24.3 MW which is less than the limit of 45 MW as specified in AMS IC version 16.

BVC has computed the value according to Steam Table^[20] and found the Project satisfied the condition.

- 3) The Project is not a co-fired system. Rice husk would be used in the boilers to generate thermal energy.

- 4) The contract^[13] between the PP and steam consumer specifying that only the PP can claim emission reductions from the energy displaced is provided.

BVC has checked the contract and confirm it is appropriate, and the Project satisfied the condition.

- 5) The Project does not seek to retrofit or modify any existing facility for renewable energy generation.

- 6) The Project is not charcoal based biomass energy generation project.

No deviations to the methodology or any revision is required in the Methodology, and the methodology is applicable for the Project.

3.2.2 Baseline Scenario

As per para 11 of AMS-I.C (Version 16), the most likely baseline alternative in the absence of the project (renewable energy technology) would be the application of coal based system for steam generation, considering the easy availability of coal in north-eastern part of China.

3.2.3 Additionality

The project test has been applied to demonstrate the Project is additional. In the revised version of PD, three steps of the project test were properly followed.

Step 1: Regulatory Surplus

The project is not be mandated by any systematically enforced law, statute or other regulatory framework in China.

Step 2: Implementation Barriers

The Project faces implementation barrier, including investment / institutional barrier and technological barrier.

In terms of investment/institutional barrier, public economic report from Hexun News^[6] shows that biomass energy generation companies are not profitable in China due to huge capital investment, lower technological efficiency (compared to fossil fuel based technologies) and lack of substantial benefits from implementing such projects. Investors have not much incentive to finance such project. In addition, as a Foreign Invested Enterprise (FIE), the PP faces difficulty in securing bank loan. BVC has checked the journal written by US International Trade Commission^[13] and confirmed that FIEs encounter limited access to local capital and difficulties to obtain adequate loans and banking services.

Considering barrier mentioned above, the PP sought financial assistance from another independent group company to invest in the project. The investor provided funding considering that the VCU revenue expected to be generated through VCS registration of the project would mitigate some of the project investment risks. BVC has concluded that the Project faced investment/institutional barriers regarding external capital sourcing, which were however overcome by the additional revenues associated with the generation of VCUs. The significance of the VCUs revenue on the

project is that it has resulted in overcoming the barriers by making funding possible to implement the project.

With respect to technological barriers, the project boiler design is a new technology developed in-house by a sister company of the PP ^[15] in collaboration with Harbin Industrial University ^[16]. The technology development required significant engineering efforts related to the design of the rice husk feeding system, combustion system and temperature control system. Significant risks are associated with commissioning, operation and maintenance of the newly developed technology on a green-field project site. In addition, due to the lack of labor who understands the new technology, PP had to train local labor possessing necessary skills and knowledge.

Therefore, based on above demonstration that in accordance with Project Test and the general guidance to the small-scale CDM methodologies, information on additionality (attachment A to appendix B) and supported by reliable data sources, it is the opinion of BVC that the Project is thus additional.

3.3 Monitoring Plan

Monitoring of the Project is as per AMS-I.C (Version 16), which is a CDM approved methodology. BVC considers the monitoring plan to be compliant with the requirements of the methodology. The reasons are as follows:

- 1) In the case of steam energy, methodology requires direct measurement of flow, temperature, pressure to determine enthalpy of the steam. The monitoring parameters include the flow rate of steam (FL_{Steam}), temperature ($Temp_{\text{Steam}}$) and pressure of steam (P_{Steam}) measured by flow rate sensor, temperature sensor and pressure sensor on steam delivery line attached to the boiler performance monitoring system.
- 2) AMS-I.C (Version 16) requires that, if more than one type of biomass fuel is consumed, each shall be monitored separately. Only rice husk is used in the Project, and the amount of its consumption (RH_{total}) measured by on-line air-lock system based flow meter is listed as the monitoring parameter.
- 3) Temperature and pressure of the steam and steam flow rate will be recorded hourly. Temperature of feed water ($Temp_{\text{FeedWater}}$) will be recorded hourly.
- 4) Quantity of rice husk supplied by the Yihai Kerry (Jilin) Oils and Grains Industries Co., Ltd, the parameter (RH_{supplied}) will be monitored and will be crosschecked by the purchase invoice.

The PP will form a monitoring team responsible for carrying out the monitoring and maintaining records of all the monitored data. The team will also be responsible for carrying out monitoring equipments calibration and maintenance.

The procedures for the estimation of emission reductions using recorded data above are shown as below:

Step 1: The enthalpy (in 'kJ/kg') of delivered steam will be determined on an hourly

basis by using the monitored values of steam temperature ($Temp_{\text{Steam}}$ in $^{\circ}\text{C}$), pressure (P_{Steam} in MPa), feed water temperature ($Temp_{\text{FeedWater}}$ in $^{\circ}\text{C}$), and steam table.

Step 2: The hourly value of thermal energy delivered to the crushing plants and oil refinery (EG_{thermal} in kJ/hour) will be calculated as multiplying the difference in total steam enthalpy and feed water enthalpy (in kJ/kg) by the hourly steam flow (FL_{Steam} in MT/hour converted to kg/hour).

Step 3: The total thermal energy ($EG_{\text{thermal,y}}$ in TJ) delivered to the steam customers will be calculated as the summation of each hourly value of thermal energy delivered (EG_{thermal} in kJ/hour converted to TJ/hour) over the corresponding monitoring period (HR in hour).

Step 4: Baseline emissions ($BE_{\text{thermal,CO2,y}}$ in $\text{tCO}_{2\text{e}}$) avoided during the monitoring period 'HR' (or 'y') by virtue of steam delivered to the steam customers will be calculated as per the following formula as per para 15 in AMS I.C (version 16):

$$BE_{\text{thermal, CO2, y}} = (EG_{\text{thermal,y}} / \eta_{\text{BL,thermal}}) * EF_{\text{FF,CO2}}$$

During Phase II when the other 15MT/hour rice husk based boiler starts operation, baseline emissions would be twice that of Phase I.

Since the project emissions and leakage emissions are ignored (refer section 3.4), the emission reductions due to the project will be equal to the baseline emissions to be calculated as per steps 1 through 4 described above.

Through onsite visit and interview with the PP, BVC confirms that the monitoring arrangements described in the monitoring plan are feasible within the project design, and the means of implementation of the monitoring plan are sufficient to ensure the emission reductions achieved by the Project can be reported ex-post and verified.

3.4 Calculation of GHG Emissions

Baseline Emissions:

During Phase I, one 15 MT/hour rice husk based boiler is put into operation and producing steam. Baseline emissions are calculated using para 15 in AMS-I.C (Version 16). Steam enthalpy is correctly determined as per steam table^[20] and is used to calculate the net thermal energy of steam supplied by the Project ($EG_{\text{thermal,y}}$), which is computed by multiplying the difference between total steam enthalpy and total feed water enthalpy by annual steam quantity. A default value of 100% is selected as the efficiency of the plant using coal ($\eta_{\text{BL,thermal}}$) and CO_2 emission factor of coal ($EF_{\text{FF,CO2}}$) is using IPCC 2006 data. The 8,000 operational hours per year for the Project is reasonable. The calculation shows that the baseline emissions in Phase I are expected to be 33,074 $\text{tCO}_{2\text{e}}$.

The calculation process is illustrated as below:

Steam enthalpy (superheated at 3.82 MPa and 450°C) = 3,332.52 kJ/kg

Feed water enthalpy (saturated at 0.103 MPa and 104°C) = 419 kJ/kg

Annual steam quantity = 15 MT/hour * 8,000 hours = 120,000 MT

$EG_{\text{thermal},y}$

= (120,000 MT) * (3,332.52 kJ/kg – 419 kJ/kg) * (10³ kg/MT) * (TJ/10⁹ kJ)

= 349.62 TJ

$BE_{\text{thermal},\text{CO}_2,y} = (EG_{\text{thermal},y} / \eta_{\text{BL},\text{thermal}}) * EF_{\text{FF},\text{CO}_2} = (349.62 \text{ TJ}/100\%) * (94.6 \text{ tCO}_2/\text{TJ}) = 33,074 \text{ tCO}_2.$

During Phase II, two 15 MT/hour boiler will be put into operation (totally 30 MT/hour), and the baseline emissions will be twice that of Phase I, i.e., 66,148 tCO₂.

Project Emissions:

The Project consumes rice husk and its combustion will not lead to GHGs emissions. No on-site consumption of fossil fuels and electricity is attributable to the Project. Wood, which is a carbon neutral fuel, is used for start-up operation of boilers. There are no other significant emissions associated with the Project within the project boundary. Therefore, the project emissions are considered zero.

Leakage:

The rice husks consumed by the Project are purchased from a rice mill located nearby the project and hence within 200km radius from the project. As per Attachment C to Appendix B: General guidance on leakage in biomass project activities (version 03) of indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activities, the leakage attributable to competing uses for biomass can be neglected, because the rice husk consumed by the Project is provided by the rice mill Yihai Kerry (Jilin) Oils, Grains and Foodstuffs Industries Co., Ltd. located nearby that only supplies rice husk to the Project.

In addition, according to AMS I.C./Version 16, if biomass residues are transported over a distance of more than 200 kilometers due to the implementation of the project, this leakage source attributed to transportation shall be considered. Currently rice husk is procured from rice mill nearby within 200km radius, thus, leakage source due to transportation can be neglected.

Therefore, there will be no leakage emissions as a result of the project.

Since project emissions and leakage emissions are both zero, the annual emission reductions (ER_y) are equal to baseline emissions. The average annual emission reductions over the fixed 10-year crediting period are expected to be 59,533 tCO₂e.

BVC is of the opinion that the emission reduction calculations are correct and in accordance with requirements of AMS-I.C (Version 16).

3.5 Environmental Impact

The environmental impact caused by the Project has been analyzed in the PD, including air quality, water quality, noise and solid waste. And Environmental Protection Bureau of Jilin has issued EIA approval on 05/08/2010^[5].

EIA report states that these impacts are within an acceptable limit by implementing measures of pollution control. BVC therefore confirms that the Project will not have significant impact on the regional environment.

3.6 Comments by Stakeholders

The Local Stakeholders survey for the Project was conducted at the Project site, when 35 questionnaires were distributed to the participants^[17]. The responses showed that the majority of stakeholders supported the Project, even though some people were concerned on the environmental impact during construction and operation phase.

During the site visit on 29/01/2010, interviews were held with local stakeholders (as per details given in Table 3).

Table 3: Name of Stakeholder Interviewed

Interviewed Organization	Person Interviewed
Local Stakeholders	Mr Yunjiang Xi Mr Xiuxia Wang

The stakeholders appreciated the Project. The project has provided employment opportunities to local people. No negative comments were received from the stakeholders regarding the Project.

4 Validation Conclusion

Bureau Veritas Certification has performed a validation of Jilin Rice Husk Thermal Energy Generation Project owned by Yihai Kerry (Jilin) Bio-cogeneration Co., Ltd, which applied the methodology AMS-I.C. version 16. The validation was conducted on the basis of VCS 2007.1, host country criteria and also on the criteria given to provide for consistent Project operations, monitoring and reporting.

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

Through detailed analysis of the Project, it is concluded that the Project is likely to result in reductions of GHG emissions. The Project Test and the general guidance to the small-scale CDM methodologies, information on additionality (attachment A to appendix B) have been applied to demonstrate that the Project is not a plausible

baseline scenario. Emission reductions attributable to the Project are hence additional to any that would occur in the absence of the Project. Given that the Project is implemented and maintained as designed, the Project is likely to achieve the estimated the average annual emission reductions of 59,533 tCO₂e over the chosen 10-year crediting period.

The review of the project description (version 0) and the subsequent follow-up interviews have provided BVC with sufficient evidence to determine the fulfillment of stated criteria. The PD (version 1) was subsequently revised on 27/08/2010 to resolve the issues that rose during the interviews and subsequent interactions. In our opinion, the Project correctly applies and meets the relevant VCS 2007.1 requirements.

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

ANNEXURE – I

REFERENCES-1

- [1]. PD version 0 dated 14/12/2009
- [2]. PD version 1 dated 27/08/2010
- [3]. National Renewable Energy Law issued by NDRC of China effective from 01/01/2006.
http://www.gov.cn/flfg/2005-06/21/content_8275.htm
- [4]. In-principal approval to operate the Project issued by Jilin City government dated 20/05/2008
- [5]. EIA approval issued by Jilin Province Environmental Protection Bureau on 05/08/2010
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- [7]. Purchase contract for two 15MT/hour rice husk boilers
- [8]. Technical parameter of the rice husk boiler
- [9]. Daily report of the rice husk boiler operation
- [10]. Rice husk purchase agreement between PP and Yihai Kerry (Jilin) Oils, Grains and Foodstuffs Industries Co., Ltd
- [11]. Steam sale agreement between PP and Yihai Kerry (Jilin) Oils, Grains and Foodstuffs Industries Co., Ltd
- [12]. Project construction contract
- [13]. http://www.usitc.gov/publications/332/journals/access_to_capital_china.pdf
- [14]. Contract between the PP and Yihai Kerry (Jilin) Oils, Grains and Foodstuffs Industries Co., Ltd specifying that only the PP can claim emission reductions from the energy displaced by the Project
- [15]. Yihai (Panjin) Bio-cogeneration Co., Ltd. at Panjin in Liaoning Province
- [16]. Rice Husk Boiler Design Agreement Signed with Harbin Industrial University
- [17]. 35 questionnaires of local Stakeholders survey
- [18]. Database of CDM projects:
<http://cdm.ccchina.gov.cn/web/index.asp>
<http://www.cdmpipeline.org/>
- [19]. CDM Projects Management Rules in China
<http://cdm.ccchina.gov.cn/web/NewsInfo.asp?NewsId=458>

[20]. SteamTable:
<http://www.spiraxsarco.com/resources/steam-tables/superheated-steam.asp>

[21]. AFCE for the Project approved on 31/07/2008

REFERENCES- 2 Documents:

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

- 1 AMS-I.C Version 16 dated 18/12/2009
- 2 Attachment C to Appendix B, General guidance on leakage in biomass project activities version 03 (EB47, Annex28, 28/05/2009)
- 3 Attachment A to Appendix B, General guidance to the small-scale CDM methodologies, information on additionality
- 4 Voluntary Carbon Standard 2007.1; 18/11/2008
- 5 Program Guidelines 2007.1; 18/11/2008
- 6 VCS Program Update; 21/01/2010

ANNEXURE – II

Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by validation team	Summary of project owner response	Validation team conclusion
CAR-1. As per section 5.8 of <i>VCS 2007.1</i> and <i>VCS Program Update</i> on 21/01/2010, please follow the three steps of the project test to demonstrate the additionality of the Project.	Reply 1: The assessment and demonstration of additionality is included in section 2.5 in the updated version of the PD (dated 8 February 2010). The 'Project Test' approach provided under clause 5.8 of the Voluntary Carbon Standard 2007.1 (18 November 2008) has been used. In this approach, the following steps as detailed in the PD have been used: Step 1: Regulatory Surplus Step 2: Implementation Barriers ➤ Investment/Institutional barrier ➤ Technological barriers Step 3: Common Practice Reply 2: The investment/institutional barrier in the PD has been elaborated showing that PP face difficulties in get funding to implement	Comments on Reply 1: The steps of the 'Project Test' have been applied in the updated PD to demonstrate the additionality of the Project, except: 1) Please further demonstrate the implementation barrier in the PD, especially how VCU revenue helps overcome the barrier. 2) For the common practice analysis, please state whether and how similar activities to the Project are identified in the local region, and if there are, please analyze whether essential distinctions exist between those and the Project. Any project is considered similar "if they are in the same country/region and/or rely on a broadly similar technology, are of a similar scale, and take place

Draft report clarifications and corrective action requests by validation team	Summary of project owner response	Validation team conclusion
	the Project due to China biomass energy generation projects' low and unreliable returns, and very limited access to obtain loan from banks in China. Financing in the form of easier loans was finally availed from another independent group company. Securing from such sources was easier in view that VCU revenue expected to be generated would mitigate some investment risks of the Project. Thus, the significance of the VCU revenue is that it has resulted in removing the barriers by making funding possible to implement the project. The section of common practice has been removed as the methodology of AMS-I.C is not required to conduct the step.	in a comparable environment", so coal-fired boiler systems/projects are not related because of a different technology. The data source of similar projects should not be CDM related database. Comments on Reply 2: Biomass energy generation companies are not profitable in China due to huge investment and low technological efficiency. Particularly, as the Foreign Invested Enterprise (FIE), the PP encounters difficulty to obtain bank loans. Taken the VCU associated revenue into account, financing in the form of loans was provided from another independent group company. The VCU revenue resulted in removing barrier by making funding possible to implement the project. BVC has also checked the

Draft report clarifications and corrective action requests by validation team	Summary of project owner response	Validation team conclusion
		methodology, the attachment A to appendix B, and the response to the common practice problem for small scale projects by Program Officer of VCSA, and confirmed the step of common practice for the Project is not necessary. Hence, CAR-1 is closed.
CAR-2. As per the AMS-I.C version 16, please revise the metering position of Temp_{Steam} and P_{Steam} to be the recipients' end. The amount of rice husk consumed and rice husk supplied should also be monitored.	The metering provisions for steam parameters (temperature, pressure and flow) have been elaborated further (in sections 3.2 and 3.3) to specify that these correspond to steam delivered from the project activity. Provisions for monitoring biomass (rice husk) use in the project activity and rice husk supplied have also been included in sections 3.2 and 3.3.	BVC has checked that the metering position of Temp_{Steam} and P_{Steam} has been revised in section 3.2 and 3.3 of the PD (version 1) to measure the parameters of steam received by energy consumers. The parameters monitoring the quantity of rice husk consumed by the Project and quantity of rice husk supplied has been included as well in the updated PD. Hence, CAR-2 is closed.
CL-1. The estimated annual emission in section 1.3 of VCS-PD is inconsistent with the amount calculated in section 4.2. Please revise it	The table format for the annual emission reduction in section 1.3 has been amended. The table in the updated PD (version 1	BVC has checked the annual emission reduction of the PD and found it correct.

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accordingly.	dated 27th Aug 2010) displays emission reduction for each period, which is 59,533 tCO ₂ e.	Hence, CL-1 is closed.
CL-2. Please specify the exact start date of crediting period when the actual delivery of steam to process plants starts.	The start date of the crediting period, which is 10 December 2009, has been specified in Section 1.4 of the PD.	The start date of crediting period has been indicated clearly in the PD. CL-2 is closed.
CL-3. Please provide more detailed information on the conditions prior to project initiation in section 1.7 of VCS-PD.	The conditions prior to project initiation have been further elaborated in section 1.7. It should be noted that the proposed project is a green-field project, where no prior energy generation activity similar to the project had occurred. Prior to the project, the steam requirement did not exist for the steam customer and hence the project does not displace any existing steam generation project. The PP will purchase rice husk from a dedicated supplier located nearby to the project who operates a new rice mill. Prior to the project, there was no use of the rice husk from the rice mill. As per current practice in the region, rice husk are normally dumped outside rice mills and/or burnt.	BVC has checked information on the conditions prior to project initiation and found reasonable. Hence, CL-3 is closed.

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CL-4. Please provide the PPs' roles and responsibilities including contact information of the PPs in section 1.15 of VCS-PD.	The PP's roles and responsibilities have been detailed in section 1.15 of the updated PD.	PP's roles and responsibilities including contact information have been described clearly in section 1.15 of PD version 1. Hence, CL-4 is closed.
CL-5. Please clarify if there will be leakage in the Project in section 4.4 of VCS-PD. And please provide authoritative evidence to demonstrate the quantity of available rice husk in the region.	As explained in section 1.9 and 4.4 of the updated PD (version 1), rice husk is procured from a source located close to the project boundary (within 500 meters) and conveyance is by pipeline under suction to an intermediate silo for temporary storage avoiding development of any anaerobic conditions. There was no competing use of these rice husk prior to the project. Hence, there will be no leakage emissions as a result of the project.	As per Attachment C to Appendix B: General guidance on leakage in biomass project activities (version 03) of indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activities, the leakage attributable to competing uses for biomass can be neglected, because the rice husk consumed by the Project is provided by the rice mill located nearby that only supplies rice husk to the Project. In addition, according to AMS I.C./Version 16, if biomass residues are transported over a distance of more than 200 kilometers due to the implementation of the project, this leakage source attributed to

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		transportation shall be considered. Currently rice husk is procured from rice mill nearby within 200km radius, thus, leakage source due to transportation can be neglected. Hence, CL-5 is closed.
CL-6. Please make the complete schedule of the Project as per the VCS Project Description Template.	The project schedule has been updated in section 7 of the PD (version 1).	The complete schedule has been provided in the section 7 of the PD version 1. Hence,CL-6 is closed.
CL-7. In the IRR spreadsheet version 03 dated 21/01/2010, (1). The project-IRR was applied, in which cash outflow the debt payment should not be taken into account. Please revise the IRR calculation. (2). Please provide the explanation why the O&M cost times inflation rate during all the operation period, but the steam revenue does not take inflation into account. (3). The interest expenses should be added back to net income when calculating cash flow from operating activities. (4). The residual value of equipments should be	Reply 1: 1. NPV has been applied instead of project IRR. Debt repayment has been removed in the NPV calculation. 2. In the calculation of the NPV, inflation has not been applied to any revenue and cost items. 3. The interest expenses have been added back to the net income when calculating cash flow from operating activities.	The revised NPV spreadsheet has been checked and the 4 findings have been appropriately solved. In the latest version of PD, the NPV calculation has been removed by the PP. Hence, CL-7 is closed.

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considered.	4. Equipment is assumed to have zero residual value. Reply 2: The NPV calculation has been removed from additionality demonstration.	
FAR-1: Based on the initial PD (version 0 dated 14/12/2009), the Project is designed to generate power during Phase II. PP has denied the potential plan of power generation in the updated PD version 1 dated 27/08/2010. During the process of verification, if there is any change, the validation requirements should be re-assessed.	-	

ANNEXURE-III
CURRICULA VITAE OF THE DOE'S VALIDATION TEAM MEMBERS

Mr. Robin Wang Jing	BVC, China	Technical Reviewer, CDM Lead Verifier He holds a Bachelor Degree in Gas & Heating Engineering. He was a Gas Engineer with over 10 years' experiences in oil and gas sector and building technology in P.R. China. Before joining BV in 2007, he gained two years of CDM audit experience in P.R China. He obtained the certificate of CDM Verifier, Lead Auditor for ISO 14001 and completed the course assessment for the ISO 14064:2006.
Ms. Jasmine Tang Xuemei	BVC, China	Team Leader, CDM Lead Verifier She holds a Master Degree in Environmental Engineering. Before joining BV in 2008, she gained two years of CDM technical working experience in P.R China. She obtained the certificate of CDM Lead Verifier, Lead Auditor for ISO 14001 and completed the course assessment for the ISO 14064:2006.
Mr. Liao Ling	BVC, China	Team Leader, CDM Lead Verifier He holds a Bachelor Degree in Atmosphere Science. Before joining BV in 2008, he gained two years of technical working experience of CDM in P.R China. He obtained the certificate of CDM Verifier, Lead Auditor for ISO 14001 and completed the course assessment for the ISO 14064:2006.

Mr. Tony Li Xingtong	BVC, China	Team Member, CDM Lead Verifier He holds a Master Degree in Landscape Ecology and Bachelor Degree in Environmental Engineering. Before joining BV in 2009, he gained one year of CDM technical experience in P.R China. He obtained the certificate of CDM Verifier, Lead Auditor for ISO 14001 and completed the course assessment for the ISO 14064:2006.
Ms. Li Jing	BVC, China	Team Member, CDM Verifier She holds a Master Degree in Environmental Management and a Bachelor Degree in Environmental Science. Before joining BV in 2009, She acquired professional experience in climate/renewable energy policy, U.S. wholesale power markets working for the leading consulting firm and international non-profit organization. Her expertise is market research and financial analysis, including asset valuation of independent power producers and renewable energy markets projection. She has obtained the certificates of CDM Lead Verifier, Lead Auditor for ISO 14001 and completed the course assessment for the ISO 14064:2006.