

1/17



# VERIFICATION AND CERTIFICATION REPORT

### PT Manunggal Energi Nusantara

## MEN-Tangerang 13.6MW Natural Gas Co-generation Project

SGS Climate Change Programme SGS United Kingdom Ltd SGS House 217-221 London Road Camberley Surrey GU15 3EY United Kingdom

SGS United Kingdom Ltd | SGS House, 217-221 London Road, Camberley, Surrey GU15 3EY Tel +44 (0)1276 697810 Fax +44 (0)1276 697888 Registered in England No. 1193985 Rossmore Business Park, Ellesmere Port, Cheshire CH65 3EN www.sgs.com



Date of Issue:	Project Number:
23-01-2009	CDM.VER0761
Project Title:	
MEN-Tangerang 13.6MW Natural Gas Co-ge	neration Project
Organisation:	Client:
SGS United Kingdom Limited	PT Manunggal Energi Nusantara
Publication of Monitoring Report: 4 <sup>th</sup> Novembe	er 2008
Monitoring Period:	26 <sup>th</sup> February 2008 to 31 <sup>st</sup> August 2008
First Monitoring Version and Date:	Version 1.0.0,
Final Monitoring Version and Date:	Version 3.0.0

#### Summary:

SGS United Kingdom Ltd has performed the Initial verification of the CDM project MEN-Tangerang 13.6MW Natural Gas Co-generation Project and UNFCCC Reference Number 1313. The verification includes confirming the implementation of the monitoring plan of the registered PDD and the application of the monitoring methodology as per AM0014, version 3 dated 18<sup>th</sup> May 2007. A site visit was conducted to verify the data submitted in the monitoring report.

PT Manunggal Energi Nusantara ("MEN") is developing a cogeneration project using natural gas as fuel. The electricity and heat generated has been supplied to textile manufacturing companies: PTArgo Pantes. The purpose of the Project is the generation of 13.6MW of electricity and 9.5 tonnes per hour of high quality steam at 8-10 bar pressure for industrial users who are currently using grid electricity and generating steam from fuel-mix with higher carbon intensity than natural gas.

SGS confirms that the project is implemented in accordance with the validated and registered Project Design Document. The monitoring system is in place and the emission reductions are calculated without material misstatements. Our opinion relates to the projects GHG emissions and the resulting GHG emission reductions reported and related to the valid and registered project baseline and monitoring and its associated documents. Based on the information seen and evaluated we confirm that the implementation of the project has resulted in **17**, **154** tCO2e during period 26/02/2008 up to 31/08/2008.

Subject:					
CDM Verification					
Verification Team:					
Kamesh Iyer – Lead Assessor			No Distribution (without		
Randy Ismail – Local Assessor			No Distribution (without		
Nikunj Agarwal – Expert			ssion from the Client or nsible organisational unit)		
Technical Review: Trai		Trair	ee Technical Reviewer:	respo	risible organisational unit)
Date: 23-01-2009		Nam	e: N/A		
Name: Jochen Gross				Limited Distribution	
Authorised Signatory:					
Name: Siddharth Yadav Date: 23 <sup>rd</sup> January 2009			Liprostricted Distribution		
<b>Revision Number:</b>	Date:		Number of Pages:		Unrestricted Distribution
0	03-12-2008		17		
1	23-01-2009		17		
2	-		-		





#### Abbreviations

CAR CDM	Corrective Action Request Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction(s)
CO2	Carbon Dioxide
CO2e	Carbon Dioxide equivalent
DOE	Designated Operational Entity
FAR	Forward Action Request
GHG	Greenhouse Gas(es)
GWP	Global Warming Potential
IMS	Integrated Management System
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
NG	Natural Gas



### **Table of Content**

1.       Introduction         1.1       Objective         1.2       Scope         1.3       Project Activity and Period Covered         2.       Methodology         2.1       General Approach         2.2       Verification Team for this Assessment         2.3       Means of Verification         2.3.1       Review of Documentation         2.3.2       Site Visits         2.4       Reporting of Findings         2.5       Internal Quality Control         3.       Verification Findings         3.1       Project Documentation and Compliance with the Registered PDD         3.2       Monitoring Results         3.3       Remaining Issues, CAR's, FAR's from Previous Validation or Verification         3.4       Project Implementation	555666
1.2       Scope         1.3       Project Activity and Period Covered         2.       Methodology         2.1       General Approach         2.2       Verification Team for this Assessment         2.3       Means of Verification         2.3.1       Review of Documentation         2.3.2       Site Visits         2.4       Reporting of Findings         2.5       Internal Quality Control         3.       Verification Findings         3.1       Project Documentation and Compliance with the Registered PDD         3.2       Monitoring Results         3.3       Remaining Issues, CAR's, FAR's from Previous Validation or Verification	5 5 6 6
1.2       Scope         1.3       Project Activity and Period Covered         2.       Methodology         2.1       General Approach         2.2       Verification Team for this Assessment         2.3       Means of Verification         2.3.1       Review of Documentation         2.3.2       Site Visits         2.4       Reporting of Findings         2.5       Internal Quality Control         3.       Verification Findings         3.1       Project Documentation and Compliance with the Registered PDD         3.2       Monitoring Results         3.3       Remaining Issues, CAR's, FAR's from Previous Validation or Verification	5 5 6 6
<ul> <li>1.3 Project Activity and Period Covered</li></ul>	5 6 6
<ul> <li>2.1 General Approach</li></ul>	6 6
<ul> <li>2.1 General Approach</li></ul>	6 6
<ul> <li>2.2 Verification Team for this Assessment.</li> <li>2.3 Means of Verification</li></ul>	6
<ul> <li>2.3 Means of Verification</li> <li>2.3.1 Review of Documentation</li> <li>2.3.2 Site Visits</li> <li>2.4 Reporting of Findings</li> <li>2.5 Internal Quality Control</li> <li>3. Verification Findings</li> <li>3.1 Project Documentation and Compliance with the Registered PDD</li> <li>3.2 Monitoring Results</li> <li>3.3 Remaining Issues, CAR's, FAR's from Previous Validation or Verification</li> </ul>	
<ul> <li>2.3.1 Review of Documentation</li></ul>	
<ul> <li>2.3.2 Site Visits</li> <li>2.4 Reporting of Findings</li> <li>2.5 Internal Quality Control</li> <li>3. Verification Findings</li> <li>3.1 Project Documentation and Compliance with the Registered PDD</li> <li>3.2 Monitoring Results</li> <li>3.3 Remaining Issues, CAR's, FAR's from Previous Validation or Verification</li> </ul>	6
<ul> <li>2.4 Reporting of Findings</li></ul>	
<ul> <li>2.5 Internal Quality Control</li></ul>	
<ol> <li>Verification Findings</li> <li>3.1 Project Documentation and Compliance with the Registered PDD</li> <li>3.2 Monitoring Results</li> <li>3.3 Remaining Issues, CAR's, FAR's from Previous Validation or Verification</li> </ol>	
<ul> <li>3.1 Project Documentation and Compliance with the Registered PDD</li> <li>3.2 Monitoring Results</li></ul>	
<ul> <li>3.2 Monitoring Results</li></ul>	9
3.3 Remaining Issues, CAR's, FAR's from Previous Validation or Verification 1	
3.5 Completeness of Monitoring	
3.6 Accuracy of Emission Reduction Calculations	
3.7 Quality of Evidence to Determine Emission Reductions	
3.8 Management System and Quality Assurance	
3.9 Data from External Sources	
4. Calculation of Emission Reductions	
<ol> <li>Recommendations for Changes in the Monitoring Plan</li></ol>	
<ol> <li>Overview of Results</li></ol>	
<ol> <li>Verification and Certification Statement</li></ol>	
8. Document References	



#### 1. Introduction

#### 1.1 Objective

SGS United Kingdom Ltd has been contracted by PT Manunggal Energi Nusantara to perform an independent verification of its CDM project MEN-Tangerang 13.6MW Natural Gas Co-generation Project. CDM projects must undergo periodic audits and verification of emission reductions as the basis for issuance of Certified Emission Reductions (CERs).

The objectives of this verification exercise are, by review of objective evidence, to establish that:

- The emissions report conforms with the requirements of the monitoring plan in the registered PDD and the approved methodology; and
- The data reported are complete and transparent.

#### 1.2 Scope

The scope of the verification is the independent and objective review and ex post determination of the monitored reductions in GHG emission by the project activity. The verification is based on the validated and registered project design document and the monitoring report. The project is assessed against the requirements of the Kyoto Protocol, the CDM Modalities and Procedures and related rules and guidance.

SGS has, based on the recommendations in the Validation and Verification Manual, employed a risk-based approach in the verification, focusing on the identification of significant reporting risks and the reliability of project monitoring.

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

#### 1.3 Project Activity and Period Covered

This engagement covers emissions and emission reductions from anthropogenic sources of greenhouse gases included within the project boundary of the following project and period.

Title of Project Activity:	MEN-Tangerang 13.6MW Natural Gas Co-generation Project	
UNFCCC Registration Number:	1313	
Monitoring Period Covered in this Report	26/02/2008 up to 31/08/2008	
Project Participants	PT Manunggal Energi Nusantara	
	Mitsubishi UFJ Securities Co., Ltd.	
Location of the Project Activity:	JI. MH Thamrin KM4, Cikokol, City of Tangerang, Jakarta, Indonesia	

PT Manunggal Energi Nusantara ("MEN") has developed a cogeneration project using natural gas as fuel. The electricity and heat generated has been supplied to textile manufacturing company – PT Argo Pantes. The purpose of the Project is the generation of 13.6MW of electricity and 9.5tonnes per hour of high quality steam at 8-10 bar pressure for industrial users (currently PT Argo Pantes) who are currently using grid electricity and generating steam from fuel-mix with higher carbon intensity than natural gas.



#### 2. Methodology

#### 2.1 General Approach

SGS's approach to the verification is a two-stage process.

In the first stage, SGS completed a strategic review and risk assessment of the projects activities and processes in order to gain a full understanding of:

- Activities associated with all the sources contributing to the project emissions and emission reductions, including leakage if relevant;
- Protocols used to estimate or measure GHG emissions from these sources;
- Collection and handling of data;
- Controls on the collection and handling of data;
- Means of verifying reported data; and
- Compilation of the monitoring report.

At the end of this stage, SGS produced a Periodic Verification Checklist which, based on the risk assessment of the parameters and data collection and handling processes for each of those parameters, describes the verification approach and the sampling plan.

Using the Periodic Verification checklist, SGS verified the implementation of the monitoring plan and the data presented in the Monitoring Report for the period in question. This involved a site visit and a desk review of the monitoring report. This verification report describes the findings of this assessment.

#### 2.2 Verification Team for this Assessment

Name	Role	SGS Office
Kamesh lyer	Lead Assessor	SGS India
Randy Ismail	Local Assessor	SGS India
Nikunj Agarwal	Expert	SGS India

#### 2.3 Means of Verification

#### 2.3.1 Review of Documentation

The validated PDD, the monitoring report submitted by the client and additional background documents related to the project performance were reviewed. A complete list of all documents reviewed is attached in section 8 of this report.



#### 2.3.2 Site Visits

As part of the verification, the following on-site inspections have been performed

Location: Jl. MH Thamrin KM4, Cikokol, City of Tangerang, Jakarta, Indonesia				
Date: (17/11/2008 – 18/11/2008)				
Coverage:	Source of Information / Persons Interviewed			
Management Approach to GHG commitment	Mr. H Soeyoto – Director			
Assessment of Project Boundary	Physical Verification/Process flow diagram			
Physical components	Physical Verification / Commissioning certificates from PT Navigat and Jenbacher			
Qualification and Training	SOP and Training schedules/ Interviews Mr. P. K Gaur – Plant Manager			
Plant Operations	Plant Manual			
Roles and responsibility	Mr. H Soeyoto – Director Mr. P. K Gaur – Plant Manager Ms. Cynthia H – Consultant			
<ul> <li>Monitoring and measuring system</li> <li>Collection of measurements</li> <li>Observations of established practices</li> <li>Testing of the accuracy of monitoring equipment</li> <li>DCS logging and transmitter accuracy</li> <li>Data Verification of monitoring parameters</li> </ul>	Physical Verification /logs/Plant data/ Calibration procedures/ Calibration reports /Supplier data/transportation record/External Lab reports Mr. P. K Gaur – Plant Manager Ms. Cynthia H – Consultant Ms. Fenika Sutopo - Consultant			
CDM monitoring & reporting documentation	Mr. P. K Gaur – Plant Manager Ms. Cynthia H – Consultant			
Quality Assurance – Management and operating system	Internal Audit procedure/ Internal Audit records. Mr. P. K Gaur – Plant Manager Ms. Cynthia H – Consultant			
Emergency procedures	Mr. P. K Gaur – Plant Manager			

#### 2.4 Reporting of Findings

As an outcome of the verification process, the team can raise different types of findings

In general, where insufficient or inaccurate information is available and clarification or new information is required the team shall raise a New Information Request (NIR) specifying what additional information is required.

Where a non-conformance arises the team shall raise a Corrective Action Request (CAR). A CAR is issued, where:

- the verification is not able to obtain sufficient evidence for the reported emission reductions or part of the reported emission reductions. In this case these emission reductions shall not be verified and certified;
- II. the verification has identified misstatements in the reported emission reductions. Emission reductions with misstatements shall be discounted based on the verifiers ex-post determination of the achieved emission reductions

The verification process may be halted until this information has been made available to the assessors' satisfaction. Failure to address a NIR may result in a CAR. Information or clarifications provided as a result of an NIR may also lead to a CAR.



Observations may be raised which are for the benefit of future projects and future verification actors. These have no impact upon the completion of the verification activity.

Corrective Action Requests and New Information Requests are detailed in Periodic Verification Checklist. The Project Developer is given the opportunity to "close" outstanding CARs and respond to NIRs and Observations.

#### 2.5 Internal Quality Control

Following the completion of the assessment process and a recommendation by the Assessment Team, all documentation will be forwarded to a Technical Reviewer. The task of the Technical Reviewer is to check that all procedures have been followed and all conclusions are justified. The Technical Reviewer will either accept or reject the recommendation made by the assessment team.



#### 3. Verification Findings

#### 3.1 Project Documentation and Compliance with the Registered PDD

The project was registered on the  $26^{th}$  February 2008 and covers the monitoring period from the  $26^{th}$  February 2008 –  $31^{st}$  of August 2008. The monitoring period is covered from  $1^{st}$  March 2008 –  $31^{st}$  August 2008 and does not intend to claim credits from  $26^{th}$  Feb 2008 to the  $28^{th}$  Feb 2008 for simplicity issues as data is monitored and can only be crosschecked on a monthly basis.

The commissioning of all 5 Jenbacher Gas engines (13.6 MW gross with each GT of 2.72 MW capacity) was completed on 26<sup>th</sup> September 2007 and the boiler installations were commissioned on 21<sup>st</sup> December 2007. These were verified from the commissioning certificates from PT Navigat Energy who is an authorised vendor for GE JENBACHER.

The applicability of the methodology AM0014 version 3 was rechecked and it was found that the cogeneration system is a third party co-generation i.e. MEN is not the consuming facility and supplies all heat and electricity produced to the textile facility of PT Argos Pantes. During this monitoring period it was also checked that there is no excess of electricity supplied to the grid. During verification it was found that PT Argos Pantes used to schedule required heat and power on a weekly basis and thus the MEN plant was operating as per supply required by PT Argos Pantes for heat and power.

All the monitoring parameters were in accordance with the monitoring methodology of AM0014 version 3 and the Registered PDD version 6.1.3.

CAR 2 was raised as the quantity of Natural gas was not as per the registered PDD and the values taken for calculation are from cross check meters (Tag NG 101- Tag NG105) and not from the main PGN meters (tag NG 100). The proponent responded by correcting the error as the PGN meters were the main meters from which the total Natural gas is supplied to the plant. This was verified from the Monitoring report version 3 and also in the calculation sheet version 4 and found OK. CAR 2 was closed out.

#### 3.2 Monitoring Results

The following parameters are monitored as per the monitoring methodology

The Volume of Natural gas is a parameter which is measured using by RMG Mess Technik gas meters (tag No 100; Serial No 30711) and are maintained by PGN who are the gas suppliers. The meters are calibrated by the <u>National Metrology Agency (Direktorat Metrologi)</u> and the calibrations are valid till 28<sup>th</sup> April 2009 (Document Ref No. Ref No: 872/PDN.4.8.2/S/04/2008 as verified from the certificate from the Department of Metrology). This meter reading is jointly recorded by PGN and MEN at the end of each month.

The project proponent has also installed 5 individual Endress Hauser meters (Tag No 101, 102, 103, 104 and 105) for self-monitoring of individual Jenbacher turbines. All these meters are calibrated. These have been referred in the Monitoring report Version 3.

The PGN meters are reporting the data in  $\text{Sm}^3$  at 1 bar and 27 Celsius as confirmed by the General Requirements and Gas Services Issued by PGN; hence the factor has been corrected to Nm3 at 1 bar and 0 Celsius. This is done each month and the calculations have been checked and verified. This is for cross verification and reporting as per the registered PDD.

CAR 1 was raised as the secondary meters were considered for this monitoring period as the primary meters. As per the registered PDD this meter is the one present at the entrance of the facility. This was corrected by the project proponent by appropriately defining the PGN meters as the main meter and the inhouse gas meters as secondary meters and hence CAR 1 was closed.

Cogeneration heat to the industrial plant (MCHO) is measured an integrated GIFLO flow meter (Variable area pipeline flow meter, Tag No HE-301, Manufacturer: Spirax Sarco Limited, UK with serial No: C-7378) with temperature sensor, reporting steam temperature, pressure flow rate and heat rate. The M-800 screen gives total output on a 10 second basis and is operational from September 2007 and the M-750 display is in totalised form in MJ and is operational from 18<sup>th</sup> April 2008. The product conformity certificate was verified issued by Spirax Sarco Calibration Document 33725131 version 7. The installation and conformance of the



system was verified vis-à-vis the Spirax sarco website <u>http://www.spiraxsarco.com/pdfs/IM/p337\_04.pdf</u> and found OK.

CAR 2 was raised as the figures used for calculating the steam parameters had considered only daily instantaneous figures for temperature and pressure and estimated the steam for the period from 1<sup>st</sup> March till 18<sup>th</sup> April 2008. In response to the CAR the proponent responded by including the four hourly figures which are more accurate. This was verified and it was found that all values were now been considered and consistent. Hence, CAR 2 was closed.

Cogeneration electricity to the industrial plant (MCEO) is measured with of two sets of meters. The first sets of meters (GE 201, GE202, GE203, GE204 and GE 205) are Woodward meters; model no MWS4, Multimeasurement transmitter with the accuracy class of 0.5s. The parasitic consumption is recorded a Schneider Electric meter of type PM-800 (GE200). The calibration being carried out by PLN calibration laboratory which is certified by the National Accreditation Committee as on 18<sup>th</sup> September 2007 and is valid till 18<sup>th</sup> September 2008. The second set of meters is located on the interface panel and a Schneider Electric meter of type PM-800 (UE-100) is used to measure total electricity delivered to PT Argos Pantes and its parasitic consumption is recorded by UE-101. The calibration being carried out by PLN calibration laboratory which is certified by the National Accreditation Committee as on 18<sup>th</sup> September 2007 and is valid till 18<sup>th</sup> September 0.500 (UE-100) is used to measure total electricity delivered to PT Argos Pantes and its parasitic consumption is recorded by UE-101. The calibration being carried out by PLN calibration laboratory which is certified by the National Accreditation Committee as on 18<sup>th</sup> September 2007 and is valid till 18<sup>th</sup> September 2008. The lower of the two meter readings has been considered for calculating emission reduction.

#### 3.3 Remaining Issues, CAR's, FAR's from Previous Validation or Verification

There were no pending issues from the validation

#### 3.4 Project Implementation

Project was implemented and equipment installed as described in the registered PDD;

The commissioning of all 5 Jenbacher Gas engines (13.6 MW gross with each GT of 2.72 MW capacity) was completed on 26<sup>th</sup> September 2007 and the boiler installations were commissioned on 21<sup>st</sup> December 2007. These were verified from the commissioning certificates from PT Navigat Energy who is an authorised vendor for GE JENBACHER.

#### 3.5 Completeness of Monitoring

The reporting procedures reflect the content of the monitoring plan. The monitoring mechanism is effective and reliable

#### 3.6 Accuracy of Emission Reduction Calculations

The calculation of emission reductions is found to be correct. Three CARs were raised, the response to CARs was satisfactory and these were closed. The details of the reported and the verified values for all parameters are listed in section 4.

#### 3.7 Quality of Evidence to Determine Emission Reductions

Critical parameters used for the determination of the Emission Reductions are discussed above in section 3.2 above. All the data recorded is in compliance with the monitoring report.

#### 3.8 Management System and Quality Assurance

The companies involved in the project have quality assurance system implemented, as per the registered PDD therefore we can affirm that the management system the CDM project is in place; with the responsibilities properly identified and in place.

In order to verify data quality, the Companies involves in the project works in accordance with a quality assurance procedure (*Procedure for Monitoring Plan Implementation*), which establishes the operational and management structure implemented.



#### 3.9 Data from External Sources

The Net Calorific value of the natural gas and the density of the gas have been calculated with the help of the gas supplier's certificate and the calculations have been verified and found OK. The gas certificate primarily has the molar fraction of each gas component along with the compressibility of the gas and the NCV and density of the Natural gas are derived from it.

The Emission factor for the Grid is to be calculated ex-post as per the registered PDD using the combined Margin approach by calculating the Simple OM and BM for the latest available data as per the "Tool to calculate emission factor for an electricity system". The proponent had considered the EF for 2006 as validated in the PDD. CAR03 was raised to justify that 2006 data is the latest available data. The proponent responded by providing the PLN link for the Jamali Grid which was verified and it was seen that the latest data available is 2006 as per the PLN website. Hence CAR03 was closed



#### 4. Calculation of Emission Reductions

For each parameter in the monitoring methodology / monitoring report list the following information

Parameter	Reported Value	Verified Value
МСНО	83,999.189	86,070.188
MCEO	43,096	43,096
VNG/ MEC <sub>NG</sub>	11,024,343	10,971,271
EFGrid	0.901	0.901
NCV <sub>NG</sub>	0.04771	0.04766
NG density	0.76823	0.76823

Constants verified from the registered PDD

Constant	Value for CO <sub>2</sub>	Value for CH <sub>4</sub>	Value for N <sub>2</sub> O
Global Warming Potential of GHG	1	21	310
Emission Factor of GHG from combustion of residue oil (displaced)	77.4 tCO <sub>2</sub> /TJ	0.003 tCH₄/TJ	0.0006 t N₂O /TJ
Emission Factor of GHG from combustion of natural gas (Project)	56.1 tCO <sub>2</sub> /TJ	0.001 tCH₄/TJ	0.0001t N₂O /TJ

Constant	Value
Methane emission factor from activities related to the production of natural gas (Leakage)	0.0287518×10 <sup>3</sup> t CH <sub>4</sub> /Nm <sup>3</sup>
Efficiency of Baseline (Residue oil) Boiler	90%

BE<sub>total</sub> = BE<sub>th</sub> + BE<sub>equiv met comb</sub> + BE<sub>equiv N2O comb</sub> + BE<sub>th equiv fug</sub> + BE<sub>elec</sub>

PE<sub>total</sub> = PE<sub>CS</sub> + PE<sub>equiv met comb</sub> + PE<sub>equiv N2O comb</sub> + PE<sub>equiv fug</sub>

 $ER = BE_{total} - PE_{total}$ ER = 17,154 tCO2e



#### 5. Recommendations for Changes in the Monitoring Plan

No recommendations



#### 6. Overview of Results

#### Assessment Against the Provisions of Decision 17/CP.7:

Is the project documentation in accordance with the requirements of the registered PDD and relevant provision of decision 17/CP.7, EB decisions and guidance and the COP/MOP?

Yes. The results of the compliance assessment are recorded in the verification checklist which is used as an internal report only.

Have on-site inspections been performed that may comprise, inter alia, a review of performance records, interviews with project participants and local stakeholders, collection of measurements, observations of established practices and testing of the accuracy of monitoring equipment?

Yes, Kamesh lyer visited the sites and undertook interviews, collected data, audited the implementation of procedures, checked calibration certificates and checked data, inter alia.

The results of the site visits are recorded in the verification checklist which is used as an internal report only.

The evidences have been checked and collected. The revised monitoring report is attached with this verification report.

Has data from additional sources been used? If yes, please detail the source and significance.

The following parameters have been fixed ex-ante;

Global Warming Potential of GHG for  $CO_2$ ,  $CH_4$  and  $N_2O$ Emission Factor of GHG from combustion of residue oil (displaced) for  $CO_2$ ,  $CH_4$  and  $N_2O$ Emission Factor of GHG from combustion of natural gas (Project) for  $CO_2$ ,  $CH_4$  and  $N_2O$ Methane emission factor from activities related to the production of natural gas (Leakage) Efficiency of Baseline (Residue oil) Boiler

.Please review the monitoring results and verify that the monitoring methodologies for the estimation of reductions in anthropogenic emissions by sources have been applied correctly and their documentation is complete and transparent.

Yes. The monitoring methodology has been correctly applied and the monitoring report and supporting references are complete and transparent.

Have any recommendations for changes to the monitoring methodology for any future crediting period been issued to the project participant?

#### No, recommendations are issued

Determine the reductions in anthropogenic emissions by sources of greenhouse gases that would not have occurred in the absence of the CDM project activity, based on the data and information using calculation procedures consistent with those contained in the registered project design document and the monitoring plan.

The data used in anthropogenic emission reduction calculation is consistent with those contained in the registered PDD and monitoring plan. The emission reduction was 21,311 tCO2 for the period 26/02/2008 to 31/08/2008 as per the estimation made in the registered PDD. The actual emission reduction has been verified as 17, 154 insert emission reduction tCO2 for the same period.

Identify and inform the project participants of any concerns related to the conformity of the actual project activity and its operation with the registered project design document. Project participants shall address the concerns and supply relevant additional information.

"No such non conformity of the actual project activity and its operation with the registered project design document has been observed."



UK AR6 CDM Verification Issue 3 (April 2008) CDM.VER0761

Post monitoring report on UNFCCC website

Yes, the monitoring report is available at ref. 1313 on UNFCCC website http://cdm.unfccc.int/UserManagement/FileStorage/DHOKIYM3X629SNQGETJ0CFV8P5ZRW4



#### 7. Verification and Certification Statement

SGS United Kingdom Ltd has been contracted by PT Manunggal Energi Nusantara to perform the verification of the emission reductions reported for the CDM project MEN-Tangerang 13.6MW Natural Gas Co-generation Project and UNFCCC No 1313 in the period 26/02/2008 up to 31/08/2008.

The verification is based on the validated and registered project design document and the monitoring report for this project. Verification is performed in accordance with section I of Decision 3/CMP.1, and relevant decisions of the CDM EB and CoP/MoP. The scope of this engagement covers the verification and certification of greenhouse gas emission reductions generated by the above project during the above mentioned period, as reported in Monitoring report version 3.0.0.

The management of the PT Manunggal Energi Nusantara is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project Monitoring Report Version 3.0.0. Calculation and determination of GHG emission reductions from the project is the responsibility of the management of the MEN-Tangerang 13.6MW Natural Gas Co-generation Project. The development and maintenance of records and reporting procedures are in accordance with the monitoring report.

It is our responsibility to express an independent GHG verification opinion on the GHG emissions and on the calculation of GHG emission reductions from the project for the period 17,154 based on the reported emission reductions in the Monitoring Report version 3.0.0 for the same period.

Based on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these. SGS planned and performed our work to obtain the information and explanations that we considered necessary to provide sufficient evidence for us to give reasonable assurance that this reported amount of GHG emission reductions for the period is fairly stated.

SGS confirms that the project is implemented as described in the validated and registered project design documents. Based on the information we have seen and evaluated, we confirm the following:

Project Title:	MEN-Tangerang 13.6MW Natural Gas Co-generation Project
UNFCCC Reference Number:	1313
Registered and Approved PDD used for Verification:	Registered PDD version 6.1.3 dated 18/10/2007
Methodology used for Verification:	AM0014, version 3 dated 18 <sup>th</sup> May 2007
Applicable Period:	26/02/2008 up to 31/08/2008
Total GHG Emission Reductions Verified:	17, 154

#### Signed on behalf of the Verification Body by Authorized Signatory

... Body t

Signature:

Name: Siddharth Yadav Date: 23<sup>rd</sup> January 2009



UK AR6 CDM Verification Issue 3 (April 2008) CDM.VER0761

#### 8. Document References

- /1/ Registered PDD Version 6.1.3 dated 18/10/2007
- /2/ TUV-SUD validation REPORT NO. 1017251 February 18, 2008
- /3/ AM0014 Version 3
- /4/ Monitoring Report version 1.0.0
- /5/ Monitoring Report version 2.0.0
- /6/ 080201 Consolidated MAR08 to AUG08 Version 1.0
- /7/ 080201 Consolidated MAR08 to AUG08 Version 3.0
- /8/ GT Module Commissioning Certificates dated 25<sup>th</sup> September 2007
- /9/ Boiler Commissioning Certificates dated 21<sup>st</sup> December 2007 (Job No J D 799)
- /10/ Calibration certificates
- /11/ Internal Audit Doc Ref D- 1 005/III/M-2/MEN-TNG/08
- /12/ Monthly CDM Reports Ref M-2 005/III/M-2/MEN-TNG/08
- /13/ Invoices to PT Argos Pantes (Monthly for the period from March to August 2008)
- /14/ Invoices of PGN (Monthly for the period from March to August 2008)
- /15/ Gas Supplier (PGN ) certificates
- /16/ Certificate to Operate ref No : 671.2/322-Distamben/2008 (Bahasa)
- /17/ Biannual Report UKL-UPL Monitoring report
- /18/ Standard Operating procedures for MEN
- /19/ Instrument Log/Plant records
- /20/ Training schedule and records
- /21/ Monitoring Report version 3.0.0
- /22/ 080201 Consolidated MAR08 to AUG08 Version 4.0

- 000 -