VERIFICATION AND CERTIFICATION REPORT

THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED

Afam Combined Cycle Gas Turbine Power Project

UN PA 5645

Monitoring Period 01: 01/11/2012 to 31/10/2013 (Both days inclusive)

SGS United Kingdom Ltd | SGS House, 217-221 London Road, Camberley, Surrey GU15 3EY **Tel** +44 (0)1276 697810 **Fax** +44 (0)1276 697700
Registered in England No. 1193985 Rossmore Business Park, Ellesmere Port, Cheshire CH65 3EN www.sgs.com
Member of the SGS Group (SGS S.A.)

Date of Issue:	**Project Number:**
11/06/2015	CDM.VER1401MP1
Project Title:	
Afam Combined Cycle Gas Turbine Power Project	
Organisation:	**Client:**
SGS United Kingdom Limited	The Shell Petroleum Development Company of Nigeria Limited
Publication of Monitoring Report:	
Monitoring Period:	01/11/2012 to 31/10/2013
First Monitoring Version and Date:	Version 01 dated 16/07/2014
Final Monitoring Version and Date:	Version 05 dated 20/02/2015

Summary:

SGS United Kingdom Ltd has performed the first periodic verification of the CDM project entitled '**Afam Combined Cycle Gas Turbine Power Project'**, bearing UNFCCC reference number 5645, registered on 29/10/2012 with crediting period from 01/11/2012 to 31/10/2022. The verification includes confirming the implementation of the monitoring plan of the registered PDD Version 05 dated 29/08/2012 and the application of the monitoring methodology as per AM0029, version 3.0. A site visit was conducted to verify the data submitted in the monitoring report. SGS confirms the following has been reviewed:

(a) The registered PDD and revised PDD, including the monitoring plan and the corresponding validation report for the registered PDD;

(b) Monitoring report,

(c) The applied monitoring methodology;

(d) Relevant decisions, clarifications and guidance from the CMP and the CDM Executive Board;

(e) All information and references relevant to the project activity resulting in emission reductions.

The project activity involves the installation of 650 MW grid-connected combined-cycle gas turbine (CCGT) and the export of the generated power to the Power Holding Company of Nigeria (PHCN) national grid of Nigeria.

SGS confirms that the project is implemented in accordance with the validated and registered Project Design Document and revised PDD. 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 **541,537 tCO_2e** emission reductions during the period from **01/11/2012 to 31/10/2013**.

Subject:			
CDM Verification			
Verification Team:			
Shivaji Chakraborty – Lead Assessor Sauvik Banerjee- Technical Area Expert (TA 1.1) Dominic Etuk – Local Assessor			☒ No Distribution (without permission from the Client or responsible organisational unit)
Technical Review:			
Date: 18/04/2015 Name: Ajoy Gupta			☐ Limited Distribution
Authorised Signatory:			
Name: Jonathan Hall Date: 21/08/2015			☒ Unrestricted Distribution
Revision Number:	**Date:**	**Number of Pages:**	
00	02/12/2014	50	
01	19/12/2014	52	
02	23/03/2015	60	
03	11/06/2015	60	

Abbreviations

BE	Baseline Emissions
BM	Build Margin
CAR	Corrective Action Request
CCPP	Combined Cycle Power Plant
CDM	Clean Development Mechanism
CERs	Certified Emission Reductions
CH_4	Methane
CL	Clarification Request
CO2e	Carbon Di-oxide equivalent
COP/MOP	Conference of Parties serving as the Meeting of Parties to Kyoto Protocol
DCS	Distributed Control System
DOE	Designated Operational Entity
DR	Document Review
EB	Executive Board
ER	Emission Reduction
FAR	Forward Action Request
GC	Gas Chromatograph
GHG	Greenhouse Gas(es)
GT	Gas Turbine
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
m3	Cubic meter
MR	Monitoring Report
MT	Metric Tonne
MW	Mega Watt
MWh	Mega Watt hour
NCV	Net Calorific Value
NG	Natural Gas
OM	Operating Margin
PDD	Project Design Document
PEs	Project Emissions
PP	Project Participant
QA/QC	Quality Assurance/Quality Control
SCM	Standard Cubic Meter
SPDC	Shell Petroleum Development Company of Nigeria Limited
TJ	Tera Joule
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation and Verification Standard

Table of Content

1. Introduction

1.1 Objective

SGS United Kingdom Ltd has been contracted by The Shell Petroleum Development Company Of Nigeria Limited to perform an independent verification of its CDM project entitled 'Afam Combined Cycle Gas Turbine Power 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 revised 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, revised PDD 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 Standard, employed a risk-based approach in the verification, focusing on the identification of significant reporting risks and the reliability of project monitoring.

Due professional care has been exercised and ethical conduct has been followed by the assessment team during the verification process. The verification report is a fair presentation of the verification activity.

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 of the project design.

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:	Afam Combined Cycle Gas Turbine Power Project
UNFCCC Registration Number:	5645
Monitoring Period Covered in this Report:	01/11/2012 to 31/10/2013
Project Participants:	Host Country: Nigeria Authorized Participants: The Shell Petroleum Development Company of Nigeria Limited
Location of the Project Activity:	The project is located in Oyigbo Local Government Area (LGA) of Rivers State. The power plant is built in Afam area of the community. The physical location for the project is at geographical coordinates: 7.2545 E, 4.8480 N and 7.2600 E, 4.8525 N decimal degrees

The project activity involves the installation of a 650 MW grid-connected combined-cycle gas turbine (CCGT) and the export of the generated power to the Power Holding Company of Nigeria (PHCN) national grid of Nigeria.

The project activity power plant operates on a cleaner fuel (Natural Gas) leading to lower Carbon Dioxide (GHG) emissions compared to the other power plants in the region operating on other carbon intensive fossil fuels.

2. Methodology

2.1 General Approach

SGS performs the verification work using a Periodic Verification Checklist prepared following the VVS. The Periodic Verification Checklist describes the verification approach and the sampling plan.

The checklist gives the assessment team 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.

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.

Only verification activities undertaken after the publication of the monitoring report on the UNFCCC CDM website were used as a basis for SGS to conclude our verification and submit a request for issuance of CERs to the Board.

2.2 Verification Team for this Assessment

The team selected to perform the verification of the project is as follows:

Name	Role
Shivaji Chakraborty	Lead Assessor
Sauvik Banerjee	Assessor & Technical Area Expert (TA1.1)
Dominic Etuk	Local Assessor

2.3 Means of Verification

2.3.1 Review of Documentation

The registered PDD and revised 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 by all the members of the assessment team

Location: Afam area, approximately 30 km northeast of Port Harcourt, the capital of Rivers State, Nigeria	
Date: 29/10/2014- 30/10/2014	
Coverage:	**Source of Information / Persons Interviewed**
Management Approach to GHG commitment	Ogochukwu Ikegwuonu , Chineyere Ozumba Marcelo Ganan, Chris Funt, Stuart Roshten, Nick Tangney, Moore Oby, Alagala A.L, Ralph Omiponle, Ben Agbajogu
Assessment of Project Boundary	
Physical components	
Qualification and Training	
Plant Operations	
Roles and responsibility	
Monitoring and measuring system • Collection of measurements • Observations of established practices • Testing of the accuracy of monitoring equipment • DCS logging and transmitter accuracy • Data Verification of monitoring parameters	
CDM monitoring & reporting documentation	
Quality Assurance – Management and operating system	
Emergency procedures	

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 Clarification Request (CL) 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:

I. Non-compliance with the monitoring plan or methodology are found in monitoring and reporting and has not been sufficiently documented by the project participants, or if the evidence provided to prove conformity is insufficient;

II. Modifications to the implementation, operation and monitoring of the registered project activity has not been sufficiently documented by the project participants;

III. Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impact the quantity of emission reductions;

IV. Issues identified in a FAR during validation to be verified during verification or previous verification(s) have not been resolved by the project participants

The verification process may be halted until this information has been made available to comply with the requirements of the CDM Executive Board. Failure to address a CL may result in a CAR. Information or clarifications provided as a result of a CL may also lead to a CAR.

A clarification request (CL) will be raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met. All CARs and CLs raised during verification shall be resolved prior to submitting a request for issuance.

Corrective Action Requests and Clarification Requests are raised in the Periodic Verification Checklist. The Project Developer is given the opportunity to "close" outstanding CARs and respond to CLs.

Forward Action Requests (FARs) may be raised during verification for actions where the monitoring and reporting require attention and/or adjustment for the next verification period, which are for the benefit of future projects and future verification activities. These have no impact upon the completion of the verification activity.

All CARs, CLs and FARs for this verification period are included in annex to this report.

2.5 Internal Quality Control

Following the completion of the assessment process and a recommendation by the Assessment Team, all documentation is forwarded to a Technical Review Team. The task of the Technical Review Team 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.

Technical Review Team

Name	Role
Ajoy Gupta	Technical Reviewer
Tarit Roy	Technical Area Expert (TA1.1)

3. Verification Findings

3.1 Project Implementation

The project activity has been implemented as described in the registered PDD[/1/] and the revised PDD[/1.b/] being submitted with this request for issuance.

The project activity involves the installation of a 650 MW grid-connected combined-cycle gas turbine (CCGT) and the export of the generated power to the Power Holding Company of Nigeria (PHCN) national grid of Nigeria. By generating electricity from natural gas and exporting it to the grid, the project activity replaces the generation of electricity from more carbon intensive fuels and reduces the GHG emissions in the atmosphere. The project activity has applied the approved baseline and monitoring methodology AM0029, version 3.0[/7/].

As per the information available on the UNFCCC webpage for the project activity 5645[/1/], this is the first monitoring period for the project activity. The project activity is registered with the UNFCCC on 29/10/2012 with UNFCCC ref no.5645. The project activity has been completely installed and found fully operational during the verification site visit. The commissioning date of the project activity is 22/07/2009[/17/] which is the commissioning of the gas turbines GT11, GT12 and GT13; subsequently the combined cycle mode was commissioned on 04/07/2010. As per the information available on the project page of the UNFCCC website (http://cdm.unfccc.int/Projects/DB/DNV-CUK1325573884.39/view) and the registered PDD,

The technical details of the turbines and generators installed were checked at the site visit and were found to be in line with the monitoring report.

Description	Make	Type	Serial No.
Gas Turbine GT11	Alstom	GT13E2	G00301
Gas Turbine GT12	Alstom	GT13E2	G00304
Gas Turbine GT13	Alstom	GT13E2	G00305
Steam Turbine	Alstom	DK2-2N33G	GM002506
Gas Turbine Generator (GT11)	Alstom	50WY21Z-092	HM301456
Gas Turbine Generator (GT12)	Alstom	50WY21Z-092	HM301462
Gas Turbine Generator (GT13)	Alstom	50WY21Z-092	HM301465
Steam Turbine Generator (Gen 10)	Alstom	50WY232-109	GM224506

As per the applied methodology AM0029, version 3.0[/7/], the monitoring methodology is applicable under the same conditions as the baseline methodology. The applicability conditions of the baseline methodology have been validated at the time of registration.

The project activity has been installed as described in the registered PDD[/1/] and the revised PDD[/1.b/]. A site visit was conducted by the assessment team to the project activity on 29/10/2014 and 30/10/2014. The actual design, installation and operation of the project activity has been checked and are found to be in compliance with the information provided in the registered PDD [/1/] and the revised PDD[/1.b/]. The locations of the monitoring instruments and meters have been checked during the site visit and were found appropriate and consistent with the registered and revised PDD and the requirements of the registered monitoring plan. The project boundaries and all the equipments were checked and found to be in line with the registered PDD[/1/] and the revised PDD[/1.b/] (being submitted along with this request for issuance).

The project boundary at the site was assessed and is found in line with the registered PDD. There are no other GHG sources found attributable to the project activity and not included in the project boundary of registered PDD. Up to the end of current monitoring period (01/11/2012 – 31/10/2013), the project boundary has always been consistent with the registered PDD. The compliance assessment as per the requirements of paragraph 270 of the VVS, version 07.0[/4/] have been covered and checked during the site visit for the project activity.

As per the registered PDD version 05 dated 29/08/2012[/1/], the estimated emission reduction is 550,234 tCO_2e per year. The reported and verified emission reductions in the current monitoring period are 541,537 tCO_2e. The verified emission reductions are lower by 8,697 tCO_2e (1.6%) than the estimate in the registered PDD. The reason has been verified as less power generation during the current monitoring period, in comparison to the expected power generation value as envisaged in the registered PDD. This occurred due to shut down/outage periods[/19/], lower electricity generation, lower gas consumption and due to higher NCV of fuel gas which was checked against the plant records and was found to be consistent and hence is accepted by the assessment team.

The following has been checked to verify the applicability of the methodology to the project activity.

Technology/ Measures as per the approved methodology, AM0029, version3.0[/7/]	**Applicability/ Means of Verification**
The project activity is the construction and operation of a new natural gas fired grid-connected electricity generation plant;	The project activity is a newly constructed combined cycle gas turbine power plant with an installed capacity of 650MW comprising of 3x150MW gas turbines and a 200MW steam turbine to generate electricity and supply it to the regional grid of Nigeria, using natural gas as a primary fuel. This fact was checked against the signed copy of PPA[/18/] between the Power Holding company of Nigeria PLC and the PP dated 09/12/2005 and further cross checked during the site visit by the assessment team and hence is accepted.
The geographical/physical boundaries of the baseline grid can be clearly identified and information pertaining to the grid and estimating baseline emissions is publicly available;	The geographical and the physical boundary of the baseline grid was checked to be clearly identified by the assessment team during site visit and found to be consistent with the baseline identified under registered PDD[/1/] and revised PDD[/1.b/].
Natural gas is sufficiently available in the region or country, e.g. future natural gas based power capacity additions, comparable in size to the project activity, are not constrained by the use of natural gas in the project activity.	Natural gas is abundantly available in the country and the region as Nigeria is the largest oil producer in Africa. This fact was checked against the US energy information administration (http://www.eia.gov/countries/analysisbriefs/Nigeria/nigeria.pdf) and further cross-checked against the public domain available at http://www.bloomberg.com/news/2014-09-15/nigeria-must-boost-gas-output-for-power-supply-minister.html and hence is accepted by the assessment team.

Discussion of CAR/CLs:

The PP was requested to clarify why there was 18% more ERs as compared to the estimated value as per the registered PDD as per requirement of VVS para 262 (b) (vi). **CAR01** was raised in this regard.

In response, the justification of the difference in emission reduction as compared to the registered PDD has been found to be correct as based on the lower electricity generation, lower gas consumption and due to higher NCV of fuel gas which was found to be correctly being reported in the MR version 02 dated 10/11/2014 and was found to be consistent and thus **CAR01** was closed out.

The PP was requested to clarify why the monitoring report template was not the most recent one available at the UNFCCC website as per the requirement of para 257e of VVS 7.0. Further, the PPs listed on page 1 and in section A.3 did not match those that are on the UNFCCC webpage and the Host Party was not consistent with UNFCCC webpage on Page 1 and in section A.2. **CAR02** was raised in this regard.

In response, the PP revised the MR using the latest template and this was found to be consistent with the most recent available template on the UNFCCCs webpage and thus accepted. Also, the listed PPs in the revised MR were checked and found to be updated correctly as per the UNFCCC webpage on page 1 and Section A.3. Host party was also found to be corrected and thus accepted. Emission reductions for 2012 and 2013 were revised on page 1 and Section E.7 (based on 100% data available); the information updated in the MR version 02 dated 10/11/2014 was accepted and thus **CAR02** was closed out. Further detail discussion on CAR02 and relevant conclusion made can be referred under Section 9 of this verification report.

The PP was requested to clarify when the power plant was commissioned and the details of commissioning of all components of the project activity. The PP was further requested to provide the make and serial numbers of all the turbines and generators, transparently in section A.1, including the downtime during the period under verification (from 01/11/2012- 31/10/2013). Also any such event which resulted for any change in equipment had to be listed in section A.1. **CAR03** was raised in this regard.

In response, the PP has submitted the requisite commissioning details. The commissioning details of the power plant, Gas Turbines GT11, GT12 and GT13 and Combined Cycle were checked against the commissioning certificate for GT11, GT12 and GT13 dated 22/07/2009[/17/] as well as the commissioning certificate for the combined cycle Power Plant dated 04/07/2010[/17/] which were found to be consistent and thus accepted.
The Make and Serial Numbers of the Turbines and Generators were checked during the site visit and the respective details are found to be correctly reported in the MR and thus accepted.
Downtime of the plant from 01/11/2012 - 31/10/2013 were checked and found to be consistent with the shutdown details[/19/] as reflected in the raw data obtained from the plant and thus **CAR03** was closed out.

3.2 Post registration changes

There is a post registration change in the form of alteration made to the connection of the gas turbo-generator GT 11 with one of the two metering points i.e. electricity meters located at the grid interface. GT11 has been connected with the metering point 6 at the grid interface along with steam turbo-generator (Gen 10). This alteration in connection to the metering point has been transparently indicated in the schematic diagram presented under Section B.1 of the MR[/2.iv/]and Figure 4 & A4.1 of the revised PDD [/1/.

Please refer to the detail discussion made under Section 3.2.4 below.

3.2.1 Temporary deviations from Approved revised monitoring plan or applied methodology

There are no temporary deviations from the approved revised monitoring plan or the applied methodology[/7/] identified during the monitoring period.

3.2.2 Corrections

The following corrections have been made in the revised PDD. The changes are related to the project information and do not affect the design of the project activity as per the provision of paragraph 1 of the CDM Project Standard, ver. 07/6/.

- The name tags on the project gas turbines 'GT1, GT2 and GT3' as shown in figures 4 and A4.1 of the registered PDD are now corrected as GT13, GT12 and GT11 respectively in the revised PDD as per actual situation verified on site.
- Accordingly Section B.7.1 and Table A4.1 under Appendix 5 have also included the editorial change in the three gas turbine identification number as GT#11, GT#12 and GT#13 under the description of the three respective monitoring parameters $FC_{f,1,y}$, $FC_{f,2,y}$ and $FC_{f,3,y}$ to be consistent with the revised schematic diagram and in line with the tag number of the gas turbines as per actual situation verified on site.
- The name tag of the gas flow metering point at the GT13 inlet has been corrected as "point 3" under revised PDD section B.7.1 to make consistent with the description made under Table A4.1 of the PDD.
- Under Section C.2.3 the PP has voluntarily added "120 months" to represent the length of the 10 years crediting period.
- Appendix 1 was revised to include the most up to date contact information of the project participants focal contact point.
- Appendix 5: Typographical error for the numbering of the headings of Figure and Table A.4.1 has been corrected as A.4.1.

3.2.3 Permanent changes from Approved revised monitoring plan or applied methodology

There are no permanent changes from the approved monitoring plan or applied methodology applicable for the project activity during the monitoring period as verified based on onsite observations.

3.2.4 Changes to project design of registered project activity

As per the registered PDD/1/, the total electricity generated from the steam turbo-generator (Gen 10) will be monitored separately and the metering of the electricity generated from the three gas turbo-generators (Gen 11, Gen 12 and Gen 13) combined at the metering locations 6 and 5 respectively installed at grid interface.

However in the actual scenario as verified on site, the electricity generated from Steam Turbo-Generator (Gen10) and the Gas Turbine GT11 is being monitored by the energy meter located at metering location 6 and the electricity generated by other two Gas Turbines GT12 and GT13 is being monitored by the energy meter located at metering location 5. There is no change in the metering arrangement at the grid interface i.e. equipment itself, or the location or the procedure as indicated under registered PDD.

The above constitute a post registration change. Although the nature of the change does not fall under any of the five categories of changes to the project design of a registered project activity as specified under paragraph 280 (a to e) of the CDM Project Standard ver. 07/6/; however, since the decision and action taken for the concerned alteration in connection to the grid interface metering location was under the jurisdiction of the project participant, thus the this has been considered as changes to the project design as per the provisions of paragraph 280d.

The impact of the concerned change in project design has been further assessed in following manner:

- This post registration change does not have any impact on the applicability and application of the applied methodology AM0029 version 03 under which the project activity has been registered. The applied monitoring methodology only requires continuous monitoring of net electricity export to the grid system through energy meters. Thus the change in the connection of one project turbo-generator to the energy meter does not have any impact on the monitoring and monitored data on the total net electricity exported to the grid and hence no influence on the emission reduction

calculation as per the methodological choice as stated under registered PDD and the requirement of AM0029 version 03.

The change as compared to the description in the registered PDD was occurred actual implementation and commissioning of the project activity which was prior to the CDM registration of the project activity. However as per the reporting requirement of the paragraph 325(b) of VVS, version 7.0/4/ the assessment team confirms herewith that the changes involved does not impact the overall operation/ability of the project activity to deliver emission reductions as stated in the registered PDD/1/.

- The post registration change does not have any effect on the project finances since there will not be any change in project revenue due to the electricity sale to the grid. It is confirmed that the actual change does not have any impact on the additionality of the project activity, since the project additionality has been demonstrated through investment analysis.
- There is no change in capacity or rating of the equipments used in the project and the change is only in the power evacuation mode due to which there is no change in scale of the project as well.

Therefore, it has been concluded and confirmed that the nature of the post registration change falls under the provision of Paragraph 6 of Appendix 1 of CDM Project Standard, version 07/6/ which does not require prior approval by the CDM EB.

The revised PDD/1/ is being submitted along with this request for issuance.

It is to be noted that this project was registered under the previous regulatory framework (VVM track), and therefore, as required by the CDM EB (http://cdm.unfccc.int/faq/index.html, under heading "How do I request post-registration changes for my project?"), the information in the registered PDD has been transferred to the new VVS PDD form. The assessment team confirms that the information included in the new PDD form under the VVS track is materially the same as the information in the registered PDD.

The revised PDD /1.b/ has in turn included the following changes:

- Section B.4 and Appendix 5 include a revised schematic illustration of the project activity within CDM project boundary showing electricity generated from Steam Turbo-Generator (Gen10) and one of the Gas Turbine (GT 11) is being monitored by one energy meter (metering location 6) and the electricity generated by GT12 and GT13 will be monitored using another energy meter (metering location 5).
- Section B.7.1 has included the revised description for two monitoring parameters related to monitoring of electricity generation ($EG_{PJ,5,y}$ and $EG_{PJ,6,y}$) to synchronise with the changes in connection to metering points 5 & 6 at grid interface.

Along with the above stated revisions made to the registered PDD, due to use of the new CDM-PDD-FORM version 05 the following additions have been also included:

- Section A.1 has added the statement "*Using the methodology and the relevant tools as guides for calculating the GHG reductions, the estimated annual GHG reduction is 550,234 tons of CO_2, which is expected to remain stable over the ten year crediting period.*".as per the requirement of the VVS track template.
- The revision of Table numbers sequence throughout the PDD to synchronise with the sequence of sections as per the currently valid VVS track PDD template. Since the Table under Section A.4.4 of the VVM track PDD template has been removed from VVS track PDD template.
- Addition of statement under Section B.7.2 as per the requirement of currently valid VVS track PDD template.Appendix 1 has added information on the entities responsible for determination of project baseline determination and PDD preparations as per the requirement of VVS track PDD template.

Further discussion on CAR04 and relevant conclusion made on this PRC can be referred under Section 9 of this verification report.

3.2.5 Changes to start date of crediting period

No change in the start date of the crediting period was requested by the PP. The project was registered on 29/10/2012 and the start date of the crediting period is from 01/11/2012 until 31/10/2022. The same was checked against the UNFCCC webpage[/1/] and found consistent and hence is accepted.

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

This is the first periodic verification for the project activity and there are no remaining or pending issues from the previous validation process. This fact has been checked with the validation report[/14/] for the project activity.

3.4 Completeness and accuracy of Monitoring

3.4.1 Verification of monitoring of parameters

The monitoring of reductions in GHG emissions resulting from the registered project have been implemented in accordance with the registered monitoring plan. The complete set of data for each applicable monitored parameter is available for the monitoring period. The monitoring mechanism is complete, effective and reliable. Each parameter required to be monitored are discussed below.

Parameter 01: ***Annual quantity of fuel (natural gas) consumed in project activity ($FC_{f,1,y}$) :***

Monitoring Report, onsite checks / Registered Monitoring Plan & Approved Methodology	**Requirement in the applicable methodology and relevant EB Documents**	**Requirement in the registered monitoring plan**	**Implementation of the project**	**Conclusion on the compliance of the implementation with the monitoring plan & applicable methodology.**
Data/Parameter	$FC_{f,1,y}$	$FC_{f,1,y}$	$FC_{f,1,y}$	The nomenclature applied in the MR is in compliance with the applied methodology, registered monitoring plan and revised PDD.
Description	Annual quantity of fuel (natural gas) consumed in project activity	Annual quantity of fuel (natural gas) consumed in project activity	Annual quantity of fuel (natural gas) consumed in project activity	The description applied in the MR is in compliance with the registered monitoring plan and revised PDD.
Measured/Calculated /Default	Measured	Measured	Measured	The monitoring approach applied in the MR is in compliance with the applied methodology, registered monitoring plan and revised PDD. The monitored value was further confirmed during the site visit against the stock registers[/20/].
Source of data	Fuel flow meter reading at project	Fuel (natural gas) flow meter reading at Afam	Fuel (natural gas) flow meter readings at Afam	The source of data applied in the MR is in

	boundary	plant gas reception facilities (custody transfer point from supplier; point 1 in Figure A4.1)	plant gas reception facilities (custody transfer point from supplier; point 1 in Figure A4.1)	compliance with the applied methodology, registered monitoring plan and revised PDD. The monitored value was further confirmed during the site visit against the stock registers[20].
Monitoring equipment	Natural Gas flow meter	Natural Gas flow meter	Natural Gas flow meter	This is a measured parameter and in compliance as per the applied methodology, registered monitoring plan and revised PDD.
Measuring/Reading/ Recording frequency	Daily recording	Continuous Measurement and daily recording	Continuous Measurement and daily recording	The monitoring and recording frequency of the parameter is as per the registered monitoring plan and revised PDD. The same was also checked and confirmed during the site visit.
Calculation method (if applicable)	Not Applicable	Not Applicable	Not Applicable	Not Applicable
QA/QC procedures	The total fuel consumption will be monitored both at supplier and project end for cross-verification	Natural gas supply metering (Elster Instromet 2000) to the project will be subject to regular (in accordance with stipulation of the meter supplier) maintenance and testing to ensure accuracy.	Natural gas supply metering (Elster Instromet 2000) to the project is subject to regular (in accordance with stipulation of the meter supplier) maintenance and testing to ensure accuracy. This meter reading is compared to the sum of the three gas meters to the turbines (FCf,2,y, FCf,3,y FCf,4,y) to ensure consistency. As per the registered monitoring plan, calibration of the gas flow meter is to be carried out annually according to meter supplier methods. However, during this monitoring period, the calibration for this flow meter was delayed for the entire period involved hence, in line with VVS ver. 07 para. 283, the value monitored (638,937,292 m^3) is conservatively adjusted by the PP by +2% (although accuracy class of the meter is ±0.2%) to 651,716,038m^3.	The QA/QC approach used in the MR is in compliance with the registered monitoring plan. The delayed calibration instances have been appropriately dealt through monitored data adjustment as per the provision of para. 283 VVS ver. 07. The QA/QC approach followed was checked during the site visit and found to be appropriate.

Parameter 02: Annual quantity of fuel (natural gas) consumed in gas turbine #11 ($FC_{f,2,y}$) :

Monitoring Report, onsite checks / Registered Monitoring Plan & Approved Methodology	**Requirement in the applicable methodology and relevant EB Documents**	**Requirement in the registered monitoring plan**	**Implementation of the project**	**Conclusion on the compliance of the implementation with the monitoring plan & applicable methodology.**
Data/Parameter	$FC_{f,2,y}$	$FC_{f,2,y}$	$FC_{f,2,y}$	The nomenclature applied in the MR is in compliance with the registered monitoring plan and revised PDD.
Description	Not mentioned in the methodology	Annual quantity of fuel (natural gas) consumed in gas turbine #1	Annual quantity of fuel (natural gas) consumed in gas turbine #11	The gas turbine tag number under the parameter description has been corrected in the revised PDD being submitted with this issuance request. Based on the verification site visit observation this is conformed that no change in project design involved.
Measured/Calculated /Default	Not mentioned in the methodology	Measured	Measured	The monitoring approach applied in the MR is in compliance with the registered monitoring plan and revised PDD. The monitored value was further confirmed during the site visit against the stock registers[/20/].
Source of data	Not mentioned in the methodology	Plant Records	Plant Records	The source of data applied in the MR is in compliance with the registered monitoring plan and revised PDD. The monitored value was further confirmed during the site visit against the stock registers[/20/].
Monitoring equipment	Not mentioned in the methodology	Natural Gas flow meter	Natural Gas flow meter	This is a measured parameter at point 2 of Figure A4.1 and in compliance as per the registered monitoring plan and revised PDD.
Measuring/Reading/ Recording frequency	Not mentioned in the methodology	Continuous Measurement and daily recording	Continuous Measurement and daily recording	The monitoring and recording frequency of the parameter is as per the registered monitoring plan and revised PDD. The same was also checked and confirmed during the site visit.
Calculation method (if applicable)	Not mentioned in the methodology	Not Applicable	Not Applicable	Not Applicable

QA/QC procedures	Not mentioned in the methodology	Used to corroborate gas consumption data collected at point 1 in Figure A4.1. As per the registered monitoring plan, calibration of the gas flow meter is to be carried out annually according to meter supplier methods.	Used to corroborate gas consumption data collected at point 1 in Figure A4.1. During this monitoring period, the calibration for this flow meter was delayed for the entire period involved hence, in line with VVS ver. 07 para 283, the value monitored (221,783,454m^3) is conservatively adjusted by the PP by +2% (although accuracy class of the meter is ±0.2%) to 226,219,124m^3 .	The QA/QC approach used in the MR is in compliance with the registered monitoring plan. The delayed calibration instances have been appropriately dealt through monitored data adjustment as per the provision of para. 283 VVS ver. 07. The QA/QC approach followed was checked during the site visit and found to be appropriate.

Parameter 03: Annual quantity of fuel (natural gas) consumed in gas turbine #12 ($FC_{f,3,y}$) :

Monitoring Report, onsite checks / Registered Monitoring Plan & Approved Methodology	**Requirement in the applicable methodology and relevant EB Documents**	**Requirement in the registered monitoring plan**	**Implementation of the project**	**Conclusion on the compliance of the implementation with the monitoring plan & applicable methodology.**
Data/Parameter	$FC_{f,3,y}$	$FC_{f,3,y}$	$FC_{f,3,y}$	The nomenclature applied in the MR is in compliance with the registered monitoring plan and revised PDD.
Description	Not mentioned in the methodology	Annual quantity of fuel (natural gas) consumed in gas turbine #2	Annual quantity of fuel (natural gas) consumed in gas turbine #12	The gas turbine tag number under the parameter description has been corrected in the revised PDD being submitted with this issuance request. Based on the verification site visit observation this is conformed that no change in project design involved.
Measured/Calculated /Default	Not mentioned in the methodology	Measured	Measured	The monitoring approach applied in the MR is in compliance with the registered monitoring plan and revised PDD. The monitored value was further confirmed during the site visit against the stock registers[20].
Source of data	Not mentioned in the methodology	Plant Records	Plant Records	The source of data applied in the MR is in compliance with the

				registered monitoring plan and revised PDD. The monitored value was further confirmed during the site visit against the stock registers[20].
Monitoring equipment	Not mentioned in the methodology	Natural Gas flow meter	Natural Gas flow meter	This is a measured parameter at point 3 of Figure A4.1 and in compliance as per the registered monitoring plan.
Measuring/Reading/ Recording frequency	Not mentioned in the methodology	Continuous Measurement and daily recording	Continuous Measurement and daily recording	The monitoring and recording frequency of the parameter is as per the registered monitoring plan and revised PDD. The same was also checked and confirmed during the site visit.
Calculation method (if applicable)	Not mentioned in the methodology	Not Applicable	Not Applicable	Not Applicable
QA/QC procedures	Not mentioned in the methodology	Used to corroborate gas consumption data collected at point 1 in Figure A4.1. As per the registered monitoring plan, calibration of the gas flow meter is to be carried out annually according to meter supplier methods.	Used to corroborate gas consumption data collected at point 1 in Figure A4.1. During this monitoring period, the calibration for this flow meter was delayed for the entire period involved hence, in line with VVS ver. 07 para 283, the value monitored (172,372,950m^3) is conservatively adjusted by the PP by +2% (although accuracy class of the meter is ±0.2%) to 175,820,409m^3.	The QA/QC approach used in the MR is in compliance with the registered monitoring plan. The delayed calibration instances have been appropriately dealt through monitored data adjustment as per the provision of para. 283 VVS ver. 07. The QA/QC approach followed was checked during the site visit and found to be appropriate.

Parameter 04: Annual quantity of fuel (natural gas) consumed in gas turbine #13 ($FC_{f,4,y}$) :

Monitoring Report, onsite checks / Registered Monitoring Plan & Approved Methodology	**Requirement in the applicable methodology and relevant EB Documents**	**Requirement in the registered monitoring plan**	**Implementation of the project**	**Conclusion on the compliance of the implementation with the monitoring plan & applicable methodology.**
Data/Parameter	$FC_{f,4,y}$	$FC_{f,4,y}$	$FC_{f,4,y}$	The nomenclature applied in the MR is in compliance with the registered monitoring plan and revised PDD.
Description	Not mentioned in the methodology	Annual quantity of fuel (natural gas) consumed in gas turbine #3	Annual quantity of fuel (natural gas) consumed in gas turbine #13	The gas turbine tag number under the parameter description

				has been corrected in the revised PDD being submitted with this issuance request. Based on the verification site visit observation this is conformed that no change in project design involved.
Measured/Calculated /Default	Not mentioned in the methodology	Measured	Measured	The monitoring approach applied in the MR is in compliance with the registered monitoring plan and revised PDD. The monitored value was further confirmed during the site visit against the stock registers[20].
Source of data	Not mentioned in the methodology	Plant Records	Plant Records	The source of data applied in the MR is in compliance with the registered monitoring plan and revised PDD. The monitored value was further confirmed during the site visit against the stock registers[20].
Monitoring equipment	Not mentioned in the methodology	Natural Gas flow meter	Natural Gas flow meter	This is a measured parameter at point 4 of Figure A4.1 as per the Table A4.1 of the registered PDD and revised PDD.
Measuring/Reading/ Recording frequency	Not mentioned in the methodology	Continuous Measurement	Continuous Measurement	The monitoring and recording frequency of the parameter is as per the registered monitoring plan and revised PDD. The same was also checked and confirmed during the site visit.
Calculation method (if applicable)	Not mentioned in the methodology	Not Applicable	Not Applicable	Not Applicable
QA/QC procedures	Not mentioned in the methodology	Used to corroborate gas consumption data collected at point 1 in Figure A4.1. As per the registered monitoring plan, calibration of the gas flow meter is to be carried out annually according to meter supplier methods.	Used to corroborate gas consumption data collected at point 1 in Figure A4.1. Calibration is to be carried out annually. During this monitoring period, the calibration for this flow meter was delayed for the entire period involved hence in line with VVS ver. 07 para 283, the value monitored (249,322,186m^3) is conservatively adjusted by the PP by +2%	The QA/QC approach used in the MR is in compliance with the registered monitoring plan. The delayed calibration instances have been appropriately dealt through monitored data adjustment as per the provision of para. 283 VVS ver. 07. The QA/QC approach followed was checked during the site visit and found to be appropriate.

			(although accuracy class of the meter is ±0.2%) to 254,308,630 m^3.	

Parameter 05: The net calorific value (energy content) per volume unit of natural gas ($NCV_{f,y}$) :

Monitoring Report, onsite checks / Registered Monitoring Plan & Approved Methodology	**Requirement in the applicable methodology and relevant EB Documents**	**Requirement in the registered monitoring plan**	**Implementation of the project**	**Conclusion on the compliance of the implementation with the monitoring plan & applicable methodology.**
Data/Parameter	$NCV_{f,y}$	$NCV_{f,y}$	$NCV_{f,y}$	The nomenclature applied in the MR is in compliance with the applied methodology, registered monitoring plan and revised PDD.
Description	Net Calorific Value of fuel f	The net calorific value (energy content) per volume unit of natural gas used in the calculation of project emissions.	The net calorific value (energy content) per volume unit of natural gas used in the calculation of project emissions.	The description applied in the MR is in compliance with the registered monitoring plan and revised PDD.
Measured/Calculated /Default	Measured	Measured	Measured	The monitoring approach applied in the MR is in compliance with the applied methodology, registered monitoring plan and revised PDD. The monitored value was further confirmed during the site visit against the stock registers[20].
Source of data	Fuel Supplier, Local Authority, Country specific, IPCC	Based on fortnightly sampling at the Afam plant gas reception point (point 1 in Figure A4.1)	Based on a fortnightly sampling at the Afam power plant reception point carried out by the natural gas supplier The Shell Petroleum Development Company of Nigeria Limited (SPDC).	The source of data applied in the MR is in compliance with the applied methodology, registered monitoring plan and revised PDD, since Shell Nigeria is the fuel supplier. The monitored value was further confirmed during the site visit against the stock registers[20].
Monitoring equipment	Not Applicable	Not Applicable	Not Applicable	This is a measured parameter and in compliance as per the applied methodology, registered monitoring plan and revised PDD.
Measuring/Reading/	Fortnightly	Fortnightly	Daily	The monitoring and recording frequency of

Recording frequency				the parameter is found to be consistent as per the registered monitoring plan and revised PDD.
Calculation method (if applicable)	Not Applicable	Not Applicable	Not Applicable	Not Applicable
QA/QC procedures	Use supplier-provided data, local data, country-specific values, that order of preference. IPCC values can be used for startup fuel.	Gas samples collected using Shell Nigeria standard gas sampling protocol and analysed using standard gas chromatography techniques in on-site laboratory. The calorific value of the gas will be recorded by the project participant and cross-checked against measurements made, and provided, by the gas supplier.	Daily gas samples are collected using The Shell Petroleum Development Company of Nigeria Limited (SPDC) standard gas sampling protocol and analysed using standard gas chromatography techniques in on-site laboratory. The calorific value of the gas is monitored and recorded by the PP and cross checked against measurements made, and provided, by the gas supplier. The calibration schedule of the Gas Chromatograph is at least once quarterly. However the calibration schedule has been delayed during the current monitoring period, hence in line with the VVS ver. 07 para 283, the value monitored (0.0465 GJ/m^3) was conservatively adjusted by the PP by +2% (although accuracy class of the GC is ±0.25BTU/1000) to 0.0475 GJ/m^3.	The QA/QC approach used in the MR is in compliance with the registered monitoring plan. The delayed calibration instances have been appropriately dealt through monitored data adjustment as per the provision of para. 283 VVS ver. 07. The QA/QC approach followed was checked during the site visit and found to be appropriate.

Parameter 06: CO2 emission factor per unit of energy of natural gas ($EF_{CO2,f,y}$) :

Monitoring Report, onsite checks / Registered Monitoring Plan & Approved Methodology	**Requirement in the applicable methodology and relevant EB Documents**	**Requirement in the registered monitoring plan**	**Implementation of the project**	**Conclusion on the compliance of the implementation with the monitoring plan & applicable methodology.**
Data/Parameter	$EF_{CO2,f,y}$	$EF_{CO2,f,y}$	$EF_{CO2,f,y}$	The nomenclature applied in the MR is in compliance with the applied methodology, registered monitoring plan and revised PDD.

Description	Emission factor for fuel 'f'	CO2 emission factor per unit of energy of natural gas used in the calculation of project emissions	CO2 emission factor per unit of energy of natural gas used in the calculation of project emissions	The description applied in the MR is in compliance with the registered monitoring plan and revised PDD.
Measured/Calculated /Default	Measured	Measured	Measured	The monitoring approach applied in the MR is in compliance with the applied methodology, registered monitoring plan and revised PDD. The monitored value was further confirmed during the site visit against the stock registers.
Source of data	Local, Regional, Global (IPCC)	Based on fortnightly sampling at the Afam plant gas reception point (point 1 in Figure A4.1).	Based on the fortnightly sampling at the Afam power plant reception point carried out by the natural gas supplier The Shell Petroleum Development Company of Nigeria Limited (SPDC).	The source of data applied in the MR is in compliance with the applied methodology, registered monitoring plan and revised PDD, since Shell Nigeria is the fuel supplier. The monitored value was further confirmed during the site visit against the stock registers[20].
Monitoring equipment	Not Applicable	Not Applicable	Not Applicable	As this is a measured parameter as per the registered monitoring plan[20].
Measuring/Reading/ Recording frequency	Annual	Fortnightly sampling and analysis to be carried out. Minimum measurement – yearly in accordance with the AM0029	Daily sampling and analysis carried out by The Shell Petroleum Development Company of Nigeria Limited (SPDC).	The monitoring and recording frequency of the parameter is found to be consistent as per the registered monitoring plan and revised PDD.
Calculation method (if applicable)	Not Applicable	Not Applicable	Not Applicable	Not Applicable
QA/QC procedures	Use supplier-provided data, local data, country-specific values, that order of preference. IPCC values can be used for startup fuel	Gas samples collected using Shell Nigeria standard gas sampling protocol and analysed using standard gas chromatography techniques in on-site laboratory. The CO_2 content of the gas will be recorded by the project participant and cross-checked against measurements made, and provided, by the gas supplier.	Daily gas samples are collected using The Shell Petroleum Development Company of Nigeria Limited (SPDC) standard gas sampling protocol and analysed using standard gas chromatography techniques in on-site laboratory. The CO_2 content of the gas will be recorded by the PP and cross-checked against measurements made, and provided, by the gas supplier. The calibration schedule	The QA/QC approach used in the MR is in compliance with the registered monitoring plan. The delayed calibration instances have been appropriately dealt through monitored data adjustment as per the provision of para. 283 VVS ver. 07. The QA/QC approach followed was checked during the site visit and found to be appropriate.

			of the Gas Chromatograph is at least once quarterly. However the calibration schedule has been delayed during the current monitoring period. Hence in line with the VVS ver. 07 para 283, the value monitored (0.0345 tCO2/GJ) was conservatively adjusted by the PP by +2% (although accuracy class of the GC is ±0.25BTU/1000) to 0.0352 tCO2/GJ.	

Parameter 06: Electricity produced by two gas turbines ($EG_{P,J,5,y}$)

Monitoring Report, onsite checks / Registered Monitoring Plan & Approved Methodology	**Requirement in the applicable methodology and relevant EB Documents**	**Requirement in the registered monitoring plan**	**Implementation of the project**	**Conclusion on the compliance of the implementation with the monitoring plan & applicable methodology.**
Data/Parameter	Not Mentioned	$EG_{P,J,5,y}$	$EG_{P,J,5,y}$	The nomenclature applied in the MR is in compliance with the registered monitoring plan and revised PDD.
Description	Not Mentioned	Electricity produced by Gas Turbines	Electricity produced by Gas Turbines (GT 12 & GT 13)	Due to correction of gas turbine tag numbers, the parameter description has been corrected in the revised PDD being submitted with this issuance request. Based on the verification site visit observation this is conformed that no change in project design involved.
Measured/Calculated /Default	Not Mentioned	Measured	Measured	The monitoring approach applied in the MR is in compliance with the registered monitoring plan and revised PDD. The monitored value was further confirmed during the site visit against the plant power generation records[/21/].
Source of data	Not Mentioned	Electricity meters installed in the plant power export point to bus-bar (meter type EDMI MK6E with accuracy class	Electricity produced by the two gas turbines are measured through the meter installed at the metering location 5 at the plant power export point	The source of data applied in the MR is in compliance with the registered monitoring plan and revised PDD. The monitored value was

		0,2S/0,55. IEC62053-22/62052/11)	to bus-bar (meter type EDMI MK6E with accuracy class 0,2S/0,55. IEC62053-22/62052/11)	further confirmed during the site visit against the plant power generation records[21].
Monitoring equipment	Not Mentioned	Energy Meter	Energy Meter	This is a measured parameter at metering point 5 of Figure A4.1 and in compliance as per the registered monitoring plan revised PDD.
Measuring/Reading/ Recording frequency	Not Mentioned	Continuous metering	Continuous metering	The measuring frequency of the parameter is as per the registered monitoring plan and revised PDD.
Calculation method (if applicable)	Not Mentioned	Not Applicable	Not Applicable	Not Applicable
QA/QC procedures	Not mentioned in the methodology	Metered export of electricity to be checked against data on power received by the grid operator (PHCN) at the Afam plant-grid interface points. Accuracy of meters are to be tested every 180 days as outlined in section 7.3 of the PPA and calibration of meters needs to be undertaken if electrical energy measured by the system differs by over half a percent (0.5%) from any back-up system.	Metered export of electricity to be checked against data on power received by the grid operator (PHCN) at the Afam plant-grid interface points. During the current monitoring period, the calibration for the energy meter was delayed for the entire period involved hence in line with VVS ver. 07 para 283, the value monitored (1,642,650 MWh) is conservatively adjusted by -2% (although accuracy class of the meter is ±0.2S) to 1,609,797MWh.	The QA/QC approach used in the MR is in compliance with the registered monitoring plan. The delayed calibration instances have been appropriately dealt through monitored data adjustment as per the provision of para. 283 VVS ver. 07. The QA/QC approach followed was checked during the site visit and found to be appropriate.

Parameter 06: Electricity produced by one gas and one steam turbines ($EG_{P,J,6,y}$)

Monitoring Report, onsite checks / Registered Monitoring Plan & Approved Methodology	**Requirement in the applicable methodology and relevant EB Documents**	**Requirement in the registered monitoring plan**	**Implementation of the project**	**Conclusion on the compliance of the implementation with the monitoring plan & applicable methodology.**
Data/Parameter	Not Mentioned	$EG_{P,J,6,y}$	$EG_{P,J,6,y}$	The nomenclature applied in the MR is in compliance with the registered monitoring plan and revised PDD.
Description	Not Mentioned	Electricity produced by steam turbine	Electricity produced by gas turbine and steam turbine (GT 11 & ST)	Due to change in metering connection point as a post registration change, as per the provision of CDM Project Standard ver. 07 Appendix 1 para 6 the

				revised PDD being submitted with this issuance request. Based on the verification site visit observation this is conformed that no change in project design involved.
Measured/Calculated /Default	Not Mentioned	Measured	Measured	The monitoring approach applied in the MR is in compliance with the registered monitoring plan and revised PDD. The monitored value was further confirmed during the site visit against the plant power generation records[/21/].
Source of data	Not Mentioned	Electricity meters installed in the plant power export point to bus-bar (meter type EDMI MK6E with accuracy class 0,2S/0,55. IEC62053-22/62052/11)	Electricity produced by the gas turbine and the steam turbine are measured through the meter installed at the metering location 6 at the plant power export point to bus-bar (meter type EDMI MK6E with accuracy class 0,2S/0,55. IEC62053-22/62052/11)	The source of data applied in the MR is in compliance with the registered monitoring plan and revised PDD. The monitored value was further confirmed during the site visit against the plant power generation records[/21/].
Monitoring equipment	Not Mentioned	Energy Meter	Energy Meter	This is a measured parameter at metering point 6 of Figure A4.1 and the revised PDD is being submitted along with this issuance request..
Measuring/Reading/ Recording frequency	Not Mentioned	Continuous metering	Continuous metering	The measuring frequency of the parameter is as per the registered monitoring plan and revised PDD.
Calculation method (if applicable)	Not Mentioned	Not Applicable	Not Applicable	Not Applicable
QA/QC procedures	Not Mentioned	Metered export of electricity to be checked against data on power received by the grid operator (PHCN) at the Afam plant-grid interface points. Accuracy of meters are to be tested every 180 days as outlined in section 7.3 of the PPA and calibration of meters needs to be undertaken if electrical energy measured by the system differs by over half a percent (0.5%) from any back-up system.	Metered export of electricity to be checked against data on power received by the grid operator (PHCN) at the Afam plant-grid interface points. During the current monitoring period, the calibration for the energy meter was delayed for the entire period involved hence in line with VVS ver. 07 para 283, the value monitored (1,626,729 MWh) is conservatively adjusted by -2% (although accuracy class of the	The QA/QC approach used in the MR is in compliance with the registered monitoring plan. The delayed calibration instances have been appropriately dealt through monitored data adjustment as per the provision of para. 283 VVS ver. 07. The QA/QC approach followed was checked during the site visit and found to be appropriate.

			meter is ±0.2S) to 1,594,194 MWh.	

The monitoring has been carried out in accordance with the requirement of applied methodology and monitoring plan contained in the registered PDD[1]. All parameters stated in the monitoring plan and the applied methodology[7] have been fulfilled in the current monitoring report.

3.4.2 Verification of implementation of sampling plan

The project activity does not involve any sampling plan for monitoring of the parameters.

3.5 Accuracy of Equipment

The values for all parameters are listed in section 4 of this report, 'Calculation of Emission Reductions'. The data adopted primarily from the plant records for the current monitoring period were cross checked during the on-site verification and found to have been correctly adopted for the emission reduction calculations in the ER calculation excel sheet[3].

This is to confirm that appropriate methods and formulae for calculating baseline emissions, project emissions and emission reductions have been followed; and the *ex-ante* fixed baseline emission factor that was applied in the calculations have been found justified.

The project monitoring equipments used during the current monitoring period and respective calibration details as verified is described below:

Monitoring equipment	**Monitoring parameter**	**Equipment S/N**	**Type**	**Accuracy Level**	**Calibration frequency requirement**	**Calibration date**	**Validity**	**Are there delays in calibration?**	**Calibration Entity**	**Accreditation Certificate for the calibration entity Issuing authority Relevant**
Electricity Meter	$EG_{PJ,5,y}$	206657326	Tri-vector	0.2s	Once in 6 months	14/12/2007 –	6 months#	Yes	Power Holding Company of Nigeria PLC	NA
Electricity Meter	$EG_{PJ,6,y}$	208002801	Tri-vector	0.2s	Once in 6 months	06/05/2008	6 months#	Yes	Power Holding Company of Nigeria PLC	NA
Gas Chromatograph	$EF_{CO2,F,y}$ and $NCV_{f,y}$	9005161	NA	±0.25 BTU/1000 (*for ambient C6+ analysis*)	At least quarterly	21/11/2013	4 months	Yes	Internal calibration	NA
Gas Flow Meter	$FC_{f,4,y}$	10506157	SM-R1-X-G1600-200-44, 6-K-120	±0.2 %	Annually	31/10/2012	1 year@	Yes	Force Technology	DANAKΨ

Monitoring equipment	Monitoring parameter	Equipment S/N	Type	Accuracy Level	Calibration frequency requirement	Calibration date	Validity	Are there delays in calibration?	Calibration Entity	Accreditation Certificate for the calibration entity Issuing authority Relevant
	$FC_{f,3,y}$	10509681 (old)*	SM-R1-X-G1600-200-44, 6-K-120	±0.2 %	Annually	-	1 year@	Yes	*pigsar* Φ	NA
		10506156 (New)*	SM-R1-X-G1600-200-44, 6-K-120	±0.2 %	Annually	04/03/2014	1 year@	Yes	*pigsar* Φ	NA
	$FC_{f,2,y}$	10506153	SM-R1-X-G1600-200-44, 6-K-120	±0.2 %	Annually	23/08/2010	1 year@	Yes	Force Technology	DANAK Ψ
	$FC_{f,1,y}$	(FM 11) – 0B73 (FM 12) – 444C	SM-R1-X-G1600-200-44, 6-K-120	±0.2 %	Annually	23/08/2010	1 year@	Yes	Force Technology	DANAK Ψ

Calibration of the electricity meters are not under the control of the PP and under full jurisdiction of the grid authority.

@ The calibration of gas flow meter as done by the equipment manufacturer Elster Instromet is valid for 12 years as per the email from the manufacturer (German Wohlrab, Application & Systems-Engineering, Electronic Systems, Elster GmbH) dated 08/12/2014.

***** The meter bearing the serial no: 10509681-2007 was replaced with the old meter bearing serial no: 10506156-2006 during June 2013 having the same accuracy class, due to scheduled off-site calibration of the previous meter. The gas flow meter bearing serial no: 10506156-2006 has been further replaced by the calibrated flow meter with serial no: 10509681-2007 on 31/07/2014 and the other meter has sent for off-site calibration. Thus during verification site visit conducted during 29/10/2014- 30/10/2014, SGS audit team has inspected the installed gas flow meter with serial no: 10509681-2007.

Φ *pigsar* represents the National Standard of the Federal Republic of Germany for the unit of volume for high pressure natural gas.

Ψ Danish National Reference laboratory for volume gas measurement.

Discussion of CAR/CLs:

The PP was requested to clarify that how the metering of the electricity for parameter $EG_{PJ,56,y}$ did not match with the provisions as per the PDD and how this is not a Post Registration Change as per the Project Standard Appendix 1. Further, there are two electricity parameter as per the registered PDD, $EG_{PJ,5,y}$ and $EG_{PJ.6,y}$. however in MR it is mentioned as $EG_{PJ,56,y.}$ Please clarify how this was not a Project Design Change.

η_{BL} and $COEF_{BL}$ are not part of registered monitoring plan under B.6.2. Please clarify why this has been included in D.1. **CAR04** was raised in this regard.

In response, the PP provided the revised PDD and it was found that the electricity evacuation metering is jointly held by the PP and the Grid Authorities and meters are not under the control of the PP so the project design change was found to be in line with Appendix 1 of the PS and thus **CAR04** was closed out.

3.6 Summary of compliance with the calibration frequency requirements for measuring instruments.

It was observed during the site visit that all of the above monitoring equipments had missed their calibration schedule for the entire period of current monitoring (01/11/2012 – 31/10/2013) against the schedule specified in the registered PDD[/1/].

It can be noted here that the original equipment manufacturer of the gas flow meters, Elster Instromet has confirmed vide email dated 08/12/2014[/22/] that the initial calibration to be valid for 12 years. Further the PP does not have control on the calibration of the electric meters which are under the jurisdiction of the Grid Authorities of Nigeria. The available delayed calibration results showed the equipments under working conditions within permissible limits. Therefore following the provision of the monitored data adjustment as per the stipulated procedure mentioned under paragraph 283(a) of VVS version 7.0[/4/], PP has done the data adjustment in to derive at conservative emission reduction calculation.

The PP has conservatively applied ±2% adjustment to the monitored value as described in the table below and this approach of data adjustment due to delayed calibration period has ensured that the adjusted measured values of the delayed calibration has resulted in fewer claimed emission reductions.

Monitoring equipment	Monitoring parameter	Equipment S/N	Accuracy Level	Adjustment due to delayed calibration
Electricity Meters	$EG_{PJ,5,y}$	206657326	0.2s	-2%
	$EG_{PJ,6,y}$	208002801	0.2s	-2%
Gas Chromatograph	$EF_{CO2,F,y}$ $NCV_{f,y}$	9005161	±0.25 BTU/1000 (*for ambient C6+ analysis*)	+2%
Gas Flow Meters	$FC_{f,4,y}$	10506157	±0.2%	+2%
	$FC_{f,3,y}$	10509681 (old)*	±0.2%	+2%
		10506156 (New)*		
	$FC_{f,2,y}$	10506153	±0.2%	+2%
	$FC_{f,1,y}$	(FM 11) – 0B73 (FM 12) – 444C	±0.2%	+2%

3.7 Accuracy of Emission Reduction Calculations

The calculation of emission reductions is found to be correct. The details of the reported and the verified values for all parameters are listed in section 4, 'Calculation of Emission Reductions'.

The formula and method used in the Monitoring Report, Version 02[/2/] and the emission reduction calculation sheet, Version 02[/9/], to calculate the baseline emissions, project emissions and leakage are appropriate and in line with the approved methodology AM0029 version 3.0[/7/].

3.8 Quality of Evidence to Determine Emission Reductions

Critical parameters used for the determination of the Emission Reductions are discussed in section 3.4. All the data recorded is in compliance with the monitoring report.

The comparison of the actual CERs claimed in the monitoring period with the estimate in the registered PDD[1] has been provided in the MR. The verification team reviewed the comparison of the actual CERs claimed in the monitoring period with the same estimated in the registered PDD and this has been discussed in section 3.1 of this report.

In line with Paragraph 290 of VVS version 07.0, it has been ensured that:

1. The data used for the determination of the emission reductions are available and monitored in accordance with the registered monitoring plan and the assessment team has cross checked 100% of the reported data.
2. Information provided in the monitoring report has been cross-checked with other sources such as plant logbooks, inventories, purchase records, laboratory analysis;
3. The appropriate methods and formulae for calculating baseline emissions, project emissions and leakage have been properly followed the applied methodology and the registered PDD;
4. All assumptions used in emission calculations have been justified;
5. Appropriate emission factors, IPCC default values and other reference values have been correctly applied;
6. Each parameter required by the monitoring plan has been discussed in section 3.4 and 3.10 of this report.

Discussion of CAR/CLs:

CAR05 was raised due to the following points:

- For all parameters why only monthly values reported in ER sheet. Not consistent with the PDD which mentions daily value. The PP was to clarify.
- Serial Numbers of all the meters are missing from the MR and ER sheet CAL. The PP was requested to mention the specifications of the ultrasonic gas flow meter and not only the controller.
- Calibration details of all the meters are not mentioned clearly in the MR for each parameter covering the entire duration of the monitoring period from 01/11/2012- 31/10/2013. Provide details of calibration of the Gas Chromatograph. It is seen that there is calibration delay for the meters used for monitoring of parameters $FC_{f,y,}$ $FC_{f,2,y,}$ $FC_{f,3,,}$ $EG_{PJ,5,y}$ & $EG_{PJ,6,y.}$ The PP was to clarify delay in calibration as per the provisions of VVS paragraph 283.
- Source of data is inconsistent for the parameters $FC_{f,2,y,}$ $FC_{f,3,y}$ & $FC_{f,4,y}$ with regard to the metering point and connecting turbine inlet with the registered PDD. PP was requested to clarify
- It is unclear where from data has been adopted for parameter $EF_{CO2,F,y}$ the PP was requested to clarify why all monthly data for the monitoring period has not been mentioned here.
- The ER sheet is unclear about parameter $FC_{f,y.}$ The PP was requested to clarify where this parameter is reported in the ER sheet.
- Sheet S-ID misses the parameters $FC_{f,y,}$ $EG_{PJ,5,y}$ & $EG_{PJ,6,y}$ the PP was requested to clarify,
- Sheet M-ID missed the parameter $FC_{f,y,}$ $EG_{PJ,5,y}$ & $EG_{PJ,6,y.}$ Make of Gas Chromatograph is Daniel and not Danalyzer. The PP was requested to clarify.
- Sheet FIG does not have metering locations as per the actual scenario of the project activity.
- Data sheets for parameters $FC_{f,y,}$ $EG_{PJ,5,y}$ & $EG_{PJ,6,y.}$ are missing. The PP was requested to clarify
- Sheets R-F_1, R-F_2, R-F_3- Column M-Date: the PP was requested to clarify exact period in DD/MM/YYYY- DD/MM/YYYY format and not just months.
- Sheet R-C: C_Content do not match for the period of Nov-12 to Aug-13. PP was requested to clarify
- Sheet EG: $EG_{PJ,56,y}$ is actually two parameter $EG_{PJ,5,y}$ & $EG_{PJ,6,y.}$ The PP was requested to clarify why they have not been reported separately.
- Sheet CAL: Serial number for GT-12 at site does not match with the meter serial number provided. The PP was requested to clarify when this meter was changed. Calibration of 5 years is inconsistent with the PDD the PP was requested to clarify. Calibration of Gas Chromatograph for the current monitoring period is not provided. The PP was requested to clarify. Metering point 56 is incorrect and do not match with metering point diagram provided in the MR Section C.

- Sheet M-M: the PP was requested to clarify what is the Mis Measurement Register as there is no provision of such mentioned in the Registered Monitoring Plan or CDM Manual.
- Sheet FIX: $COEF_{BL}$: Source of data was unclear.
- Sheets MR01(2012) & MR01: Is it ok to mention MR01 or should it be MP01, the PP was requested to clarify Also there are formulae in the sheet which overlap and can be a reason for incomplete. Please clarify. Also it is unclear what these two sheets signify.

In response to the raised points, the PP has submitted the revised documents and found as:

- Daily data was found to be incorporated in the Excel sheet as per the frequency of monitoring as mentioned in the registered PDD and thus accepted.
- Serial number all meters were found to be included in the MR and ER sheets version 02 dated 10/11/2014 and thus accepted. Specification of the ultrasonic flow meter was checked and found to be consistent with the actual DANALYSER on site and thus accepted.
- Details of calibration for the parameters FCf,1,y, FCf,2,y, FCf,3,y, EGPJ,5,y & EGPJ,6,y, NCV f,y and EFCO2,f,y were found to be correctly mentioned in the monitoring report and delay in calibration was correctly being addressed by the PP with a maximum permissible error being applied for the parameters data for the period of delay in calibration and thus accepted.
- Source of data was found to be consistent for the parameters FCf,2,y, FCf,3,y & FCf,4,y with regards to the metering point and connecting turbine inlet with the registered PDD and thus accepted.
- All data for EF CO2,f,y was checked and found to be correct and thus accepted.
- The PP has now reviewed and included the parameter FCf,1,y in the ER sheet and it is now consistent with the registered PDD and thus accepted.
- Sheet S-ID was found to be now inclusive of the parameters FCf,y, EGPJ,5,y & EGPJ,6,y.and thus accepted.
- Parameters FCf,1,y, EGPJ,5,y & EGPJ,6,y were included in the Sheet M-ID and the Make of the Gas Chromatograph has been changed accordingly and thus accepted.
- Sheet FIG in the ER spreadsheet and MR now includes the metering locations as per the actual scenario of the project activity which was found to be consistent and thus accepted.
- Data sheets for parameters FCf,1,y, EGPJ,5,y & EGPJ,6,y.were included respectively in the ER spreadsheet and was found to be correct and hence accepted.
- The format was found to be revised for the exact period for Sheets R-F, R-F_1, R-F_2, R-F_3 in the ER sheet accordingly and thus accepted.
- The Sheet R-C: C_Content was checked and now match for the period of Nov-12 to Aug-13 and thus accepted.
- Parameters EGPJ,5,y & EGPJ,6,y are actually two parameters and they were found to be reported separately and thus accepted.
- The PP revised the Sheet CAL and included details on Meter change for flow meter at GT-12 in section D.2 in the MR also calibration for the flow meter were correctly mentioned in line with the registered PDD and revised PDD and thus accepted. Details regarding calibration for the Gas Chromatograph were found to be consistent and thus accepted.. The metering point for tariff meter were found to be consistent with the metering point diagram 5 and 6 provided in MR section C and thus accepted.
- Sheet M-M was found to consistently reporting the delay in calibration and thus accepted..
- Source of COEFBL was clearly stated in the Sheet FIX and thus accepted.
- The Sheet MR01 (2012) & MR01 has now been revised accordingly to MP01 (2012) and MP01. Sheet MP01 comprehensively shows the actual emission reduction achieved during the monitoring period (1/11/2012-31/10/2013) while Sheet MP01 (2012) represents the emission reduction achieved during the monitoring period (1/11/2012-31/12/2012) and also for the period (1/01/2013-31/10/2013). The formula has now been adjusted to fit properly in ER sheet. This was found to be consistent and thus accepted.

Therefore, **CAR05** was closed.

3.9 Management and operational System and Quality Assurance

A complete quality assurance and management system is implemented at the project site and the same was found to be outlined in Afam VI Power Project Operations and Maintenance Reports. Therefore the

assessment team can confirm that the management system for the CDM project is implemented; with the responsibilities properly identified and in place.

3.10 Data from External Sources

The following parameters are used from external sources as per the registered monitoring plan:

- **$OXID_f$: Oxidation factor of natural gas**

As per the registered PDD/1/ section B.6.2, the data is sourced from IPCC/10/ default values. The value determined *ex ante* as 1. This is found in line with the registered PDD/1/ and revised PDD/1.b/,hence accepted by the assessment team.

- **$EF_{BL,CO2,y}$: Baseline CO_2 emissions factor**

As per the registered PDD/1/ section B.6.2, the data is calculated based on the fuel coefficient and the energy efficiency of the technology. The value determined ex ante as 0.511 tCO_2/ MWh. This is found in line with the registered PDD/1/ and revised PDD/1.b/, hence accepted by the assessment team.

4. Calculation of Emission Reductions

Parameter	Reported Value Webhosted MR, version 01	Verified Value[##] MR, Version 05 dated 20/02/2015
Annual quantity of fuel (natural gas) consumed in project activity: $FC_{f,1,y}$	643,488,591 m^3	638,937,292 m^3
Annual quantity of fuel (natural gas) consumed in gas turbine #11: $FC_{f,2,y}$	221,783,455 m^3	221,783,454 m^3
Annual quantity of fuel (natural gas) consumed in gas turbine #12: $FC_{f,3,y}$	172,372,951 m^3	172,372,950 m^3
Annually quantity of fuel (natural gas) consumed in gas turbine #13: $FC_{f,4,y}$	249,332,185 m^3	249,322,186 m^3
The net calorific value (energy content) per volume unit of natural gas used in the calculation of project emissions.: $NCV_{f,y}$	0.04654 GJ/m^3	0.0465 GJ/m^3
CO2 emission factor per unit of energy of natural gas used in the calculation of project emission: $EF_{CO2,F,y}$	0.03340 tCO_2/GJ	0.0345 tCO_2/GJ
Electricity produced by two gas turbines: $EG_{PJ,5,y}$	Not Reported	1,642,650 MWh
Electricity produced by a one gas and one steam turbine: $EG_{PJ,6,y}$	Not Reported	1,626,729 MWh

[##]The above parameter specific values are the actual monitored values as verified from plant records and the further adjusted values due to delay in calibration have been used for Project Emission calculation and thus accepted.

The PP has submitted the monitoring report with the incorporation of equations, parameters and values used in the calculation of emission reductions. The PP has also submitted an excel sheet for the same. Both the documents are checked and found appropriate and in line with the registered PDD and the applied baseline and monitoring methodology AM0029, version 3.0.

As per the equation 8 of the applied baseline methodology AM0029, version 3.0.

$ER_y = BE_y – PE_y – LE_y$

Where:

ER_y: = Emissions reductions in year y (tCO_2e)
BE_y: = Emissions in the baseline scenario in year y (tCO_2e)
PE_y: = Emissions in the project scenario in year y (tCO_2e)
LE_y: = Leakage in year y (tCO_2e)

1) Baseline Emissions:

Baseline emissions are calculated by multiplying the electricity generated in the project plant ($EG_{PJ,y}$) with a baseline CO_2 emission factor ($EF_{BL,CO2,y}$), as follows:

$$BE_y = EG_{PJ,y} \cdot EF_{BL,CO2,y}$$

= 3,203.991 (GWh) * 0.0561 (tCO_2/GWh)

= 1,638,172 tCO_{2e}

2) Project Emissions:

The project activity is on-site combustion of natural gas to generate electricity. The CO_2 emissions from electricity generation (PE_y) are calculated as follows:

$$PE_y = \sum_f FC_{f,y} * COEF_{f,y}$$

= 656x10^6 (m^3) * 0.0017 (tCO_2/GJ)

= 1,096,635 tCO_{2e}

3) Leakage Emissions:

There is no leakage in the project activity as the fugitive emissions from upstream CH_4 emissions and CO_2 emissions from associated fuel combustion and flaring as they apply to both baseline and project scenario. Hence leakage is considered as Nil. This was found to be in line with the requirement of the methodology AM00029 and has been as specified in the registered and revised PDD and thus accepted.

4) Emission Reductions:

Thus Emission Reduction during the period are

ER_y = BEy – PEy – LEy

= 1,638,172 – 1,096,635 – 0

= 541,537 tCO_2e **(Rounded down)**

Emission Reduction:

Period	Reported Value (as per the web hosted MR) tCO_2e	Verified Value tCO_2e	If Different, Summary of Issues That Caused the Difference
01/11/2012 to 31/10/2013	671,550	541,537	Please refer CAR05 under section 9 of the report for the difference in value between the reported and verified value
CERs (Up to 31 December 2012 (1st commitment period);)	131,292	112,590	
CERs (From 1st January 2013 onwards)	540,257	428,947	

5. Recommendations for Changes in the Monitoring Plan

The registered monitoring plan is in line with the applied approved baseline and the monitoring methodology AM0029, version 3.0. Only due to the alteration made to the connection of respective turbo-generators with the metering points at grid interface, the description of the two monitoring parameters *(*$EG_{PJ,5,y}$ and $EG_{PJ,6,y}$*)* related electricity generation has been modified under the revised PDD and same is being submitted along with current MP01 RFI as per Appendix 1 of CDM Project Standard.

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. All the members of the assessment team visited the site and undertook interviews, collected data, audited the implementation of procedures, checked calibration certificates and checked data, inter alia.

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

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

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

Yes data from external sources are used in the baseline, project and leakage emission calculations. This is discussed in detail in section 3.11 of this report.

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 recommendation is made for changes to the monitoring methodology

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 550,234 tCO_2 for the period 01/11/2012 to 31/10/2013 as per the estimation made in the registered PDD. The actual emission reductions have been verified as 541,537 tCO_2 for the same period, which is lower than as estimated in the registered PDD.

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."

Post monitoring report on UNFCCC website

Yes, the monitoring report is available at ref. UNFCCC Project Reference Number 5645 on the UNFCCC website: http://cdm.unfccc.int/Projects/DB/DNV-CUK1325573884.39/iProcess/SGS-UKL1405419627.16/view

7. Verification and Certification Statement

SGS United Kingdom Ltd has been contracted by The Shell Petroleum Development Company of Nigeria Limited to perform the verification of the emission reductions reported for the CDM project "Afam Combined Cycle Gas Turbine Power Project", UNFCCC Reference No 5645 in the period 01/11/2012 to 31/10/2013.

The verification is based on the validated and registered project design document and the monitoring report for this project. The 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 05 dated 20/02/2015.

The management of The Shell Petroleum Development Company of Nigeria Limited is responsible for the preparation, calculation and determination of GHG emission reductions from the project. The development and maintenance of records and reporting procedures are in accordance with the monitoring report, Version 05 dated 20/02/2015.

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 01/11/2012 to 31/10/2013 based on the reported emission reductions in the Monitoring Report Version 05 dated 20/02/2015 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:	Afam Combined Cycle Gas Turbine Power Project
UNFCCC Reference Number:	5645
Registered PDD and Revised PDD:	Version 05, dated 29/08/2012 Version 10, dated 23/02/2015
Methodology Used for Verification:	AM0029 version 3.0
Applicable Period:	01/11/2012 to 31/10/2013
Total GHG Emission Reductions Verified:	**541,537 tCO2e**

Signed on behalf of the Verification Body by Authorized Signatory

Signature:

Name: Jonathan Hall

Date: 21/08/2015

8. Document References

1. Registered PDD, version 5 dated 29/08/2012, UNFCCC ref no: 5645 Web link: http://cdm.unfccc.int/Projects/DB/DNV-CUK1325573884.39/view

1.b Revised PDD

i. Revised PDD version 06 dated 06/11/2014
ii. Revised PDD, version 7 dated 17/11/2014
iii. Revised PDD version 8 dated 23/02/2015
iv. Revised PDD version 9 dated 18/12/2014
v. Revised PDD version 10 dated 23/02/2015 (Final)

2. Monitoring Report

i. Monitoring Report, version 1 dated 16/07/2014 (Webhosted version)
ii. Monitoring Report, version 2 dated 10/11/2014
iii. Monitoring Report, version 3 dated 08/12/2014
iv. Monitoring Report, version 4 dated 18/12/2014
v. Monitoring Report, version 5 dated 20/02/2015 (Final version)

Monitoring Report, version 1 dated 16/07/2014	Webhosted version
Monitoring Report, version 5 dated 20/02/2015	In response to CAR01, the PP had included the detailed justification of the variance of the actual emission reductions as compared to the estimated reductions under section E. In response to CAR02: • The PP had corrected the template of the MR throughout. • The PP and host party name was corrected • Section E.7 was found to be corrected • Sampling section was found to be corrected • Project location coordinates at Section A.2 have been made consistent with the registered PDD. • Description on person/ entity responsible for completing the MR form and indicate if the person/ entity is also a PP in appendix 1 has been added under Section A.6. • The date format has been represented in the format DD/MM/YYYY under Section B.1 Table 3. • The Type number (SM-R1-X-K G1600) of gas flow meter has been consistently

	mentioned under Section A.1 Table 1. • Section D.2 monitored parameter tables have added the statement "*It should be noted that while the accuracy class is ±0.2%, the value obtained has been adjusted by 2% for conservativeness.*" under row Additional Comments. In response to CAR03: • The detailed downtime has been included in section B.1 • The make and serial number of all the turbines and generators have now been included in section A.1. • The commissioning details of the power plant has been included In response to CAR04, The PP had corrected the section D.1 In response to CAR05, the PP had corrected the sections D.2 with regard to the values of the monitoring parameters.

3. Emission Reduction spreadsheets i. Emission reduction spreadsheet, version 1 16/07/2014 (Initial version) ii. Emission reduction spreadsheet, version 2 dated 10/11/2014 (Final version)
4. Clean Development Mechanism Validation and Verification Standard version 7.0
5. MONITORING REPORT FORM (F-CDM-MR) version 4.0
6. Clean Development Mechanism Project Standard version 7.0
7. Registered Methodology: AM0029: Baseline Methodology for Grid Connected Electricity Generation Plants using Natural Gas, version 3.0 http://cdm.unfccc.int/methodologies/DB/WW4I82DG7LJUQE5E5YGT1NZE4PNS60
8. Plant Records for the net electricity exported to the grid for the current monitoring period
9. Total Gas Consumption records in the Afam VI power plant for the current monitoring period.
10. 2006 IPCC Guidelines for National Greenhouse Gas Inventories Web-link: http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf. (The site last accessed on 18/08/2013)
11. Calibration and Test certificates of the energy meters: - Calibration certificate of the meter no: 206657328 dated 14/12/2007 ref no: 0341/PM(MTSO)/01/118/07 issued by Power Holding Company of Nigeria, PLC. - Calibration certificate of the meter no: 206657326 dated 14/12/2007 ref no: 0341/PM(MTSO)/01/117/7 issued by Power Holding Company of Nigeria, PLC. - Calibration certificate of the meter no: 208002801 and 208002802 dated

06/05/2008 ref no: AGM(M&I)T/S/Vol.1/021/088/2008 issued by Power Holding Company of Nigeria, PLC. - Test Certificate of the meter no: 208002802 dated 05/03/2008 issued by Power Holding Company of Nigeria, PLC. - Test Certificate of the meter no: 206657328 dated 08/12/2007 issued by Power Holding Company of Nigeria, PLC. - Test Certificate of the meter no: 206657326 dated 08/12/2007 issued by Power Holding Company of Nigeria, PLC. - Test Certificate of the meter no: 208002802 dated 05/03/2008 issued by Power Holding Company of Nigeria, PLC.
12. Calibration certificates of the gas flow meters: - Gas flow meter calibration certificate of serial no: 10506153-2006 dated 25/08/2010 ref no: 9.8-8810 rev.A, order no: 3309790/9401 issued by Force Technology. - Gas flow meter calibration certificate of serial no: 10506153 dated 14/09/2010 ref no: G1/S/1440 issued by Nmi Nederland B.V. - Gas flow meter calibration certificate of serial no: 10509681 dated 04/03/2014 ref no: G1/S/1440 issued by PIGSAR. - Gas flow meter calibration certificate of serial no: 10509681 dated 13/03/2014 ref no: G14/S/3345 issued by Nmi Nederland B.V. - Gas flow meter calibration certificate of serial no: 10506157-2006 dated 31/10/2012 ref no: 9.8-11042 issued by Force Technology. - Gas flow meter calibration certificate of serial no: 10506157 dated 08/11/2012 ref no: G12/S/2736 issued by Nmi Nederland B.V.
13. Gas Chromatograph analyser bearing serial no: 9005161 certificate dated 21/11/2013.
14. Validation Report version 04 dated 18/04/2010 issued by DNV
15. Instruction manual for turbine flow gas meter of type: SM-RI-X-G1600-200-44,6-K -120
16. Gas Chromatograph reports for the current monitoring period
17. Commissioning Certificate of the Gas Turbines GT#11, GT#12 and GT#13 dated 22/07/2009 issued by Parsons Brinckerhoff Commissioning Certificate of the Combined cycle dated 04/07/2010
18. Power Purchase Agreement signed between the Shell Petroleum Development Company of Nigeria Limited and the Power Holding Company of Nigeria PLC on 09/12/2005
19. Shutdown Details of the Afam VI power plant for the current monitoring period.
20. Natural Gas Stock Register of Afam VI power plant for the current monitoring period.
21. Power generation register of Afam VI power plant for the current monitoring period.
22. Email dated 08/12/2014 from Elster GmbH Electronic Support regarding Calibration Requirements of Flow meter SM-RI-X

9. Findings Overview

	CARs	CLs	FARs
Total Number raised	05	00	00

Date:	30/10/2014		Raised by:	Assessment Team	
Type:	CAR	Number:	01	Reference:	AU4 Section 5
Lead Assessor Comment:				**Date:** 30/10/2014	
PP has to clarify why there is 18% more ERs as compared to the estimated value as per the revised approved PDD. Please clarify as per requirement of VVS para 262 (b) (vi).					
Project Participant Response:				**Date:** 10/11/2014	
As per the points raised in the CARs, the amount of ERs have been revised and are now 1.6% lower than in the original PDD. This is described in the revised Section E.6 of the MR.					
Documentation Provided as Evidence by Project Participant:					
141107 SPDC Monitoring Report ER Sheet					
Information Verified by Lead Assessor:					
Monitoring Report version 02 dated 10/11/2014 ER sheet version 02 dated 10/11/2014					
Reasoning for not Acceptance or Acceptance and Close Out:					
The justification of the difference in emission reduction as compared to the registered PDD has been found to be correct as based on the lower electricity generation, lower gas consumption and due to higher NCV of fuel gas which was found to be correctly being reported in the MR version 02 dated 10/11/2014 and was found to be consistent and thus accepted.					
Acceptance and Close out by Lead Assessor: Closed				**Date:** 14/11/2014	

Date:	30/10/2014		Raised by:	Assessment Team	
Type:	CAR	Number:	02	Reference:	MR all sections
Lead Assessor Comment:				**Date:** 30/10/2014	
The monitoring report template is not the most recent one available at the UNFCCC website as per the requirement of para 257e of VVS 7.0. Please provide MR in correct template. The PPs listed on page 1 and in section A.3 do not match those that are on the UNFCCC webpage. Host Party is not consistent with UNFCCC webpage on Page 1 and in section A.2. PP has to clarify The 2012 and the 2013 emissions on page 1 and in section E.7 do not add up to the total number of CERs being claimed. PP is requested to clarify. How is sampling involved? Is there any data sampling involved or 100% data is monitored. Please clarify. Please remove as “>>” from the MR.					
Project Participant Response:				**Date:** 10/11/2014	
The monitoring template has been updated to the most recent template version 4.0 PP has reviewed the list on page 1 and section A.3 to match those on the UNFCCC webpage. Host party is the Federal Republic of Nigeria. This is the official name recognized by the UN.. PP has now reviewed the 2012 and 2013 emissions on page 1 and in section E.7. Sampling is not required as 100% data has been directly monitored during the project activity. PP has revised the MR accordingly. PP has now removed the icon “>>” from the MR.					
Documentation Provided as Evidence by Project Participant:					
141107 SPDC Monitoring Report					

Information Verified by Lead Assessor:
Monitoring Report version 02 dated 10/11/2014
Reasoning for not Acceptance or Acceptance and Close Out:

The template of the MR was checked and found to be consistent with the most recent available template in the UN webpage and thus accepted.

List of PP were checked and found to be updated correctly as per the UNFCCC webpage on page 1 and Section A.3. Host party was found to be correct and thus accepted. Emission reductions for 2012 and 2013 was found to be corrected on page 1 and Section E.7 and thus accepted.
100% data was available and the information was updated in the MR version 02 dated 10/11/2014 and thus accepted.

181214 SPDC MR Clean

- MR section A2 coordinates do not match the registered PDD range nor the revised PDD (revised coordinates), please clarify this inconsistency?
- MR section A6, as per MR guidance this section should contain *the contact information of the person/ entity responsible for completing the MR form and indicate if the person/ entity is also a PP in appendix 1*. This section is completed with information of the PP, however Appendix 1 shows that the person / entity responsible to complete the MR is not the PP.

This is therefore inconsistent and not line with MR guidance

- Page 6 Table 2, please provide dates in the format DD/MM/YYYY ; this is the format in which dates are expected to be presented as per MR instructions template.
- Section C reads: “It will be made available to the DOE.” This wording indicates it hasn’t yet.
- Section D2
  - FCf,1,y -The accuracy is 0.2% but the maximum error fact applied is 2% is that correct?
  - FCf,4,y -In PDD it says point 3 of figure A4.I and in MR it says at point 4 in figure A4.1
- Monitoring equipment “SM-R1-X-K G1600” on page 13 (twice on the page) + page 14, and “SM-RI-X-G1600” mentioned on page 2 of the MR are meant to be the same equipment, if so, should the terminology not be consistent? Please check for consistency throughout the document.
- NCVf,y -The accuracy is 0.25% but the maximum error fact applied is 2% is that correct?
- Page 18 can you please clarify the figure for EF co2, f,y is consistent with the CER xls please (MP1 2012 tab)?
- Page 19, COEF,f,y can you please clarify the figure is consistent with the CER xls please (MP1 2012 tab)?

101114 SPDC ER Model.xls

- Can you please check if that the values for EF co2, f,y and COEF,f,y, should be the same in MP1 2012 tab and MP1 total tab?

Acceptance and Close out by Lead Assessor: Open	**Date:** 19/02/2015
Project Participant Response:	**Date: 20/02/2015**

181214 SPDC MR Clean

- PP has reviewed the coordinates in section A.2 of the MR form and its now consistent with the registered and revised PDD.
- The section A.6 of the MR form has now been reviewed and now consistent with the MR completion Guidance.

The following inconsistencies have been revised in the MR Form:

- Note that page 6 table 2 observed by the DOE is actually page 6 Table 3 in the MR Form. This is now revised by the PP as appropriate DD/MM/YY and is now consistent with the MR instruction template.
- PP has reviewed Section C of the MR form appropriately.
- In Section D2
    - Parameter fcf,1,y, in Section D has accuracy class of 0.25%, the PP have used 2% to adjust for values obtained for all the flow meters to ensure adherence to the conservative standard of the CDM.
    - The PP noted that the monitoring point, Parameter FCF,4,y in figure A4.1 remain unchanged as point 4 both on the PDD and MR.

PP has now revised the monitoring equipment SM-R1-X-K-G1600 on page 2 and is now same with monitoring equipment on page 13 and 14.

- The NCV,f,y has an accuracy class of 0.25%, PP have used 2% to adjust for value obtained for the GC to ensure adherence to the conservative standard of the CDM.

The figure for EF co2,f,y on the MR is the average value obtained within the whole monitoring period (November 2012 up to October 2013) in MP01 while the value on MP01 (2012) covers the average value of the monitoring period from November 2012 up to 31st December 2012. Hence the comparable value for EF co2,f,y on the MR is that on the MR01 sheet of the ER spreadsheet. All values are stated in the sheet '(MP01 (2012)' and 'MP01' accordingly.
The figure obtained for the parameter COEF,f,y is the value obtained during the monitoring period from November 2012 up to 31st December 2012, while that on the MR Form covers the total value for the monitoring period (November 2012 – 31st December 2012) on the MP01 Sheet. Hence the comparable value for COEF,f,y on the MR is that on the MR01 sheet of the ER spreadsheet. All values are stated in the sheet '(MP01 (2012)' and 'MP01' accordingly.

101114 SPDC ER Model.xls

PP can confirm that the values on sheet EF co2,f,y and COEF,f,y is not same. The sheet MP1 2012 covers the average value based on the monitoring period from November 2012 up to 31st December 2012, while the MP1 covers the average values for the whole monitoring period up from November 2012 to October 2013. All values are stated in the sheet '(MP01 (2012)' and 'MP01' accordingly.

Documentation Provided as Evidence by Project Participant:

Revised MR version 05 dated 20/02/2015
SPDC ER model dated 10/11/2014

Information Verified by Lead Assessor:

Revised MR version 05 dated 20/02/2015
SPDC ER model dated 10/11/2014 (PP has not revised the date)

Reasoning for not Acceptance or Acceptance and Close Out:

MR version 05 dated 20/02/2015 was checked and the coordinates were found to be consistent with the registered PDD and revised PDD and thus accepted.
Section A.6 was checked and found to be consistently revised by the PP as per the requirement of the MR completion guideline and thus accepted.
Page 6 was found to be revised for Table 3 of the MR form and was found to be consistent and thus accepted. Section C was found to be revised appropriately and thus accepted.
The accuracy class 2% was used by the PP which was found to be conservative and correctly being applied and thus accepted.
Monitoring point for the parameter FCF,4,y was found to be consistent and thus accepted.
Monitoring equipment SM-R1-X-K-G1600 was found to be correct for the Gas Turbine Flow Meter and found to be consistent with the meter checked on site and thus accepted.
The 2% adjustment for the NCV,f,y has been checked and found to be conservative and appropriate based on the justification from the PP and hence accepted.
The figure for EF co2,f,y and COEF,f,y was found to be correct and hence accepted. MR version 05 dated 20/02/2015 and SPDC ER model dated 10/11/2014 was checked and found to be consistent hence accepted.
The correction made to the custom formatting of the cells I15 and J15 of the tab M-M has been found

consistent. **CAR02** was closed out.	
Acceptance and Close out by Lead Assessor: Closed	**Date:** 14/03/2015

Date:	30/10/2014		Raised by:	Assessment Team	
Type:	CAR	Number:	03	Reference:	MR Section A.1
Lead Assessor Comment:				**Date:** 30/10/2014	
PP has to clarify when the power plant was commissioned. Please provide details of commissioning of all components of the project activity. PP is requested to provide make and serial numbers of all the turbines and generators clearly in section A.1. Downtime for the period of verification from 01/11/2012- 31/10/2013 has to be clearly mentioned in this section A.1. Also any such event which has resulted for any change in equipment has to be listed in section A.1.					
Project Participant Response:				**Date:** 10/11/2014	
Details regarding the commissioning of the power plant and all components of the project activity have now been included. PP has now included the 'make' and 'serial numbers' of all the turbine and generators in section A.1 PP has now added the downtime periods for the 01/11/2012- 31/10/2013 and is now detailed in section B.1 in the MR. This is done in accordance with the guidance on completion of the MR form and Project Standard.					
Documentation Provided as Evidence by Project Participant:					
141107 SPDC Monitoring Report ER sheet version 02 dated 10/11/2014					
Information Verified by Lead Assessor:					
141107 SPDC Monitoring Report ER sheet version 02 dated 10/11/2014					
Reasoning for not Acceptance or Acceptance and Close Out:					
The commissioning of the power plant, Commissioning of Gas Turbines GT 11, GT12 and GT13 on 22/07/2009 and Combined Cycle on 04/07/2010 were checked with the commissioning details for GT11, GT12 and GT13 as well as combined cycle Power Plant provided by Parsons Brinckerhoff on 22/07/2009 and 04/07/2010 which were found to be consistent and thus accepted. Make and Serial Numbers of Turbines and Generators are found to be correctly being reported and thus accepted. Downtime of the plant from 01/11/2012- 31/10/2013 were checked and found to be consistent with the shutdown details as reflected in the raw data obtained from the plant and thus accepted.					
Acceptance and Close out by Lead Assessor: Closed				**Date:** 14/11/2014	

Date:	30/10/2014		Raised by:	Assessment Team	
Type:	CAR	Number:	04	Reference:	Monitoring Plan
Lead Assessor Comment:				**Date:** 30/10/2014	
The metering of the electricity for parameter $EG_{PJ,56,y}$ does not match with the provisions as per the PDD. Please clarify how this is not a Post Registration Change as per the Project Standard Appendix 1. There are two electricity parameter as per the registered PDD, $EG_{PJ,5,y}$ and $EG_{PJ.6,y}$. However in MR it is mentioned as $EG_{PJ,56,y.}$ Please clarify how this is not a Project Design Change. η_{BL} and $COEF_{BL}$ are not part of registered monitoring plan under B.6.2. Please clarify why this has been included in D.1.					
Project Participant Response:				**Date:** 10/11/2014	
The metering parameter $EG_{PJ,56,y}$ has now been reviewed by the PP and has been restated to be in line with the EG metering in the registered PDD. PP has removed the Parameters ηBL and COEFBL in section D.1 of the revised monitoring report.					
Documentation Provided as Evidence by Project Participant:					
Revised PDD 141107 SPDC Monitoring Report					
Information Verified by Lead Assessor:					
Revised PDD version 06 dated 06/11/2014 MR version 02 dated 10/11/2014					

Reasoning for not Acceptance or Acceptance and Close Out:	
PP provided the revised PDD and it was found that the electricity evacuation metering is jointly held by PP and the Grid Authorities and meters are not under the control of the PP so the project design change was found to be in line with Appendix 1 of PS and thus accepted. However, PP was requested to provide the PDD in latest VVS track. PP removed the parameters ηBL and COEFBL from Section D.1 and thus accepted.	
Acceptance and Close out by Lead Assessor: Open	**Date:** 14/11/2014
Project Participant Response:	**Date:** 17/11/2014
PP has updated PDD in the latest VVS track.	
Documentation Provided as Evidence by Project Participant:	
PDD in latest VVS track (original, revised in tracked changes and clean) in word and pdf copy for the confidential and public versions.	
Information Verified by Lead Assessor:	
PDD version 07 dated 17/11/2014 in confidential and public versions: 171114 PDD Original PDD transferred to latest VVS template_Confidential 171114 PDD Original PDD transferred to latest VVS template_Public 171114 PDD_Changes in PDD now in VVS template_Confidential Clean 171114 PDD_Changes in PDD now in VVS template_Confidential 171114 PDD_Changes in PDD now in VVS template_Public Clean 171114 PDD_Changes in PDD now in VVS template_Public	
Reasoning for not Acceptance or Acceptance and Close Out:	
PP provided the PDDs in clean and track change mode and the changes to the PDD were found to be in line with the requirement of PS version 07 Appendix 1 and thus accepted. 1. Following editorial errors in the track change version of (both Public and Confidential) PDD should be corrected: a. The strike out “Attachment. Instructions for filling out the project design document form for CDM project activities” as shown from page 79 to 89 should not be shown as per the part of the PDD. b. The revised description for $EG_{PJ,5,y}$ and $EG_{PJ,6,y}$ has not been shown in track change. c. Why the information provided under Section C.2.1 to C.2.3 of the track change public PDD has shown in track change new inclusion since the information was already available in the registered PDD. 2. In the confidential version of the revised PDD, the numbering of Appendix from “Appendix 2” is found to be inconsistent with the large scale PDD template, ver.05. 3. Revised PDD (Appendix 6 to public version and Appendix 7(!) to confidential version): The description mentioned as summary of post registration change not entirely clear on the applicability of CDM PS Appendix 1 Para 5a. Since it has not transparently clarified the jurisdiction and extent of control on behalf of the PP related to such alterations of the connection to the metering points (5 & 6) at the grid interface. 4. Revised PDD Section F (both Public & Confidential): Appropriate information has not been mentioned related to “Approval and authorization”, please refer to the PDD completion guideline.	
Acceptance and Close out by Lead Assessor: Open	**Date:** 04/12/2014
Project Participant Response:	**Date:** 08/12/2014
1. The Project participants has revised the track change version of (both Public and Confidential) PDD for all the editorial errors listed above. 2. Confidential version of the revised PDD numbering now consistent with the large scale PDD template (version 05) 3. Revised PDD (public and confidential) now revised accordingly under the Appendix 6 to reflect the post registration changes. 4. The PP has revised the section F (public and confidential) in accordance with the PDD completion guideline.	
Documentation Provided as Evidence by Project Participant:	

Revised PDD (public and confidential in word and pdf)
Revised PDD (public and confidential in word and pdf) clean copies

Information Verified by Lead Assessor:

PDD version 08 dated 08/12/2014 (public and confidential in word and pdf and clean copies)

Reasoning for not Acceptance or Acceptance and Close Out:

171114 PDD Original PDD transferred to latest VVS template_Public

Below are findings when comparing with the registered PDD **(please note that the same feedback will apply to the confidential version of that document).**

- Page 1- version and date have been changed when it should be the same content as the registered PDD
- Page 13. "Figure 4 shows the project boundary"; this should say as per registered PDD, "Figure 1 shows the project boundary".
- Page 13, Figure 1 overlaps the header for B.4
- Page 24, last paragraph refers to a Figure but does not provide the Figure no. the Registered PDD stated Figure 5.
- Page 27 (paragraph above the table) states to refer to a table no number provided. Registered PDD stated Table 8
- Page 28 Last sentence states to refer to a table no number provided. Registered PDD stated Table 9
- Page 29 paragraph above table 10, states to refer to a table but no number provided. Registered PDD stated Table 10
- Page 30, step 3 paragraph refers to a table but no number is provided (should match registered PDD)
- Page 30, step 4 last sentence refers to a table but no number is provided (should match registered PDD)
- Page 36 last sentence refers to a table but no number is provided (should match registered PDD)
- Page 40, para above table refers a table but no number is provided (should match registered PDD)
- Page 41, last sentence refers to "Table 14Table" which does not match the registered PDD
- Page 46, first paragraph refers to a table but no number is provided (should match registered PDD)
- Page 55 section D1 refers to Figure 2 (on next page). This referencing does not match the registered PDD
- Page 56 refers to Table 20, this does not match the table referencing number from the registered PDD.
- Page 57 table 21 in the registered PDD is now table 20. This is not consistent
- Page 56 refers to Table 21, this does not match the table referencing number from the registered PDD.
- Page 57 table 22 in the registered PDD is now table 21. This is not consistent
- Page 63, sentence above the table refers to "Table 22Table" which does not match the registered PDD
- Page 64 refers to Table 23, this does not match the table referencing number from the registered PDD.
- Page 65 table 24 in the registered PDD is now table 23. This is not consistent

181214 PDD Marked Changes now in VVS template_Public[2]

- Note that if any of the Table referencing needs to change from the Registered PDD transferred to VVS, they will need to be marked in track changes.
- Appendix 1 should contain a table of contact information for the PP but also one for the entity/person responsible to complete the PDD.
- Appendix 6 describes the change as the metering points for GT11 and GT12 and GT13
- It is noticed that GT1, GT2 and GT3 are now GT11, GT12 and GT13. This is not mentioned or explained.
- The corrections linked to the use of the new template are also not mentioned.

Acceptance and Close out by Lead Assessor: Open	**Date:** 19/02/2015

Project Participant Response:	Date: 20/02/2015

171114 PDD Original PDD transferred to latest VVS template_Public / Confidential
PP has now reviewed the version number and date on page 1 of the VVS template for both VVS versions (public and confidential) and it's now consistent with the registered PDD.
Figure 4 on page 13 has been reviewed and it's consistent with the registered PDD.
PP has adjusted the figure 1 and header for B.4 appropriately and the page no longer overlaps.
The figure number on the last paragraph on page 24 has now been included appropriately and is now consistent with the Figure 5 registered PDD.
The Table number stated on the paragraph above on page 27 has now been included and consistent with the Table 8 of the Registered PDD.

PP has appropriately reviewed the table number on page 28 and is now consistent with the Table 9 of the registered PDD.
The table number in the paragraph above Table 10 on page 29 has been reviewed appropriately and is now consistent with that of the registered PDD.
PP has revised the table number on page 30 within step 3 and its now consistent with the registered PDD.
PP has now revised the table number on page 30 within step 4 and its now consistent with the registered PDD.

The table number referred to on page 36 has been reviewed and consistent with that of the registered PDD.

The table number referred to on the paragraph above the table on page 41 has been revised appropriately and is now consistent with the registered PDD.

PP has now reviewed the last sentence referred to as "*Table 14Table"* on page 46 and is now consistent with the registered PDD.

The figure 2 referred to on Page 55 of Section D1 has been updated to Figure 7 appropriately and is now consistent with the registered PDD.

As noted for pages 56,57, 64 and 65; please note that the table referencing number does not match with the registered PDD due to the difference in the template of the VVM versus VVS where table 2 in the original PDD (VVM template) titled '*forecast delivery of emission reductions'* is no longer applicable in VVS template.
PP has reviewed the last sentence referred to "*Table 22Table"* on page 63 and now consistent with the registered PDD.

Please note that all revisions made were for the two VVS versions (Confidential and Public).

181214 PDD Marked Changes now in VVS template_Public[2]
It should be noted that PP tracked the changes made to the referencing of tables due to the transfer of registered PDD in the VVM template to the VVS template.

The table for the entity/person responsible to complete the PDD has now been included as appropriate.
PP has now explained the changes from GT1, GT2 and GT3 to GT11, GT12 and GT13 in the revised PDD under the appendix 6.

All corrections linked to the use of new template which is majorly the table referencing are now mentioned in appendix 6 of the revised PDD.

Documentation Provided as Evidence by Project Participant:
Original PDD in VVS version 10 dated 23/02/2015 Tracked changed PDD version 10 dated 23/02/2015 and clean copy PDDs version 10 dated 23/02/2015 in word and pdf.
Information Verified by Lead Assessor:
Original PDD in VVS version 10 dated 23/02/2015

Tracked changed PDD version 10 dated 23/02/2015 and clean copy PDDs version 10 dated 23/02/2015 in word and pdf.
Reasoning for not Acceptance or Acceptance and Close Out:
All corrections in the PDDs (Original PDD in VVS version 10 dated 23/02/2015 Tracked changed PDD version 10 dated 23/02/2015 and clean copy PDDs version 10 dated 23/02/2015 in word and pdf) were checked with regard to the completeness aspects and found to be consistent and hence accepted. Thus, **CAR04** was closed out.
Acceptance and Close out by Lead Assessor: Closed — **Date:** 14/03/2015

Date:	30/10/2014		Raised by:	Assessment Team		
Type:	CAR	Number:	05		Reference:	All parameters in MR and Excel Sheet

Lead Assessor Comment: **Date:** 30/10/2014

For all parameters why only monthly values reported in ER sheet. Not consistent with PDD which mentions daily value. Please clarify.
Serial Number of all meters are missing from the MR and ER sheet CAL. also please clearly mention the specifications of the ultrasonic gas flow meter and not only the controller.
Calibration details of all the meters are not mentioned clearly in the MR for each parameter covering the entire duration of the monitoring period from 01/11/2012- 31/10/2013. Provide details of calibration of the Gas Chromatograph. It is seen that there is calibration delay for the meters used for monitoring of parameters $FC_{f,y,}$ $FC_{f,2,y,}$ $FC_{f,3,,}$ $EG_{PJ,5,y}$ & $EG_{PJ,6,y.}$ PP has to clarify delay in calibration as per the provisions of VVS para 283.
Source of data is inconsistent for the parameters $FC_{f,2,y,}$ $FC_{f,3,y}$ & $FC_{f,4,y}$ with regard to the metering point and connecting turbine inlet with the registered PDD. Please clarify.
It is unclear where from data has been adopted for parameter $EF_{CO2,F,y}$ Please clarify why all monthly data for the monitoring period has not been mentioned here.
ER sheet is unclear about parameter $FC_{f,y.}$ Please clarify where this parameter is reported in ER sheet.
Sheet S-ID misses the parameters $FC_{f,y,}$ $EG_{PJ,5,y}$ & $EG_{PJ,6,y}$ please clarify,
Sheet M-ID missed the parameter $FC_{f,y,}$ $EG_{PJ,5,y}$ & $EG_{PJ,6,y.}$ Make of Gas Chromatograph is Daniel and not Danalyzer. Please clarify in this sheet.
Sheet FIG does not have metering locations as per the actual scenario of the project activity.
Data sheets for parameters $FC_{f,y,}$ $EG_{PJ,5,y}$ & $EG_{PJ,6,y.}$are missing. Please clarify
Sheets R-F_1, R-F_2, R-F_3- Column M-Date: Please mention exact period in DD/MM/YYYY- DD/MM/YYYY format and not just months.
Sheet R-C: C_Content do not match for the period of Nov-12 to Aug-13. Please clarify.
Sheet EG: $EG_{PJ,56,y}$ is actually two parameter $EG_{PJ,5,y}$ & $EG_{PJ,6,y.}$ Please clarify why they have not been reported separately.
Sheet CAL: Serial number for GT-12 at site does not match with the meter serial number provided. Please clarify when this meter was changed. Calibration of 5years is inconsistent with PDD please clarify. Calibration of Gas Chromatograph for the current monitoring period is not provided. Please clarify. Metering point 56 is incorrect and do not match with metering point diagram provided in MR Section C.
Sheet M-M: Please clarify what is the Mis Measurement Register as there is no provision of such mentioned in the Registered Monitoring Plan or CDM Manual.
Sheet FIX: $COEF_{BL}$: Source of data is unclear.
Sheets MR01(2012) & MR01: Is it ok to mention MR01 or should it be MP01? Also there are formulae in the sheet which overlap and can be a reason for incomplete. Please clarify. Also it is unclear what these two sheets signify. Please clarify.

Project Participant Response: **Date:** 10/11/2014

For all CDM parameters, PP has included all the daily values that were used to calculate the monthly variables in the ER sheet..
Serial numbers of all meters are now stated in the MR and the ER sheet. Also the specification for the ultrasonic flow meter has been included.
Details relating to calibration for all meters are now mentioned clearly and calibration delay for the meters used for monitoring of parameters $FC_{f,1,y}$, $FC_{f,2,y}$, $FC_{f,3,y}$, $EG_{PJ,5,y}$ & $EG_{PJ,6,y}$, $NCV_{f,y}$ and $EF_{CO2,f,y}$ has also been treated as per the provisions of VVS para 283.
Source of data is now consistent for the parameters $FC_{f,2,y,}$ $FC_{f,3,y}$ & $FC_{f,4,y}$ with regards to the metering point

and connecting turbine inlet with the registered PDD.
PP has now included all data for the parameter $EF_{CO2,f,y}$. Also all monthly data has now been mentioned in the ER sheet.
PP has now reviewed and included the parameter $FC_{f,1,y}$ in the ER sheet and it is now consistent with the registered PDD.
Sheet S-ID is now inclusive of the parameters $FC_{f,y}$, $EG_{PJ,5,y}$ & $EG_{PJ,6,y.}$
Parameters $FC_{f,1,y,}$ $EG_{PJ,5,y}$ & $EG_{PJ,6,y}$ has now been included in the Sheet M-ID and the Make of the Gas Chromatograph has been changed accordingly.
Sheet FIG in the ER spreadsheet and MR now includes the metering locations as per the actual scenario of the project activity
Data sheets for parameters $FC_{f,1,y,}$ $EG_{PJ,5,y}$ & $EG_{PJ,6,y}$.are now included respectively in the ER spreadsheet.
The format has now been revised for the exact period for Sheets R-F, R-F_1, R-F_2, R-F_3 in the ER sheet accordingly.
The Sheet R-C: C_Content has been reviewed and they now match for the period of Nov-12 to Aug-13.
Parameters $EG_{PJ,5,y}$ & $EG_{PJ,6,y}$ are actually two parameters and they have now been treated separately.
PP has now reviewed the Sheet CAL and included details on Meter change for flow meter at GT-12 in section D.2 in the MR also calibration for the flow meter has now been stated correctly in line with the registered PDD. Details regarding calibration for the Gas Chromatograph have now been included. The metering point for tariff meter has been reviewed and its now consistent with the metering point diagram 5 and 6 provided in MR section C
Sheet M-M has been reviewed and the Mis-measurement register has renamed in the sheet M-M of the ER sheet.
Source of $COEF_{BL}$ has now been clearly stated in the Sheet FIX.
The Sheet MR01 (2012) & MR01 has now been revised accordingly to MP01 (2012) and MP01. Sheet MP01 comprehensively shows the actual emission reduction achieved during the monitoring period (1/11/2012-31/10/2013) while Sheet MP01 (2012) represents the emission reduction achieved during the monitoring period (1/11/2012-31/12/2012) and also for the period (1/01/2013-31/10/2013). The formula has now been adjusted to fit properly in ER sheet.

Documentation Provided as Evidence by Project Participant:

Revised PDD
141107 SPDC Monitoring Report

Information Verified by Lead Assessor:

PDD version 06 dated 07/11/2014
MR version 02 dated 10/11/2014

Reasoning for not Acceptance or Acceptance and Close Out:

Daily data was found to be incorporated in the Excel sheet as per the frequency of monitoring as mentioned in the registered PDD and thus acceptd.
Serial number all meters were found to be included in the MR and ER sheets version 02 dated 10/11/2014 and thus accepted. Specification of the ultrasonic flow meter was checked and found to be consistent with the actual DANALYSER on site and thus accepted.
Details of calibration for the parameters $FC_{f,1,y}$, $FC_{f,2,y}$, $FC_{f,3,y}$, $EG_{PJ,5,y}$ & $EG_{PJ,6,y}$, $NCV_{f,y}$ and $EF_{CO2,f,y}$ were found to be correctly mentioned in the monitoring report and delay in calibration was correctly being addressed by the PP with a maximum permissible error being applied for the parameters data for the period of delay in calibration and thus accepted.
Source of data was found to be consistent for the parameters $FC_{f,2,y,}$ $FC_{f,3,y}$ & $FC_{f,4,y}$ with regards to the metering point and connecting turbine inlet with the registered PDD and thus accepted.
All data for $EF_{CO2,f,y}$ was checked and found to be correct and thus accepted.
PP has now reviewed and included the parameter $FC_{f,1,y}$ in the ER sheet and it is now consistent with the registered PDD and thus accepted.
Sheet S-ID was found to be now inclusive of the parameters $FC_{f,y}$, $EG_{PJ,5,y}$ & $EG_{PJ,6,y.}$and thus accepted.
Parameters $FC_{f,1,y,}$ $EG_{PJ,5,y}$ & $EG_{PJ,6,y}$ were included in the Sheet M-ID and the Make of the Gas Chromatograph has been changed accordingly and thus accepted.
Sheet FIG in the ER spreadsheet and MR now includes the metering locations as per the actual scenario of the project activity which was found to be consistent and thus accepted.
Data sheets for parameters $FC_{f,1,y,}$ $EG_{PJ,5,y}$ & $EG_{PJ,6,y}$.were included respectively in the ER spreadsheet and was found to be correct and hence accepted.
The format was found to be revised for the exact period for Sheets R-F, R-F_1, R-F_2, R-F_3 in the ER

sheet accordingly and thus accepted.
The Sheet R-C: C_Content was checked and now match for the period of Nov-12 to Aug-13 and thus accepted.
Parameters $EG_{PJ,5,y}$ & $EG_{PJ,6,y}$ are actually two parameters and they were found to be reported separately and thus accepted.
PP revised the Sheet CAL and included details on Meter change for flow meter at GT-12 in section D.2 in the MR also calibration for the flow meter were correctly mentioned in line with the registered PDD and revised PDD and thus accepted. Details regarding calibration for the Gas Chromatograph were found to be consistent and thus accepted.. The metering point for tariff meter were found to be consistent with the metering point diagram 5 and 6 provided in MR section C and thus accepted.
Sheet M-M was found to consistently reporting the delay in calibration and thus accepted..
Source of $COEF_{BL}$ was clearly stated in the Sheet FIX and thus accepted.
The Sheet MR01 (2012) & MR01 has now been revised accordingly to MP01 (2012) and MP01. Sheet MP01 comprehensively shows the actual emission reduction achieved during the monitoring period (1/11/2012-31/10/2013) while Sheet MP01 (2012) represents the emission reduction achieved during the monitoring period (1/11/2012-31/12/2012) and also for the period (1/01/2013-31/10/2013). The formula has now been adjusted to fit properly in ER sheet. This was found to be consistent and thus accepted.

Section B.2.4: The description made is not found justified; please explain how the matter can be described as project design change with reference to the Paragraph 280 of CDM PS ver.07. Please categorise the exact nature of post registration change as per the guideline outlined under Section 18.3 of CDM PS ver.07. It is also not clarified the jurisdiction and extent of control on behalf of the PP related to such alterations of the connection to the metering points (5 & 6) at the grid interface.

Section C states that, for baseline emissions calculation $COEF_{BL}$ has been monitored, however as per the registered PDD and applied methodology $EF_{BL,CO2,y}$ (0.511 tCO_2/MWh) has been fixed ex-ante. Thus please explain whether the parameter $COEF_{BL}$ has been further monitored during current monitoring period.

Section D.2: Please explain the correlation and parity on choice of data for the parameters "$NCV_{f,y}$" and "$EF_{CO2,f,y}$" as reported in the MR against the requirement set in the Methodology "annual estimation based on *supplier-provided data, local data, country-specific values, that order of preference.*"

Section D.2: The description related to delay in calibration for four natural gas flow meters and two electricity meters involved, it has been reported that the monitored data adjustment has been done as per Para. 283 of VVS ver. 07, however it has been not transparently clarified whether the results of delayed calibration are available. Please clarify the correctness of the data adjustment approach as per the two provisions stated under Para. 283 of VVS ver. 07.

Acceptance and Close out by Lead Assessor: Open	**Date:** 04/12/2014
Project Participant Response:	**Date:** 04/12/2014

Section B2.4: The PP revised section B2.4 in the MR version 02 dated 10/11/2014 as requested by the DOE. Nevertheless, the change in the connection of the electricity meters to the turbine generators does not describe the nature and extent of the actual changes as listed in clauses in the Paragraph 280 of CDM PS ver.07 and section 13.8.3.4 as shown table below:

	Clauses in PP 280 (Section 13.8.3.4)	**Justification**
a	Changes in the effective output capacity due to increased installed capacity or increased number of units, or installation of units with lower capacity or units with a technology which is less advanced than that described in the PDD;	The Installed capacity of the power plant remains unchanged as evident during the DOE site visit.
b	Addition of component or extension of technology;	There is no addition of component or extension to technology described in the registered PDD.
c	Removal or addition of one site (or more) of a project activity registered with multiple-sites	No site is added nor removed from the project activity registered in the PDD.
d	Actual operational parameters which are within the control of project participants differing from the expected parameters;	The operational Parameters are same as those registered in the PDD. However, the referred parameters ($EG_{PJ,5,y}$ and $EG_{PJ,6,y)}$ are not within the control of the PP.

e	Any consequential changes to the baseline methodology and/or the standardized baseline resulting from subparagraphs (a)–(d) above, including changing or adding another baseline methodology and/or another standardized baseline or applying a baseline scenario that is more appropriate as a result of the proposed or actual modifications to the project activity.	There is no change/modification to the baseline methodology applied to the project activity

In Version 1 of the MR, the PP did not identify the meter connections as a permanent deviation as it does not impact any of the 5 conditions listed above.

Section C: Section C of the MR has been revised and now agrees with the registered PDD and applied methodology on $EF_{BL,CO2,y.}$

Section D.2: The "$NCV_{f,y}$" and "$EF_{CO2,f,y}$" as reported in the MR by the Project participant are in conformance with the PDD and in line with the AM0029 version 03 methodology applied for this project activity. The NCV and EF values were based on the records of gas analysis from the Gas chromatograph of the Gas Supplier which in this case is same as the project participant.
Section D.2: The Project participant will like to note that in accordance with the manufacturer's specification and recommendation for calibration life of the flow meters stated as 12 years, the flow meters are in-calibration but the PP has adjusted the values obtained with respect to missing the calibration frequency stated as per the PDD and this is considered conservative. The penalty is only taken to conform to CDM rules and not for any technical cause of the meters being out of calibration.
The calibration of the electricity meters are out of the control of the Project Participants as they are under the control of the Transmission Company of Nigeria.

Documentation Provided as Evidence by Project Participant:

Revised PDD (public and confidential in word and pdf)
Revised PDD (public and confidential in word and pdf) clean copies
Revised MR

Information Verified by Lead Assessor:

Revised PDD version 08 dated 08/12/2014
MR version 03 dated 08/12/2014

Reasoning for not Acceptance or Acceptance and Close Out:

The justification for the PRC was found to be contradicting with the response in the MR. The PP has mentioned in MR section B.2.3 about PRC however in the FO response has mentioned that the case is not a PRC. PP has to clarify in this regard.
Section C was found to be corrected and found to be justified and thus accepted.
Section D.2 was found to be correctly reporing the aspect of NCVf,y and EFco2,f,y which was found to be in line with the methodology and hence accepted.
Section D.2 was further checked with regard to the calibration and the calibration frequency of the manufacturer was found to be justified at 12years based on the email from manufacturer Elster Electronic Support on 08/12/2014 written to the PP. The calibration was found to be active at the time of verification as per the manufacturer specification although the PDD mentions the frequency as 6months. Further the PP was found to be conservatively applying the error % for the period of verification and thus was found justified and hence accepted.

Acceptance and Close out by Lead Assessor: Open	**Date:** 18/12/2014
Project Participant Response:	**Date:** 18/12/2014

The Project participant has modified section B.2.4 of the MR.

Documentation Provided as Evidence by Project Participant:

Monitoring Report Version 4.0 (18/12/2014)

Information Verified by Lead Assessor:

MR version 4.0 dated 18/12/2014

Reasoning for not Acceptance or Acceptance and Close Out:

Section B.2.4 of the MR was found to be consistent with the changes in the PDD and thus was accepted.

Acceptance and Close out by Lead Assessor: Closed	**Date:** 19/12/2014

10. Statement of Competence

Name: Shivaji Chakraborty

Status

-	Lead Assessor	x	-	Expert	x
-	Assessor	x	-	Financial Expert	
-	Local Assessor	India	-	Technical Reviewer	x

Scopes of Expertise

1. Energy Industries (renewable / non-renewable)	**x**
Technical Area(s*):* TA 1.1 Thermal energy generation TA 1.2 Renewables	
2. Energy Distribution	
Technical Area(s*):*	
3. Energy Demand	
Technical Area(s*):*	
4. Manufacturing	
Technical Area(s*):*	
5. Chemical Industry	
Technical Area(s*):*	
6. Construction	
Technical Area(s*):*	
7. Transport	
Technical Area(s*):*	
8. Mining/Mineral Production	
Technical Area(s*):*	
9. Metal Production	
Technical Area(s*):*	
10. Fugitive Emissions from Fuels (solid, oil and gas)	
Technical Area(s*):*	
11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride	
Technical Area(s*):*	
12. Solvent Use	
Technical Area(s*):*	
13. Waste Handling and Disposal	
Technical Area(s*):*	
14. Afforestation and Reforestation	
Technical Area(s*):*	
15. Agriculture	
Technical Area(s*):*	

Approved Member of Staff by:	Siddharth Yadav	Date:	19/09/2012
Continued Compliance confirmation	Lisa Brough		16/01/2015

Name: Sauvik Banerjee

Status

-	Lead Assessor	x	-	Expert	x
-	Assessor	x	-	Financial Expert	
-	Local Assessor	India	-	Technical Reviewer	

Scopes of Expertise

1. Energy Industries (renewable / non-renewable)	**x**
Technical Area(s): TA 1.1 Thermal energy generation	
2. Energy Distribution	
Technical Area(s):	
3. Energy Demand	
Technical Area(s):	
4. Manufacturing	
Technical Area(s):	
5. Chemical Industry	
Technical Area(s):	
6. Construction	
Technical Area(s):	
7. Transport	
Technical Area(s):	
8. Mining/Mineral Production	
Technical Area(s):	
9. Metal Production	
Technical Area(s):	
10. Fugitive Emissions from Fuels (solid, oil and gas)	
Technical Area(s):	
11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride	
Technical Area(s):	
12. Solvent Use	
Technical Area(s):	
13. Waste Handling and Disposal	
Technical Area(s):	
14. Afforestation and Reforestation	
Technical Area(s):	
15. Agriculture	
Technical Area(s):	

Approved Member of Staff by:	Siddharth Yadav	Date:	02/08/2013
Continued Compliance confirmation	Lisa Brough		30/01/2015

Name: Dominic Etuk

Status

-	Lead Assessor		-	Expert	
-	Assessor		-	Financial Expert	
-	Local Assessor	Nigeria	-	Technical Reviewer	

Scopes of Expertise

1. **Energy Industries (renewable / non-renewable)**
Technical Area(s*):*
2. **Energy Distribution**
Technical Area(s*):*
3. **Energy Demand**
Technical Area(s*):*
4. **Manufacturing**
Technical Area(s*):*
5. **Chemical Industry**
Technical Area(s*):*
6. **Construction**
Technical Area(s*):*
7. **Transport**
Technical Area(s*):*
8. **Mining/Mineral Production**
Technical Area(s*):*
9. **Metal Production**
Technical Area(s*):*
10. **Fugitive Emissions from Fuels (solid, oil and gas)**
Technical Area(s*):*
11. **Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride**
Technical Area(s*):*
12. **Solvent Use**
Technical Area(s*):*
13. **Waste Handling and Disposal**
Technical Area(s*):*
14. **Afforestation and Reforestation**
Technical Area(s*):*
15. **Agriculture**
Technical Area(s*):*

Approved Member of Staff by:	Siddharth Yadav	Date:	12/09/2013
Continued Compliance confirmation	Lisa Brough		30/01/2015

Name: Ajoy Gupta

Status

-	Lead Assessor		-	Expert	
-	Assessor		-	Financial Expert	
-	Local Assessor		-	Technical Reviewer	x

Scopes of Expertise

1. **Energy Industries (renewable / non-renewable)**

Technical Area(s*):*

2. **Energy Distribution**

Technical Area(s*):*

3. **Energy Demand**

Technical Area(s*):*

4. **Manufacturing**

Technical Area(s*):*

5. **Chemical Industry**

Technical Area(s*):*

6. **Construction**

Technical Area(s*):*

7. **Transport**

Technical Area(s*):*

8. **Mining/Mineral Production**

Technical Area(s*):*

9. **Metal Production**

Technical Area(s*):*

10. **Fugitive Emissions from Fuels (solid, oil and gas)**

Technical Area(s*):*

11. **Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride**

Technical Area(s*):*

12. **Solvent Use**

Technical Area(s*):*

13. **Waste Handling and Disposal**

Technical Area(s*):*

14. **Afforestation and Reforestation**

Technical Area(s*):*

15. **Agriculture**

Technical Area(s*):*

Approved Member of Staff by:	Siddharth Yadav	Date:	22/02/2012
Continued Compliance confirmation	Lisa Brough		12/01/2015

Name: Tarit Roy

Status

-	Lead Assessor		-	Expert	x
-	Assessor		-	Financial Expert	
-	Local Assessor		-	Technical Reviewer	

Scopes of Expertise

1.	**Energy Industries (renewable / non-renewable)**	**x**
Technical Area(s): TA 1.1 Thermal energy generation		
2.	**Energy Distribution**	
Technical Area(s*):*		
3.	**Energy Demand**	
Technical Area(s*):*		
4.	**Manufacturing**	
Technical Area(s*):*		
5.	**Chemical Industry**	
Technical Area(s*):*		
6.	**Construction**	
Technical Area(s*):*		
7.	**Transport**	
Technical Area(s*):*		
8.	**Mining/Mineral Production**	
Technical Area(s*):*		
9.	**Metal Production**	
Technical Area(s*):*		
10.	**Fugitive Emissions from Fuels (solid, oil and gas)**	
Technical Area(s*):*		
11.	**Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride**	
Technical Area(s*):*		
12.	**Solvent Use**	
Technical Area(s*):*		
13.	**Waste Handling and Disposal**	
Technical Area(s*):*		
14.	**Afforestation and Reforestation**	
Technical Area(s*):*		
15.	**Agriculture**	
Technical Area(s*):*		

Approved Member of Staff by:	Siddharth Yadav	Date:	22/03/2013
Continued Compliance confirmation	Lisa Brough		16/01/2015

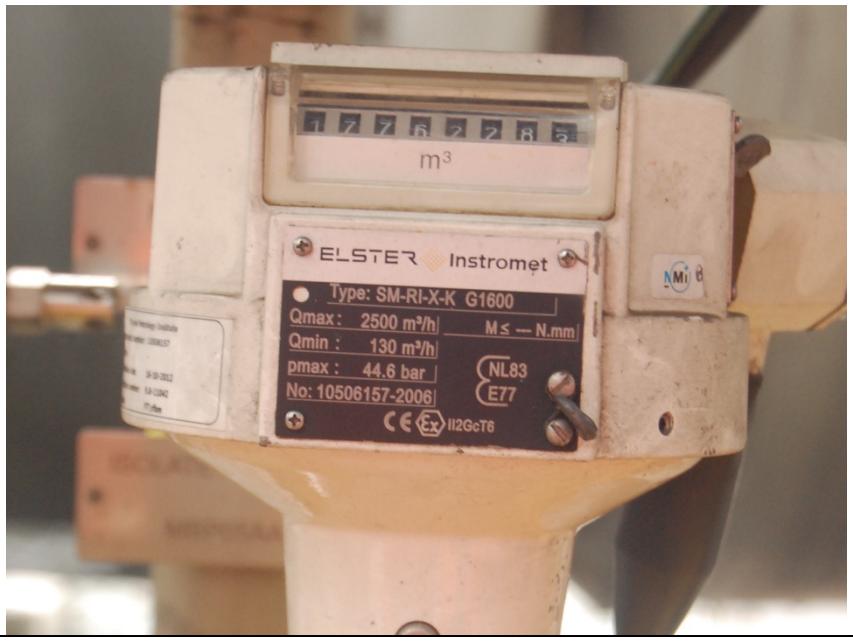
11. Photographic Evidence

Unique reference number:10506157-2006

Annual quantity of fuel (natural gas) consumed in gas turbine #13 ($FC_{f,4,y}$)

Date: 30/10/2014

Name of equipment: Turbine Flow meter



Unique reference number: 10509681-2007

Annual quantity of fuel (natural gas) consumed in gas turbine #12 ($FC_{f,3,y}$)

Date: 30/10/2014

Name of equipment: Turbine Flow meter

Unique reference number:10506153

Annual quantity of fuel (natural gas) consumed in gas turbine #11 ($FC_{f,2,y}$)

Date: 30/10/2014

Name of equipment: Turbine Flow meter

Unique reference number: 206657326

208002801

Electricity produced by two gas turbines ($EG_{P,J,5,y}$)

Electricity produced by one gas and one steam turbines ($EG_{P,J,6,y}$)

Date: 30/10/2014

Name of equipment: Electricity meter (Main)

Unique reference number: 206657327	Electricity produced by two gas turbines ($EG_{P,J,5,y}$)
208002802	Electricity produced by one gas and one steam turbines ($EG_{P,J,6,y}$)
	Date: 30/10/2014

Name of equipment: Electricity meter (Check)

Note: Taking photographs of Gas Chromatograph instrument located the project site and the Gas Flow Meter ($FC_{f,1,y}$) installed at the Afam plant gas reception point from Okoloma gas plant was not authorised during verification site visit. However, this is to confirm that respective instruments were inspected by the SGS audit team.

- o0o -