VERIFICATION AND CERTIFICATION REPORT

Omnia Fertilizer Limited

Omnia Fertilizer Limited Nitrous Oxide (N_2O) Reduction Project

SGS Climate Change Programme
SGS United Kingdom Ltd
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Date of Issue:	**Project Number:**
15-01-2009	CDM.VER0352
Project Title:	
Omnia Fertilizer Limited Nitrous Oxide (N_2O) Reduction Project	
Organisation:	**Client:**
SGS United Kingdom Limited	Omnia Fertilizer Limited
Publication of Monitoring Report:	
Monitoring Period:	26th February 2008 to 17th March 2008
First Monitoring Version and Date:	Version 1, 20th March 2008
Final Monitoring Version and Date:	Version 5, 8th January 2008

Summary:

SGS United Kingdom Ltd has performed the initial verification of the CDM project "Omnia Fertilizer Limited Nitrous Oxide (N_2O) Reduction Project" UNFCCC Reference Number 0752. The verification includes confirming the implementations of the monitoring plan of the registered PDD and the application of the monitoring methodology as per AM0028, version 1 dated 3rd March 2006. A site visit was conducted to verify the data submitted in the monitoring report.

The project activity involves the installation of an N_2O catalytic Destruction Facility in the tail gas section of the process downstream of the absorption column at Omnia Fertilizer Limited. Catalytic reduction of N_2O occurs when the N_2O in the tail gas reacts, in the presence of a reducing agent, with the iron zeolite catalyst in the N_2O catalytic Destruction Facility. The reaction removes the oxygen from the N_2O molecules and forms one or more compounds.
SGS confirms that the project is implemented in accordance with the validated and registered Project Design Document. The monitoring system is in place and the emission reductions are calculated without material misstatements. Our opinion relates to the projects GHG emissions and the resulting GHG emission reductions reported and related to the valid and registered project baseline and monitoring and its associated documents. Based on the information seen and evaluated we confirm that the implementation of the project has resulted in **26, 276** tCO2e during period 26/02/2008 up to 17/03/2008.

Subject:

CDM Verification

Verification Team:

Kamesh Iyer – Lead Assessor
Cornelis Van Den Berg – Local Assessor
Mia Antoni – Local Assessor (Trainee)
Shivananda Shetty – Expert

Technical Review:	**Trainee Technical Reviewer:**
Date: 19-11-2008, 21-11-2008 and 16-01-2009 Name: Vikrant Badve	Name: Ajoy Gupta

Authorised Signatory:

Name: Siddharth Yadav
Date: 16th January 2009

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Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction(s)
CO2	Carbon Dioxide
CO2e	Carbon Dioxide Equivalent
DOE	Designated Operational Entity
FAR	Forward Action Request
GHG	Greenhouse Gas(es)
GWP	Global Warming Potential
IMS	Integrated Management System
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
NG	Natural Gas
HNO_3	Nitric Acid
NO_2	Nitrous Oxide
m^3	Cubic meter
T	Tonne
NH_3	Ammonia

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1. Introduction

1.1 Objective

SGS United Kingdom Ltd has been contracted by Omnia Fertilizer Limited to perform an independent verification of its CDM project Omnia Fertilizer Limited Nitrous Oxide (N_2O) Reduction Project. CDM projects must undergo periodic audits and verification of emission reductions as the basis for issuance of Certified Emission Reductions (CERs).

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

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

1.2 Scope

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

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

The verification is not meant to provide any consulting towards the Client. However, stated requests for clarifications and/or corrective actions may provide input for improvement 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:	Omnia Fertilizer Limited Nitrous Oxide (N_2O) Reduction Project
UNFCCC Registration Number:	0752
Monitoring Period Covered in this Report	26/02/2008 up to 17/03/2008
Project Participants	Omnia Fertilizer Limited
Location of the Project Activity:	Sasolburg in the municipality of Metsimaholo, Free State Province, Republic of South Africa

The project has installed a tertiary N2O reduction technology for removal of the N_2O formed, from the tail gas downstream of the absorption column, by catalytic reduction (EnviNOx-System, Technology Supplier-UDHE GmbH). The system comprises one reactor with two catalyst beds where nitrogen oxides (NOx) is catalytically reduced in the first bed and nitrous oxide (N2O) in the second bed is decomposed to nitrogen and oxygen by the catalytic process, using NG as reducing agent.The optimum location for the catalyst in this case is at the hottest position in the tail gas stream.

2. Methodology

2.1 General Approach

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

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

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

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

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

2.2 Verification Team for this Assessment

Name	Role	SGS Office
Kamesh Iyer	Lead Assessor	SGS India
Cornelis Van Den Berg	Local Assessor	SGS South Africa
Mia Antoni	Local Assessor trainee	SGS South Africa
Shivananda Shetty	Expert	SGS India

2.3 Means of Verification

2.3.1 Review of Documentation

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

2.3.2 Site Visits

As part of the verification, the following on-site inspections have been performed (insert new tables if multiple locations have been visited)

Location: Omnia Fertilizers, Sasolburg, South Africa	
Date: 15/07/2008 – 16/07/2008	
Coverage:	**Source of Information / Persons Interviewed**
Management Approach to GHG commitment	Mr. Rudi Kriese – General Manager
Assessment of Project Boundary	Physical Verification/DCS flow diagram
Physical components	Physical Verification /Plant data/Delta V DCS/Envinox Commissioning certificates Mr. Rudi Kriese – General Manager Mr. Francois Visagie – Project Manager Mr. Eden Jack – Production Manager
Qualification and Training	Supplier Training Certificate/ Interviews Mr. Francois Visagie – Project Manager Mr. Eden Jack – Production Manager
Plant Operations	Plant Manual/
Roles and responsibility	Mr. Francois Visagie – Project Manager Mr. Eden Jack – Production Manager
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	Physical Verification /logs/Plant data/DCS/ IMS Calibration procedures/ IMS Calibration reports/ IMS Manual/Supplier data/External Lab reports (ISO 17025 certified) Mr. Rudi Kriese – General Manager Mr. Francois Visagie – Project Manager Mr. Eden Jack – Production Manager
CDM monitoring & reporting documentation	Mr. Francois Visagie – Project Manager Mr. Eden Jack – Production Manager
Quality Assurance – Management and operating system	IMS Internal Audit procedure/ Internal Audit records. Mr. Rudi Kriese – General Manager Mr. Francois Visagie – Project Manager
Emergency procedures	PLC/ P & I Diagrams/DCS Mr. Francois Visagie – Project Manager

2.4 Reporting of Findings

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

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

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

I. the verification is not able to obtain sufficient evidence for the reported emission reductions or part of the reported emission reductions. In this case these emission reductions shall not be verified and certified;

II. the verification has identified misstatements in the reported emission reductions. Emission reductions with misstatements shall be discounted based on the verifiers ex-post determination of the achieved emission reductions

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

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

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

2.5 Internal Quality Control

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

3. Verification Findings

3.1 Project Documentation and Compliance with the Registered PDD

The starting date of 26th February 2008 for the first monitoring period coincides with the date listed on the CDM website. The monitoring report version 5, 8th January 20082008 reflects the monitoring plan in the registered PDD and the methodology AM0028 version 1. The parameters mentioned in the monitoring plan are described in the monitoring report version 5, 8th January 2008. The monitoring approach for each parameter described in the PDD for monitoring the parameters is consistent in terms of units, measurement procedures and monitoring frequency. QA/QC procedures are consistent as mentioned in the registered PDD.

The following CARs were raised during verification of project documentation and compliance with the registered PDD.

CAR 1 was raised as (F_{Tgi}) to be monitored and all calculations are based on inlet and outlet gas monitoring. However it was found that direct monitoring of flow occurs only at the outlet after the destruction facility. The approach was not found conservative for calculation of CERs. The project participant responded by incorporating calculations which was found conservative and a deviation was sought for the same calculation method and was approved by the EB. Based on the approved deviation and the incorporated values as per deviation, CAR 1 was closed.

CAR 3 was raised as the monitoring plan in the methodology (AM0028 version 1) and Registered PDD were not matching for the following: To measure the N_2O concentration at the inlet and outlet of the destruction facility, AM0028 version 1 clear stated that Gas Chromatography had to be used (Refer ID no P6 and B3 of AM0028 version 1). However, IR photometry was used. Also, the monitoring plan clearly points out that IPCC values are to be used for hydrocarbon CO_2 emission factor; however the supplier's emission factor was used. A deviation was sought for allowing the use of NDIR and the supplier's data and was subsequently approved by the EB. Based on the deviation approved, CAR 3 was closed.

CAR 4 was raised as the monitoring plan in the methodology (AM0028 version 1) and Registered PDD require the Hydrocarbon oxidation factor to be measured. However in the calculation sheet it was calculated although the output was registered in the Delta V DCS. To rectify the error a deviation was sought for the same and was approved.

The deviations sought inline with the above CARs is traceable on UNFCCC website at the following web link

http://cdm.unfccc.int/UserManagement/FileStorage/Q5QMJC9KQXZ3R2CE90WW80B0H8H17S

The Executive Board approval is available at the following web link

http://cdm.unfccc.int/UserManagement/FileStorage/AM_CLAR_RVYMK6Y2J14HBPPL1397PLVUT97DJS

A total of 4 deviations were sought in one deviation form and all deviations were accepted.

3.2 Monitoring Results

As mandated by AM0028 version 1 to avoid that the operation of the nitric acid production plant is manipulated in anyway with respect to the N_2O generation, and thereby increase emission reduction, the ammonia flow, operating temperature and pressure in the ammonia oxidation reactor and the use of ammonia oxidation catalyst is monitored and compared to the historical values as determined in the PDD. If a permissible operating limit is exceeded, the baseline N_2O emissions for that period shall be capped at the conservative IPCC default value of 4.05 kg $N_2O/tHNO_3$

The historical data for the ammonia oxidation burner are taken from Uhde's operator manual for Omnia nitric acid plant and the data for the type of oxidation catalyst is from the supplier:
This can also be checked against Annex 3 of the registered PDD

Data	Value	Data Source
Historical operating temperature range Ammonia Oxidation reactor-AOR (°C) **Tg,hist**	885 – 895°C	Manufacturer's (Udhe) Operating Manual
Historical operating pressure range AOR (kPa) $\mathbf{P_{g,hist}}$	300 – 450 kPa	Manufacturer's (Udhe) Operating Manual
Historical composition of the ammonia ($G_{com,hist}$)	59.7% Platinum 36.6% Palladium 3.8% Rhodium	Average composition for the last 8 gauzes oxidation catalyst provided by Hereaus
Historical supplier of the ammonia oxidation catalyst ($G_{sup,hist}$)	Hereaus	Plant Operating Records (Omnia)

The operating temperature and actual production of nitric acid was out of range and corrective actions were not considered as per the approved methodology AM0028 version 1. Hence CAR 5 was raised. The project participant responded by revising the Monitoring report and CER spreadsheet. The MR and the spreadsheet were checked and verified and conservative approach as per the methodology was taken. Hence CAR 5 was closed.

Project and baseline emissions are limited to the design capacity of the existing nitric acid plant.

If the actual production of nitric acid (PHNO3, y) exceeds the design capacity (P HNO_3,max,) then emissions related to the production above P HNO_3,max will neither be claimed for the baseline nor for the project scenario. During the first monitoring period it was observed that the actual production of Nitric acid (16,525.57 tHNO_3) exceeded the design capacity of 15,708 tHNO_3 for the monitoring period. Hence, no emissions have been claimed for the baseline nor for the project scenario and this have been checked and this was verified and observed in the CER calculation spreadsheet (Daily average Report. first period.omnia.rev2.xls).

The recording in production logs, the calibration and maintenance routines for the following parameters were checked. The recorded values for the operating temperature and pressure for the operation of the ammonia oxidation reactor are automatically transferred to the Delta V distributed control system (DCS).

Plant output of nitric acid (t HNO_3) P HNO_3 was verified and it was found that the totalized is recorded in tonnes, data is captured from the meters to the Delta V DCS and verified with the meter bearing tag FT - 76010-100 and Serial No EU03496865[/ref15/] , the concentration of the nitric acid is analyzed and logged in reporting sheet as per reporting procedures. Daily consumption and the concentration are also recorded. The certificate of calibration was found in order and had been carried out on 06/02/2008.

All calibration records are maintained in the IMS calibration register.

Actual ammonia input to oxidation reactor $AOR_{,d}$ (t NH_3/day) is the sum of daily values. This was verified and the calibration of the flow meter was found to be in order and this was verified from the IMS Calibration register. The ammonia input was found to be in range and less than the historical operating temperature range Ammonia Oxidation reactor-AOR.

The actual operating temperature range Ammonia Oxidation reactor-AOR (°C) $Tg_{,d}$ and the actual operating pressure range Ammonia Oxidation reactor-AOR (kPa) Pg,d were checked for the whole period and the values were consistent with the Delta V DCS records and within the permitted ranges, the calibration for the thermocouples and pressure transmitters was found to be in order and this was verified from the IMS Calibration Register.

The Supplier of the ammonia oxidation catalyst (G_{sup}) and composition of the catalyst (G_{com}) was verified with invoices and found to be OK.

Volume flow of tail gas from N_2O destruction unit at interval ($F_{\_TGi}$) is monitored continuously and recorded through the automated data logging system, Delta V. The hourly average of two measurements are reported in the daily reports and found to be consistent to the reported daily values in the summary spread sheet. A deviation was taken as it was found that all calculations are based on inlet and outlet gas monitoring. However it was found that direct monitoring of flow occurs only at the outlet after the destruction facility. The approach was not found conservative for calculation of CERs. The PP responded by incorporating calculations which was found conservative and a deviation was sought for the same calculation method.

(Also refer section 3.1). It should be noted that the change is too small and hardly noticeable in the excel sheet and values. For further understanding the excel sheet submitted during deviation be referred. However this reduces ER daily by 1.3 to 1.5 CERs due to multiplication factor of 310 i.e. GWP of N_20.

The deviation 2 sought inline with the above is traceable on UNFCCC website at the following web link

http://cdm.unfccc.int/UserManagement/FileStorage/Q5QMJC9KQXZ3R2CE90WW80B0H8H17S

The Executive Board approval is available at the following web link

http://cdm.unfccc.int/UserManagement/FileStorage/AM_CLAR_RVYMK6Y2J14HBPPL1397PLVUT97DJS.

The spreadsheet has the final value incorporated and this was verified and found OK.

The calibration of the flow meter was checked under the IMS calibration register and is valid for the current monitoring period. No anomalies were found in the data as verified.

N_2O concentration at destruction facility outlet (t N_2O /Nm^3) CO_ N_2O and N_2O concentration at destruction facility intlet (t N_2O/Nm^3) CI_N2O is continuously measured by Non dispersive infrared photometry (NDIR) analysers which are self-calibrated, using a set of certified gases. The gas certificates from Praxair was checked and found OK. The N_2O concentration is measured in ppmv and automatically converted to t N_2O/Nm^3. The zero and span checks are automatically performed every day.

A deviation 1 was sought for using NDIR as the methodology AM0028 specifies use of gas chromatography and this was accepted. (Refer link in Section 3.1)

The hydrocarbon oxidation factor cannot be measured directly, an infrared analyzer is used to measure CH_4 concentration in inlet and outlet of the HC stream and then the hydrocarbon oxidation factor is derived. The methodology specifically mentions that to measure the oxidation factor, which is being calculated in actual by applying the following formula: [(CH_{4in} –CH4out)/CH4in] *100

The NDIR analyzer is used to measure the concentration. A deviation was sought for this parameter as this is mentioned as measured in the methodology and was approved.

The product conformity certificate for the Multi-gas Analyzer (NDIR) was verified and found to be in order. Further the certificate from TUV SUD, Germany stating the fulfillment of requirement of QAL1 of EN14181 and ISO 14956 were verified and found to be in order.

Hydrocarbon (natural gas) reducing agent Q_HC is measured krohne volume flow meter and the NG is supplied from Sasol. The calibrations certificate for the meter and the pressure and temperature transmitter was verified from the IMS certificate register and found OK. The Delta V DCS system gives the output in Nm^3. The values were checked against the plant records and were found consistent

The Monitoring report version 1 and ER spreadsheet did not detail out all parameters. Also, during transfer of values from the spreadsheet to MR version 1 it was found that a few values those were rounded up and were incorrect (eg. FTgi, HC, CO $_{N2O}$ etc) hence a CAR 2 was raised. The participant responded by accommodating all required parameters and this was checked and verified against raw data and found OK. Hence CAR 2 was closed.

Specific N_2O emissions per ton HNO_3 (t N_2O /t HNO_3) (**SE_** N_2O **).** This value is calculated from Quantity of N2O at inlet to destruction facility and Plant Output of HNO_3 data and the reported data is verified from the Delta V DCS and production records and was found OK.

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

There are no remaining issues from previous validation. This is the first verification for the project activity.

3.4 Project Implementation

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

The Technology Supplier for the EnviNOx-System is UDHE GmbH. The system comprises one reactor with two catalyst beds where nitrogen oxides (NOx) is catalytically reduced in the first bed and nitrous oxide (N_2O) in the second bed is decomposed to nitrogen and oxygen by the catalytic process, using NG as reducing agent. The facility was commissioned on the 14th February 2008 which was verified vide document UD-AM-CC-00006 Rev 0 of UHDE which was also counter signed by Omnia.

3.5 Completeness of Monitoring

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

3.6 Accuracy of Emission Reduction Calculations

The calculation of emission reductions is found to be correct. CAR 5 was raised and is discussed in section 3.2. The response to CAR 5 and the calculation method for Volume flow of tail gas from N_2O destruction unit at interval ($F_{\_TGi}$) as approved by the EB are the main reasons for the reduction of final CERs that are observed from MR version 1 to MR version 5. The details of the reported and the verified values for all parameters are listed in section 4.

3.7 Quality of Evidence to Determine Emission Reductions

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

3.8 Management System and Quality Assurance

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

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

3.9 Data from External Sources

The hydrocarbon emission factor is taken from Sasol and this has been found conservative. However since the methodology states that IPCC values should be taken a deviation was requested and approved (refer Section 3.1)

There are a few parameters which are required to be monitored and reported as a part of regulations of N_2O emissions

National Regulatory limit of N_2O emissions per output nitric acid (t N_2O /t HNO_3) **RSE_N2O,y**

Regulatory limit for specific N_2O concentration during interval I (t N_2O / m^3) **CR_N2O**

National regulation on NOx emissions **Reg_NOx**

Annual quantity N_2O Limited $\mathbf{QR}_{N2O,\,y}$

The parameters **RSE_N2O,y; CR_N2O; Reg_NOx;** $\mathbf{QR}_{N2O,\,y}$ were checked against the legal compliance register for the IMS systems and no recent regulations were found. This was verified and found OK.

4. Calculation of Emission Reductions

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

Parameter	Reported Value	Verified Value
PE_y Project Emissions	N/A	567.94tCO_2e
$PE_{ND,y}$ Project emissions from N_2O not destroyed	N/A	476.07tCO_2e
$PE_{DF,y}$ Project emissions from destruction facility	N/A	91.87tCO_2e
$PE_{N2O,y}$ N_2O not destroyed by facility	N/A	1.54tN_2O
$F_{TG,I}$ Volume flow of tail gas at N_2O destruction facility	106, 868 Nm^3/hr	106,983Nm^3/hr
CO $_{N2O,I}$ N_2O concentration at destruction facility outlet	0.3 x 10^{-7} tN_2O/Nm^3	2.87 x10^{-8} tN_2O/Nm^3
M_i Measuring interval	504 hours	504 hours
$PE_{NH3,y}$ Emissions from ammonia use in destruction facility	N/A	39.88 tCO_2e
$PE_{HC,y}$ Emissions from natural gas use in destruction facility	N/A	52.00 tCO_2e
$Q_{NH3,y}$ N_2O destruction facility: project ammonia input	18.6 t NH_3	18.63 t NH_3
EF_{NH3} Ammonia Production GHG Emission Factor	2.14t CO_2e/t NH_3	2.14t CO_2e/t NH_3
$HCE_{C,y}$ Converted hydrocarbon emissions	N/A	27.51t CO_2e
$HCE_{NC,y}$ non-converted methane emissions	N/A	24.49t CO_2e
$Q_{HC,y}$ Hydrocarbon input as reducing agent	13942 Nm^3	13941.74Nm^3
HC Hydrocarbon density	0.0007964 t/Nm^3	0.000796 t/Nm^3
EF_{HC} Hydrocarbon CO_2 EF	2.75 t CO_2e/t CH_4	2.77 t CO_2e/t CH_4
$OXID_{HC}$ Hydrocarbon Oxidation factor	89.36 %	89.36 %
$P_{HNO3,y}$ Plant Output of HNO_3	16,526.7 t HNO_3 at 100% conc	16,525.57 t HNO_3 at 100% conc
$QI_{N2O,y}$ Quantity of N_2O at inlet to destruction facility	N/A	94.6 tN_2O
$CI_{N2O,y}$ Quantity of N_2O at inlet to destruction facility	0.17 x 10^{-5} t N_2O/Nm^3	1.75 x 10^{-6} t N_2O/Nm^3
SE_{N2O} N_2O emission rate per ton of nitric acid	0.0057t N_2O/t HNO_3	0.0056t N_2O/t HNO_3

$\mathbf{ER}_y = BE_y - PE_y$

$\mathbf{ER}_y = [\mathbf{BE}_{N2O,\,y} \times \mathbf{GWP}_{N2O}] - ([\Sigma \mathbf{F}_{TG,i} \times \mathbf{CO}_{N2O,i} \times \mathbf{M}_i \times \mathbf{GWP}_{N2O}] + [\mathbf{Q}_{NH3,y} \times \mathbf{EF}_{NH3} + \rho_{HNC} \times \mathbf{Q}_{HNC,y} \times \mathbf{GWP}_{CH4} \times (1 - \mathbf{OXID}_{CH4}/100) + \rho_{HC} \times \mathbf{Q}_{HC,y} \times \mathbf{EF}_{HC} \times \mathbf{OXID}_{HC}/100])$

If $\mathbf{P}_{HNO3,y} > \mathbf{P}_{HNO3,max}$

Then

$\mathbf{BE}_{N2O,y} = \mathbf{SE}_{N2O,y} \times \mathbf{P}_{HNO3,max}$

And

$\mathbf{SE}_{N2O,y} = \mathbf{QI}_{N2O,y}/\mathbf{P}_{HNO3,y}$

Since for this MP $\mathbf{P}_{HNO3,y} > \mathbf{P}_{HNO3,max}$

$\mathbf{BE}_{N2O,y} = 0.0051 \times 15{,}708$

$= 86.60$ t N_2O

$\mathbf{BE},y = 86.60 \times 310$

$= 26{,}844.75$ t CO_2e

$\mathbf{PE}_y = \mathbf{PE}_{ND,y} + \mathbf{PE}_{DF,y}$

$\mathbf{PE}_{ND,y} = \mathbf{PE}_{N2O,y} \times \mathbf{GWP}_{N2O}$

$\mathbf{PE}_{DF,y} = \mathbf{PE}_{NH3,y} + \mathbf{PE}_{HC,y}$

$\mathbf{PE}_{NH3,y} = \mathbf{Q}_{NH3,y} \times \mathbf{EF}_{NH3}$

$\mathbf{PE}_{HC,y} = \mathbf{HCE}_{C,y} + \mathbf{HCE}_{NC,y}$

$\mathbf{PE}_y = 567.94 CO_2e$

$\mathbf{ER}_y = 26{,}844.75 - 567.94$

$= 26{,}276$ t CO_2e

5. Recommendations for Changes in the Monitoring Plan

No recommendation

6. Overview of Results

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

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

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

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

Yes. Kamesh Iyer, Cornelis Van Den Berg and Mia Antoni visited the sites and undertook interviews, collected data, audited the implementation of procedures, checked calibration certificates and checked data, inter alia.

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

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

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

Yes, the hydrocarbon emission factor is taken from Sasol and this has been found conservative. However, since the methodology states that IPCC values should be taken; a deviation was requested and was approved (http://cdm.unfccc.int/UserManagement/FileStorage/Q5QMJC9KQXZ3R2CE90WW80B0H8H17S).

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

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

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

No recommendations were made for change in monitoring methodology. However project proponent had requested a deviation to regd. PDD project activity and same is approved by CDM –EB. The project participants should follow the deviation (as discussed in section 3 of this report) as approved by the EB to ensure conservativeness and appropriate usage for methodology AM0028 version 1.

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 36,364 tCO2 for the period 26/02/2008 to 17/03/2008 as per the estimation made in the registered PDD. The actual emission reduction has been verified as 26,276 tCO2 for the same period.

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

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

Post monitoring report on UNFCCC website

Yes, the monitoring report is available at ref. UNFCCC Project 0752 on UNFCCC website
http://cdm.unfccc.int/UserManagement/FileStorage/MSYOLW1R6SVDZHILT7KD2U7X0E44BW

7. Verification and Certification Statement

SGS United Kingdom Ltd has been contracted by Omnia Fertilizer Limited to perform the verification of the emission reductions reported for the CDM project (Omnia Fertilizer Limited Nitrous Oxide (N_2O) Reduction Project) UNFCCC Ref. 0752 in the period 26/02/2008 up to 17/03/2008.

The verification is based on the validated and registered project design document and the monitoring report for this project. Verification is performed in accordance with section I of Decision 3/CMP.1, and relevant decisions of the CDM EB and CoP/MoP. The scope of this engagement covers the verification and certification of greenhouse gas emission reductions generated by the above project during the above mentioned period, as reported in Monitoring Report Version 5, 8th January 2008.

The management of the Omnia Fertilizer Limited is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project Monitoring Report dated 8th January 2008 version 5. Calculation and determination of GHG emission reductions from the project is the responsibility of the management of the (Omnia Fertilizer Limited Nitrous Oxide (N_2O) Reduction Project). The development and maintenance of records and reporting procedures are in accordance with the monitoring report.

It is our responsibility to express an independent GHG verification opinion on the GHG emissions and on the calculation of GHG emission reductions from the project for the period 26/02/2008 up to 17/03/2008 based on the reported emission reductions in the Monitoring Report Version 5, 8th January 2008 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:	Omnia Fertilizer Limited Nitrous Oxide (N_2O) Reduction Project
UNFCCC Reference Number:	0752
Registered and Approved PDD used for Verification:	Version 5: September 25, 2006
Methodology used for Verification:	AM0028, version 1 dated 3rd march 2006
Applicable Period:	(26th February 2008 to 17th March 2008
Total GHG Emission Reductions Verified:	26, 276 tCO2e

Signed on behalf of the Verification Body by Authorized Signatory

Signature:

Name: Siddharth Yadav

Date: 16th January 2009

8. Document References

/1/ Registered PDD version 5 dated 25th September 2006

/2/ Monitoring Report version 1 dated 20th March 2008

/3/ Monitoring Report version 2 dated19th May 2008

/4/ Monitoring Report version 3 dated 8th July 2008

/5/ Monitoring Report version 4 dated 21st October 2008

/6/ AM0028 version 1 dated 3rd March 2006

/7/ Registered Validation Report by DNV REPORT NO. 2006-1194

/8/ Emissions Red_Rev4S3-rev.xls (validated spreadsheet from DNV)

/9/ Daily average Report.first period.omnia.rev2.xls (CER calculation spreadsheet)

/10/ Daily average Report.first period.omnia.rev1.xls (CER calculation spreadsheet)

/11/ Product conformity Certificate for the Analyser by Sira certificate No SIRA MC 050055/00

/12/ Declaration of Conformity by TUV SUD IS-US3-MUC/lr

/13/ Training Registers & records

/14/ Comissioning Certificate

/15/ IMS Calibration Register

- FT 7674 Tail gas Venturi Flow Ref No 8383460
- FT 7680 Tail gas Venturi Flow Ref No 8383461
- FT 7671 Ammonia Flow meter Ref No 118229
- FT 7672 Natural gas Flow Ref No 118231
- PDT 7662 Envinox DP Ref No 8383462
- PT 7655 Ammonia Gas Pressure Ref No 8383463
- PT 7656 Natural Gas Pressure Ref No 8383464
- PT 7657 Tail gas Pressure Ref No 8383465
- PT 7658 Tail gas Pressure Ref No 8383466
- TT 76 85 Ammonia gas temperature 2109847
- TT7686 Natural gas temperature 2109848
- FT 76010 Nitric Acid Flow Ref No 3742741

/16/ Major Certificates

/17/ IMS Procedures

/18/ IMS Legal Register

/19/ Certificates of analysis of calibration test gases from PRAXAIR

/20/ List of personnel attending Uhde's training program

/21/ Approved Deviation
http://cdm.unfccc.int/UserManagement/FileStorage/Q5QMJC9KQXZ3R2CE90WW80B0H8H17S
The Executive Board approval is available at the following web link

http://cdm.unfccc.int/UserManagement/FileStorage/AM_CLAR_RVYMK6Y2J14HBPPL1397PLVUT97DJS

/22/ Monitoring Report Version 5, 8th January 2008

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