UNFCCC Secretariat
Martin-Luther-King-Strasse 8
D-53153 Bonn
Germany

Att: CDM Executive Board

DET NORSKE VERITAS
CERTIFICATION AS
Veritasveien 1
1322 Høvik
Norway
Tel: +47 6757 9900
Fax: +47 6757 9911
http://www.dnv.com

Your ref.:	Our ref.:	Date:
CDM Ref 0557	ASEK/TRIKA	8 October 2008

Response to request for review

"Catalytic N_2O Abatement Project in the Tail Gas of the Nitric Acid Plant of the Pakarab Fertilizer Ltd. (PVT) in Multan, Pakistan" (UNFCCC Ref. No. 0557)

Dear Members of the CDM Executive Board,

We refer to the requests for review raised by three Board members concerning DNV's request for issuance for CER's for the fourth periodic verification (1 April 2008 to 31 July 2008) of the "Catalytic N_2O Abatement Project in the Tail Gas of the Nitric Acid Plant of the Pakarab Fertilizer Ltd. (PVT) in Multan, Pakistan" (UNFCCC Ref. No. 0557), and we would like to provide the following initial response to the issues raised by the requests for review.

Request 1:
The applied methodology and the revised monitoring plan require that baseline emissions are limited to the design capacity of the existing nitric acid plant, which is 600 t/day. However, the the nitric acid production of Line A and B have exceeded the plant capacity for 9 days and 26 days respectively. Clarification is required on how the DOE verified that this requirement had been met.

DNV Response:

In the approved monitoring methodology AM0028 v.1 the following is described:
Baseline emissions are limited to the design capacity of the existing nitric acid plant. If the actual production of nitric acid ($P_{HNO3,y}$) exceeds the design capacity ($P_{HNO3,max}$) then emissions related to the production above $P_{HNO3,max}$ will neither be claimed for the baseline nor for the project scenario.

If, $P_{HNO3,y} > P_{HNO3,max}$
Then
$BE_{N2O,y} = SE_{N2O,y} \times P_{HNO3,max}$

where:

$BE_{N2O,y}$	Baseline emissions of N_2O in year y (tN_2O)
$SE_{N2O,y}$	Specific N_2O emissions per output nitric acid in year y ($tN_2O/tHNO_3$)
$P_{HNO3,max}$	Design capacity ($tHNO_3$)

From the above the production of nitric acid is clearly referring to the produced nitric acid in a year.

The project participants described the design capacity in the registered PDD as a daily design capacity. The daily design capacity for both Line A and Line B is 600 metric tons 100% nitric acid per day. DNV evaluated the actual nitric acid production during the monitoring period compared with the maximum production during the same period as follows:

The number of days in the monitoring period was 122 days. The actual production of Line A during the period was 66 836 ton and is below the maximum limitation of 73 200 ton (600 t/day * 122 days). Similarly actual production of Line B during the period was 67 571 ton and this is below the maximum limitation of 73 200 ton (600 t/day * 122 days).

Moreover the production of Line A from 1 August 2007 to 31 July 2008 (twelve months) were 177 181 ton and below a yearly capacity of 219 600 tons/yr (600 t/day * 366 days), similarly the production of Line B from 3 September 2007 to 31 July 2008 (333 days) were 176 504 ton and below the capacity of 199 800 tons (600 t/day * 333 days).

Even when taking into account only the operating days in the same periods the average daily production is equivalent to 584.8 t/day for Line A (during 303 days), and 584.5 t/day (during 302 days) for Line B. Both results are below the production capacity.

Request 2:
The revised monitoring plan and the methodology require that the plant output of nitric acid is regularly checked with the acid density and concentration during the project lifetime. Further clarification is required on how the DOE verified the plant output of nitric acid.

DNV Response:
The nitric acid produced is constantly transferred into an intermediate small nitric acid tank for sampling. Density measurement is conducted by the laboratory of the participant. The temperature of the nitric acid is monitored in the nitric acid line immediately after the flow meter. The flow rate is monitored by Krohne magnetic inductive flow meters. 100% nitric acid produced is determined from the density, temperature and concentration data.
The verification team assessed the flow rate adjustment based on the data provided from the participant. The nitric acid sample of a specific day is taken from the intermediate small tank at midnight everyday. The daily average concentration is obtained from the density measured by a hydrometer and the temperature of the sample. The concentration is determined using the conversion diagram provided from the engineering provider of the plant. Further the density of the acid (flowing in the pipeline and through the flow meter) is determined from the temperature in the nitric acid line and the concentration of the sample by using the same diagram. Examples of such calculations are given as follows for Line C:

Date: 15-06-2008
Line-C
Acid Totalizer reading = (240806 - 240587) = 219 m^3
Acid flowing temp (average) = 51 ^oC
Average acid concentration = 55.6 % (determined from sample density and temperature)
Acid flowing density from chart = 1.3074 tons/m^3

Production= 219 x 0.566 x 1.3074 = 162 tons 100% nitric acid

The verification team conducted crosschecking by sampling randomly picked days of the raw data (concentration, density, temperature and volume flow). For the verified period no material mistakes were observed in the reported values for 100% nitric acid produced (as reported in the production reports). It was verified on-site that nitric acid values reported in the production reports were consistent with the values in the provided spreadsheets. Further the calibration records of nitric acid flow meters and temperatures were verified.
Please refer to attachments 1- 3 showing as an example the verified documents for Line C.

Request 3:

The DOE verified the calibration of the measuring equipment in details except the flow meters for ammonia input to SCR De-NOx facility and hydrocarbon input for tail gas reheating. Further clarification is required.

DNV Response:
The verification team assessed the accuracy of the ABB flow meters by confirming the test certificates (FIT-1001/1611, 10 October 2006, FIT-2001/2611, 10 October 2007, FIT-3001, 10 November 2007) and the user manual provided from the supplier. The accuracy is given to be less than ± 1% of the rate at reference conditions, ammonia (99.5%) maximum flow rate and hydrocarbon (LNG) maximum flow rate. The maximum flow rates and actual average flow rates during the monitoring period were;

- Ammonia, Line A: maximum range 105 kg/hr, average observed flow rate 5.4 kg/hr
- Ammonia, Line B: maximum range 80 kg/hr, average observed 24 kg/hr
- Ammonia, Line C: maximum 30 kg/hr, average observed 12 kg/hr
- LNG, Line A: maximum 200 Nm^3/hr, average observed 70 Nm^3/hr
- LNG, Line B: maximum 190 Nm^3/hr, average observed 89 Nm^3/hr
- LNG, Line C: not used

Please refer to Attachment 4.

DNV would like to comment that the project emissions contribution from ammonia and hydrocarbons used compared to the total project emissions (emissions resulting from non destructed N_2O plus the emissions resulting from the use of ammonia and hydrocarbon) are in the range 0.2-1 % for ammonia and 1.7-2% for hydrocarbon for Line A and Line B. For Line C the project emission from the use of ammonia is 5.8%. Thus the total contribution is within a normal uncertainty of the monitoring of non destructed emissions of N_2O.

We sincerely hope that the Board accepts our above explanations.

Yours faithfully
for DET NORSKE VERITAS CERTIFICATION AS

Michael Lehmann
Technical Director
International Climate Change Service

Akira Sekine
Project manager

Attachments:

1. Production log sheet Line A, B and C.
2. Calibration records temperature transmitters in nitric acid Line A, B and C
3. Calibration record nitric acid flow meters Line A, B and C
4. Vortex flow meter test certificates Line A, B and C