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Att: CDM Executive Board

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Your ref.:	Our ref.:	Date:
CDM Ref 490	TRIKA/MLEH	21 December 2008

Response to request for review

"Catalytic N2O Destruction Project in the Tail Gas of the Nitric Acid Plant of Abu Qir Fertiliser Co." (490)

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 the monitoring period 1 April 2008 to 31 June 2008 for the "Catalytic N_2O Destruction Project in the Tail Gas of the Nitric Acid Plant of Abu Qir Fertiliser Co." (490) project, and we would like to provide the following initial response to the issues raised by the requests for review. We also refer to the response provided by the project participants.

Request 1:
The DOE is requested to clarify that on 10th April, and 15th –20th April 2008 when outlet analyser was out of operation and sent for calibration/maintenance activity respectively, how the PP demonstrated that the destruction facility was operational at normal efficiency.

DNV Response:

The EnviNOx®-System comprises one reactor with two catalyst beds arranged in series where nitrogen oxides (NO_X) is reduced by reaction with ammonia in the first bed and nitrous oxide (N_2O) is decomposed to nitrogen and oxygen by using natural gas as the reducing agent in the second bed. The inlet amount of ammonia and natural gas is monitored in order to ensure optimal efficiency of the reactions.

For the periods 10 April and 15 to 20 April 2008 when the outlet analyser was out of operation due to calibration/maintenance activity, respectively, it was demonstrated that the destruction facility was operating at normal efficiency as follows:

-The PP demonstrated that the nitric acid plant was in operation by providing monitoring data for ammonia oxidation temperature, ammonia oxidation pressure and ammonia flow to the ammonia oxidation reactor and produced nitric acid. DNV verified these four parameters and was able to confirm that the nitric acid plant was in operation. Furthermore, DNV verified that the monitoring data for ammonia oxidation parameters were within the normal ranges of operation /1/, /2/.

-The PP demonstrated that the inlet tail gas flow to the EnviNOx®-System was within the normal range by providing monitoring data and trend curves for the actual period. DNV was able to verify that the tail gas inlet flow were within expected range according to the level of nitric acid

production in this period and also within the same range as prior to and after the analyser was out of operation or out for maintenance /1/, /2/, /3/.

-The PP demonstrated that the feed of ammonia to the EnviNOx®-System was within the normal range in order to ensure the NO_X reduction to take place by providing monitoring data for this parameter. DNV was able to confirm that the inlet flow of ammonia to the EnviNOx®-System reactor was within the same range as prior to and after the analyser was out of operation or out for maintenance. 1/, /2/, /3/.

-The PP demonstrated that the feed of natural gas to the EnviNOx®-System was within the normal range in order to ensure N_2O reduction to take place. DNV was able to confirm that the inlet flow of natural gas to the EnviNOx®-System reactor was within the same range as prior to and after the analyser was out of operation or out for maintenance. 1/, /2/, /3/.

-The reactions taking place is exothermic and the PP demonstrated a temperature increase over the reactor by providing the monitoring data for reactor inlet and outlet temperature. DNV was able to verify that the temperature increase was approximately 5 ^oC and within the same range as prior to and after the analyser was out of operation or out for maintenance /5/.

-The PP demonstrated that the efficiency of reduction of N_2O was within the same range as prior to and after the analyser was out of operation or out for maintenance. The N_2O efficiency calculated 9 April and 11 April was 99.63% and 99.67%, respectively. The N_2O efficiency calculated 14 April and 21 April was 99.62% and 99.69 %, respectively.

The situation of failure in outlet analyser was earlier observed for monitoring period 1 September 2007 to 30 September 2007. DNV requested at that time an explanation from the PP regarding how it could be verified that the EnviNOx®-System was operating normally. The PP provided reply from Uhde at that time as follows /4/:

"The Uhde EnviNOx®-System for the abatement of N_2O and NO_x emissions, especially from nitric acid plants, is characterised by the stability of its catalysts. Our observations from work in the miniplant in Linz, Austria and in the commercial scale reactors that have been in operation for dome time indicate that, after a possible initial activation phase which may last for up to a few days, any change in the activity of an EnviNox catalyst – if it takes place at all – occurs slowly and monotonically "

The efficiency used in the period of the outlet analyser being out of operation or out for maintenance is 98.12 %. This value is the historical minimum N_2O removal rate for normal operating days of the previous campaigns (98.12%), this value and the historical minimum methane oxidation factor (88.34%) have been used for the determination of emissions reductions.

Further for the period 15 April to 20 April 2008 the recalculations with historic minimum N_2O removal rates for the complete days were done (even though the outlet analyzer was just about one hour per day out of operation).

The applied approach is hence conservative and in compliance with the registered monitoring plan for the project activity, later versions of AM0028 version 1and para 109 (b) of the report of the 26th meeting of the CDM Executive Board.

The project proponent has provided sufficient documentation to demonstrate that the EnviNOx®-System was in normal operation during the period when the N_2O analyser was out of function.

Request 2:

The PP is requested to clarify what back up plans it has for such situation when the measuring equipments are out of service, to ensure that the quality of monitoring parameter is not affected.

DNV Response:

DNV refers to the response given by the PP. DNV has during the site visit checked and verified the quality assurance/control and maintenance programs to be sufficient and well maintained.

References

/1/ CDM Project Spreadsheet for the verification period from 1 April 2008 to 30 June 2008:

- Summary spread sheet of emission reduction calculations (as submitted to UNFCCC for CER issuance and including ammonia oxidation reactor parameters and nitric acid production and checks for permitted operating ranges).
- Spread sheet: MR 7 Maha 1 and 3 corrected details_dg.xls

/2/ AFC daily monitoring reports (verified at site)

MDI files generated by Delta V system. 1 April 2008 to 30 June 2008

/3/ Trend curves for the monitoring period for the parameters:

- NOx inlet to EnviNOx reactor
- N_2O inlet EnviNOx reactor
- Tail gas inlet flow to EnviNOx reactor
- Tail gas flow downstream of EnviNOx reactor
- Ammonia inlet mass flow to EnviNOx reactor
- Natural gas inlet to EnviNOx reactor

Delta V Charts:

CH_4 NH3 April 2008.mdi; N2O, NOx and Tailgas.mdi ; N2O Inlet & Outlet.April 2008.mdi

/4/ Letter from Uhde regarding performance of EnviNOx during interruptions in Monitoring. Dated 11 October 2007.

/5/ Delta V Chart: TG Temp April.mdi

We sincerely hope that the Board accepts our above explanations.

Yours faithfully
for DET NORSKE VERITAS CERTIFICATION AS

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