CDM: Proposed New Methodology
Meth Panel recommendation to the Executive Board
(version 06)
(To be used by the Meth Panel to make a recommendation to the Board regarding a proposed new methodology)

Date of Meth Panel meeting:	31 January - 03 February 2006
Related F-CDM-NM document ID number (electronically available to EB members)	F-CDM-NM0117-rev: "Nanjing Chemical Industries Co Ltd (NCIC) Nitrous Oxide Abatement Project"
Related F-CDM-NMex document ID number(s) (electronically available to EB members)	F-CDM-NMex0117-rev: Not applicable
Related F-CDM-NMpu document ID number(s) (electronically available to EB members)	F-CDM-NMpu0117-rev: Not applicable.

Note to those completing this form, as applicable: Please provide recommendations on the proposed new baseline and monitoring methodologies based on an assessment of CDM-NMB and CDM-NMM and of their application in sections A to E of the draft CDM-PDD, desk reviews and public input. Please ensure that the form is entirely filled and that arguments and expert judgements are substantiated.

A. Preliminary recommendations by the Meth Panel

(1) History of submission *(to be communicated by UNFCCC Secretariat):*

>> Previously submitted as NM0117.

I. Recommendation on the proposed new baseline methodology: *(checkmark the choice made)*

Title of proposed new baseline methodology:>> Baseline Methodology for catalytic N_2O destruction in the Reactor/Burner gas of Nitric Acid Plants.

a. To approve this proposed methodology with minor changes

☐

i. Conditions under which this proposed methodology is applicable to other potential CDM project activities (e.g. project type, region, data availability):

>>

ii. Minor changes:

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b. To reconsider this proposed methodology, subject to required changes

☒

i. Conditions under which the proposed methodology is applicable to other potential projects (e.g. project type, region, data availability):

>> This methodology is applicable to secondary N_2O destruction method in facilities which is expected to not undertake any action to destruct N_2O within the process flow in the absence of project activity. N_2O destruction technologies should not result in additional energy consumption or other sources of GHG emission.

ii. Required changes:

>> It needs to be demonstrated that, during the project activity, catalyst composition is not changed in a way to enhance N_2O production in the baseline.

Consistency between the baseline and monitoring methodology needs to be improved.

Remove all project-related descriptions from CDM-NMB and CDM-NMM, in order to ensure applicability of the methodology to other similar projects.

Methodology should address the possibility of physical leak of N_2O at or before the point of monitoring N_2O concentration.

Address the issue of uncertainty regarding measurement of both baseline and project emissions in the reactor, specifically, the measurement between the precious metal gauze and the secondary N_2O catalyst, taking into account the extreme conditions such as high temperature, pressure and short distance between the catalysts.

The applicability conditions should refer to the existing capacity at a specified date. Furthermore, it is suggested that the applicability conditions need to be drafted in order to adequately reflect the assertions in the methodology (such as no leakage or post-catalyst decomposition of N_2O in the baseline).

(Project participants shall make required changes to the proposed new methodology and send it back to the Meth Panel. The proposed new methodology will be reconsidered by the Meth Panel if changes required are made by the project participants. The Executive Board will only consider this proposed new methodology after the revised proposed methodology has been reconsidered by the Meth Panel.)

c. Not to approve the proposed methodology

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i. Reasons for non-approval:

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(A new proposal should be submitted in accordance with the procedures for submission and consideration of proposed new methodologies of the Executive Board.)

II. Recommendation on the proposed new monitoring methodology: *(checkmark the choice made)*

Title of proposed new monitoring methodology: >> Monitoring methodology for catalytic N_2O destruction in reactor gas of nitric acid plants.

a. To approve this proposed methodology with minor changes

☐

i. Conditions under which methodology is applicable to other potential projects (e.g. project type, region, data availability):

>>

ii. Minor changes:

>>

b. To reconsider this proposed methodology, subjected to required changes

☒

i. Conditions under which the proposed methodology is applicable to other potential projects (e.g. project type, region, data availability.):

>> See above.

ii. Required changes:

>> Monitoring requirements of each parameter, their role in the calculation of emission reduction, and their uncertainty aspects need to be clearly classified and identified.

Remove all project-related descriptions in CDM-NMM, in order to ensure applicability of methodology to other similar projects.

(Project participants shall make required changes in the proposed new methodology and send it back to the Meth Panel. The proposed new methodology will be reconsidered by the Meth Panel if changes required are correctly made by the project participants. The

Executive Board will only consider this proposed new methodology after required changes proposed have been made and the revised proposed methodology has been reconsidered by the Meth Panel.)

c. Not to approve the proposed methodology

☐

i. Reasons for non-approval:

>>

(A new proposal should be submitted in accordance with the procedures for submission and consideration of proposed new methodologies of the Executive Board.)

B. General information on submitted proposed new methodology

(1) Title of proposed new baseline methodology:

>> Baseline Methodology for catalytic N_2O destruction in the Reactor/Burner gas of Nitric Acid Plants.

(2) One sentence describing the purpose of the methodology.

>> This methodology is designed for projects that reduce N_2O emitted as a byproduct of nitric acid production, through insertion of additional catalytic devices just after the ammonia burner (i.e. secondary destruction method).

(3) Summary description of baseline methodology.

Short statements on each on how the proposed methodology: chooses the baseline scenario, demonstrates additionality, calculates baseline emissions, calculates project emissions, calculates leakage, calculates emission reductions.

>> The baseline methodology is as follows:

- **Baseline Scenario identification**: Baseline scenario identification procedures compares two scenario project and no project, based on the assertion that conceivable alternatives such as N_2O stripping, recycle, and non selective catalytic reactor (NSCR) are unrealistic
- **Demonstration of Additionality:** Methodology uses a modified version of the additionality tool, which consists of confirming and providing evidence to support each of the following four conditions:
  - Condition 1: The nitric acid plant, where the project activity is implemented, complies with national regulations on N_2O emissions at the starting date of the CDM project activity.
  - Condition 2: The project activity is not common practice at nitric acid plants in the region.
  - Condition 3: The project activity would not be commercially viable, even if the market value of any potential by-product of the N_2O destruction technology is accounted for, without the revenues from the sales of the CERs.
  - Condition 4: The financial benefits of the revenues obtained by selling CERs from the project activity will lead to the implementation of the project activity.
- **Calculation of baseline emissions:** The baseline emissions are calculated as product of (i) the volume flow rate of the reactor gas, and (ii) the N_2O concentration of the gas, measured at the inlet of the Secondary N_2O catalyst. Contrary to the initial submission, it is assumed that destruction subsequent to the secondary N_2O catalyst does not to occur. If regulations restricting N_2O emission is imposed (either through the form of absolute quantity, maximum permitted byproduct rate, stack gas concentration), such regulation automatically serves as the baseline emission level.
- **Calculation of project emissions:** Project emissions include the non destroyed N_2O at the outlet of the reaction chamber (calculated as production of (i) volume flow rate and, (ii)N_2O concentration).
- **Calculation of leakage:** Leakage is assumed to be zero, since the secondary catalyst (project activity) will result in no measurable increase in utility usage in the plant.
- **Calculation of emission reductions:** Emission reduction is calculated by subtracting project activity and leakage emissions from baseline emissions.

(4) Title of proposed new monitoring methodology:

>> Monitoring Methodology for catalytic N_2O destruction in the Reactor gas of Nitric Acid Plants.

(5) Summary description of the monitoring methodology.

Short statements on each on how the proposed methodology monitors the baseline and project scenario and calculates leakage and emission reductions.

>> As follows:

- Baseline emissions: All relevant parameters are either measured or calculated continuously.
- Project emissions: All relevant parameters are either measured or calculated continuously.
- Leakage emissions: Leakage is assumed to be zero.
- Emission reductions: Emission reduction is calculated by subtracting project activity and leakage emissions (which is zero) from baseline emissions.

(6) Relationship with approved or pending baseline and monitoring methodologies (if applicable).

a) Does the proposed new methodology include part of an already-approved methodology or a methodology pending approval (see recent EB reports)? If so, please briefly note the relevant methodology reference numbers (AMXXXX or ACMXXXX), titles, and parts included.

>> NM0111 "Baseline Methodology for catalytic N_2O destruction in the tail gas of Nitric Acid Plants".

b) In particular, is the proposed new methodology largely an amendment or extension of an approved methodology? (i.e. the methodology largely consists of expanding an approved methodology to cover additional project contexts, applicability conditions, etc., and is thus largely comprised of text from an existing methodology) If so, indicate whether the amendments or extensions are appropriate, and explain why.

>> The methodology is similar to NM0111, which is applicable to project activities reducing N_2O emitted as a byproduct of HNO_3 production, through installation of tertiary methods (end-of-pipe catalysts). It remains to be seen whether amendments and extension is possible, since monitoring points are different, and there were earlier claim of post-catalyst decomposition of N_2O in the baseline, which does not occur in the tertiary method. However, consolidation would be possible.

c) Indicate whether , and explain how, any other approved methodology (not noted in response to the previous question) could currently, or with minor modifications, be used to calculate emission reductions from the project activity associated with the proposed new methodology. If so, please indicate the reference number and the parts of the methodology that would need modification.

>> Both AM0001 "Incineration of HFC 23 Waste Streams" and AM0021 "Baseline Methodology for decomposition of N_2O from existing adipic acid production plants" deal with conceptually similar projects, where GHG in question is emitted as a byproduct, which is subsequently recovered and destroyed. In both methodologies, baseline emission is calculated by multiplying the production of the intended substance, multiplied by a by-product rate. In this methodology, such an approach is not taken. NM0143 takes this approach.

d) Please briefly note any significant differences or inconsistencies (baseline emission calculations, leakage methods, and boundary definitions, etc.) between the proposed new methodology and already-approved methodology of similar scope.

>> Addressed in c).

e) To avoid potential repetition, feel free to provide one comprehensive answer here that covers questions a through d.

>>

C. Details of the evaluation of the proposed new methodology by the Meth Panel:

I. Proposed new baseline methodology: >> Baseline Methodology for catalytic N_2O destruction in the Reactor/Burner gas of Nitric Acid Plants.

(1) Determining the baseline scenario and demonstrating additionality:

a) Explain the methodological basis for determining the baseline scenario, and whether this basis is appropriate and adequate.

>> The basis are as follows: No post-catalyst decomposition occurs during the baseline and intentional manipulation would not be possible so long as pressure and temperature conditions are within a permitted range. This is appropriate, though the methodology should include some requirement on atleast description of the catalyst composition in the CDM-PDD.

The methodology contains internal inconsistency. Equation 6 in Section I contains the parameter F_A_p, which is the total N_2O abatement between exit after secondary catalyst and tail/stack sample point in period, i.e., measures the post-catalyst decomposition of N_2O, whereas, the assumption is made that no such destruction occurs.

b) Explain whether the application of the methodology could result in a baseline scenario that reasonably represents the anthropogenic emissions by sources of greenhouse gases that would

occur in the absence of the proposed project activity.

>> It is expected that the application of methodology would result in such a baseline scenario when temperature, pressure, and catalyst composition is not intentionally manipulated.

c) State whether the documentation explains how, through the use of the methodology, it can be demonstrated that a project activity is additional and therefore not the baseline scenario. If so, what are the tools provided by the project participants?

>> A demonstrative flowchart, incorporating the elements of the additionality tool, is provided to proving additionality. Various alternatives, which are theoretically possible but deemed practically impossible, are not considered as baseline alternatives, resulting in a simple comparison of "with-project" and "without-project" scenarios.

d) Explain whether the basis for assessing additionality is appropriate and adequate:

>> It is appropriate and adequate, given the situation of the technology and practicability of alternatives. Under the applicability condition, it would be reasonable to suppose that the only alternative to the project activity is to not to implement the project activity.

(2) Methodological basis for calculating baseline emissions and emission reductions

a) Explain how the methodology calculates baseline emissions and whether the basis for calculating baseline emissions is appropriate and adequate:

>> The baseline emissions are calculated as product of (i) the volume flow rate of the reactor gas and (ii) the N_2O concentration of the gas at the inlet of the secondary N_2O catalyst. If regulation to limit N_2O (by means of limiting its absolute quantity, byproduct rate, or concentration in tail gas) is implemented, baseline emission is the permissible N_2O emissions. This is appropriate and adequate (see C.I.(1).a above). The methodology states that "If the actual output of nitric acid (P_HNO3_p) exceeds the name plate or design capacity (P_HNO_3_hist) then subsequent emissions will be claimed neither for the baseline nor for the project scenario". In absence of any equations to calculate emissions reduction under such a condition, it is not clear how this is ensured.

b) Explain how the methodology calculates project emissions and whether the basis for calculating project emissions is appropriate and adequate.

>> Project emissions include the non destroyed N_2O at the outlet (again volume flow rate times N_2O concentration).

(3) Definition of the project boundary related to the baseline methodology:

a) State how the project boundary is defined in terms of:

i) Gases and sources

>> Only N_2O is put to question, on the ground that no other greenhouse gas emissions are known to occur in significant quantity from the application of currently available catalysts.

ii) Physical delineation

>> The project boundary covers the whole individual nitric acid plant.

b) Indicate whether this project boundary is appropriate:

>> It is appropriate.

(4) **State whether the proposed methodology is appropriate for the referred proposed project activity and the referred project context** *(described in Sections A - E of the draft CDM-PDD and submitted along with CDM-NMB):*

>> Yes, it is appropriate. Perhaps it is better to add an applicability condition that the methodology applies to N_2O reduction project activities through the use of secondary destruction technology which consumes no additional energy.

(5) Key assumptions/parameters (including emission factors and activity levels), rationale, data sources and uncertainties:

a) List the implicit and explicit key assumptions, and rationale for the methodology. Identify those, if any, which are problematic and explain:

>> Key assumption is that there will be no possibility that the baseline emissions are overestimated through estimating the emissions from volume of reactor gas and concentration of N_2O in the gas, if parameters

such as pressure, temperature stay within a certain range. Catalyst composition is not mentioned, its implications on the N2O generation should be discussed. Another assumption is that measurement of baseline N_2O emission, which is measured not at the tail end but just after the NH_3 oxidation catalyst, is an accurate representative of what would have been emitted from the tail end in the absence of the project (the inconsistency surrounding incorporation of parameter F_A_p is also relevant here). Methodology provides some explanation on the assumption, it may be better to reflect this assumption in the applicability condition..

b) Give your expert judgement on whether the assumptions/parameters are adequate:

>> They are appropriate, but does not address the question on how to deal with the case when the composition of catalyst to oxidize ammonia is changed.

c) Indicate which data sources are used and how the data are obtained (e.g. official statistics, expert judgement):

>> Most data are site-specific. Exceptions are data used for the purpose of projection, which is taken from IPCC Guidelines (1996) & Good Practice Guidance (2000).

d) Explain the vintage of data recommended (in relation to the duration of the project crediting period) and whether the vintage of data is appropriate, indicating the period covered by the data:

>> Most data are measured or calculated real time, and are therefore adequate.

e) Give your expert judgement on whether the data used are adequate, consistent, accurate and reliable:

>> They are adequate. However, consistency and accuracy merits further discussion, and they need to be presented in a consistent and organized manner to ensure applicability to other similar projects. Example are as follows:

- In support of the accuracy of the methodology, the N_2O sampling data from a previous plant is mentioned. However, this does not answer the question as to whether the measurement is accurate, since no information is provided on how they are calibrated, whether the recorded data was statistically analyzed, etc.
- Some parameters need to be defined in a more clear manner, e.g. it is not clear whether the parameters P_HNO3_p and P_HNO3_hist correspond to annual productions. It is stated in CDM-NMB that they are taken for the period, but its is not clearly explained what does the period refer to.
- It is also mentioned in the CDM-NMB that Q_RG (Volume flow rate Reactor gas DF) is calculated but no equation or explanation is provided on how to calculate the value.

f) State possible data gaps:

>> No data gaps are perceived though there are inconsistencies and uncertainties with respect to what data is necessary and how they should be monitored.

(6) Assessment of uncertainties:

a) *Provide an assessment of uncertainties given (e.g. in determining baseline scenario, data sources, key assumptions)*

>> Address the issue of uncertainty regarding measurement of both baseline and project emissions in the reactor, specifically, the measurement between the precious metal gauze and the secondary N_2O catalyst, taking into account the extreme conditions such as high temperature, pressure and short distance between the catalysts. Also, see above for other comments.

(7) Leakage:

a) State how the baseline methodology addresses any potential leakage due to the project activity:

>> Leakage is assumed to be zero, since the secondary catalyst installed in the Reactor Basket underneath the noble metal gauzes will result in no measurable increase in utility usage in the nitric acid plant.

b) Indicate whether the treatment for leakage is appropriate and adequate:

>> It is not clear whether this statement holds for all secondary destruction methods. Perhaps it is better to state this as an applicability condition.

(8) Transparency, "conservativeness" and consistency

a) Indicate whether the baseline methodology is presented in a transparent way, and if not, what changes are suggested:

>> It is transparent.

b) Explain whether the baseline methodology is conservative, and if so, how:

>> There is no evidence either way whether the methodology is conservative (i.e. choosing the lowest possible baseline emission / highest possible project activity emission among a variety of choices) or not conservative. Therefore, it can be said that conservatism is not an issue.

c) Explain whether the baseline methodology is internally consistent, and if not, highlight which sections are inconsistent:

>> It is generally consistent, though inconsistencies exist, such as incorporation of post-catalyst decomposition (parameter F_A_p) and assertion of no further abatement of N_2O emission in the baseline.

(9) If relevant, state whether the proposed changes required for the methodology implementation on 2nd and 3rd crediting periods are appropriate.

>> Changes in catalyst composition merits discussion.

(10) State the baseline approach selected, indicate whether this is appropriate, and why.

>> The approach selected is as per paragraph 48 (a) of the CDM modalities and procedures: "Existing actual or historical emissions" as applicable. It is appropriate given the lack of "economically attractive course of action" due to the nature of the project.

(11) Any other comments:

a) State which other source(s) of information (i.e. other than documentation on this proposed methodology available on the UNFCCC CDM web site) have been used by you in evaluating this methodology. Please provide specific references:

>> None.

b) Indicate any further comments:

>> Section F (After N_2O Secondary Catalyst Installation) includes project specific information ("we will in addition to the sample points to be installed between the noble gauzes and the secondary catalyst located in the reactor basket..".). Moreover, the baseline and monitoring methodologies do not reflect where the additional monitoring is undertaken and how the information so collected is used.

II. Detailed recommendations on the proposed new monitoring methodology

Evaluate each section of CDM-NMM. Please provide your comments section by section:

(1) Indicate if this proposed monitoring methodology is compatible with the proposed baseline methodology described in CDM-NMB of the draft CDM-PDD, and if not, why.

>> It is compatible, subject to the revisions suggested above.

(2) Assessment of key assumptions/parameters:

a) List the implicit and explicit key assumptions. Identify those, if any, which are problematic and explain:

>> See relevant provision in the baseline methodology.

b) State whether the key assumptions are adequate, and whether they have been arrived at in a transparent manner:

>> Mostly adequate and transparent.

(3) Data sources and data quality:

a) Give your expert judgement on whether the data sources and data quality used are adequate, consistent, accurate and reliable. If not, please explain.

>> They are adequate. However, consistency, accuracy and reliability merits further discussion as well as comparison with approved methodologies (AM0001, AM0021, NM0111).

b) *State possible data gaps:*

>>

(4) Leakage *(please elaborate, if appropriate)*:

>> Leakage is assumed to not occur.

(5) Quality assurance and control procedures (please explain):

>> It is not clear whether parameters listed at the QA/QC section correspond to those described in other parts of the monitoring methodology. Uncertainty level is assumed to be "low" without providing any explanation as why it is considered as low. It is also mentioned that calibration procedure is to be developed, but no specifics are provided in the methodology. However, it should also be noted that this is much the same with similar approved methodologies such as AM0021 and NM0111.

(6) Assessment of the description of the proposed methodology:

a) State whether the proposed methodology has been described in an adequate manner:

>> The methodology is mostly adequate; though some parameters are written in an inconsistent manner (N_2O_co_TG_I, N_2O_co_RG_I and N_2O_co_RG_O all indicate N_2O concentration before destruction facility, and it is not clear what is relationship among the three). It is not clear where the variable Q_RAmGF (volume flow reactor ammonia gas flow before N_2O destruction facility) is used. Variables listed at the QA/QC section does not seem to represent those described in other parts of the monitoring methodology. Nomenclature, sampling points and their relationship needs to be clarified. Furthermore, it is not clear from the monitoring methodology as to where the additional monitoring task is reflected.

b) State whether the proposed methodology is appropriate for the referred proposed project activity and the referred project context (described in Sections A - E of the draft CDM-PDD and submitted along with CDM-NMM):

>> It is generally appropriate, subject to the condition that the above point is clarified.

(7) Any other comments:

a) State whether any other source of information (i.e. other than documentation on this proposed methodology available on the UNFCCC CDM web site) has been used by you in evaluating this methodology. If so, please provide specific references:

>> None.

b) Indicate any further comments:

>> Monitoring equipment such as GASMET ON-LINE SERIES is mentioned in the QA/QC section. This seems to be project-specific information, and should be left out.

Signature of Meth Panel Chair ……..

Date: 13/02/2006 *(Jean-Jacques Becker)*

Signature of Meth Panel Vice-Chair ……..

Date: 13/02/2006 *(José Miguez)*

Information to be completed by the secretariat	
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