Response to the "Request for Review" - Issuance

UNFCCC Ref No. 0124

Crediting year: 01 January 2007 to 31 December 2007

Project title: Methane Extraction and Fuel Conservation Project at Tamil Nadu Newsprint and Paper Limited (TNPL), Kagithapuram, Karur District, Tamil Nadu

02 September 2008

The CDM Executive Board
c/o UNFCCC Secretariat
Martin Luther King Strasse 8
D-53153 Bonn
Germany

Dear CDM Executive Board,

We are hereby submitting our responses to the review request for the issuance with regard to Project activity 0124 "Methane Extraction and Fuel Conservation Project at Tamil Nadu Newsprint and Paper Limited (TNPL), Kagithapuram, Karur District, Tamil Nadu". We are providing the necessary details to each of the queries as required by the Executive Board for the issuance of CERs.

Query 1:

The purported accuracy of flow meter readings seems to indicate that measurement was not in fact used, but that estimates were made instead.

Response:

We understand that the query on "accuracy of the readings" could have been motivated by any or all of the following aspects of the data:

A. All three gas flow readings are exactly matching/balancing with each other
B. All flow readings are in multiples of 100

A description of the monitoring and recording procedures followed by TNPL could explain these aspects:

A. All three flow readings are exactly matching/balancing with each other:

First of all, we would like to state that *the generation and consumption of biogas* is indubitable, the authenticity of which may be verified as described in sections A.1 and A.2 below. The reason why all three flow readings are exactly matching is described in section A.3.

A.1 Authenticity of biogas generation and consumption:

The authenticity of the biogas generation can be verified from the following documents:

- Published annual reports
- Performance specifications to the third party Operation and Maintenance (O&M) agency

Published annual reports:

The biogas generated from the project activity is used to substitute part of the furnace oil consumption in the lime kiln. The quantity of biogas consumption, furnace oil consumption and paper production details for a particular financial year (April to March) are reported in the Company's annual reports.

TNPL is a publicly listed organization and therefore its annual reports need to be published and circulated to the shareholders. The annual reports contain the following details as mandated by the applicable laws:

- Annual power and **fuel** consumption details (including **biogas and furnace oil**) and specific energy consumption details – mandated by the Company's Act,1956 of India
- Board of Directors' report including the overall performance and **paper production data**
- External Auditor's certificate on Corporate Governance and compliance with "Clause 49" of the Listing agreement with the Stock exchanges
- External Auditor's report of the annual report
- Comptroller and Auditor General (C&AG) of the Government of India's comments on the annual report

The table A.1 shows the details of the annual biogas consumption, furnace oil consumption and paper production from the pre-project scenario till year 2007-08 extracted from the respective annual reports (Encl A.1):

Table A.1: Annual report details

Year	Biogas consumed	Furnace oil consumed	Paper production	Specific gas consumption	Specific oil consumption	Remarks
	000'M3	000' litres[1]	Tonnes	M3/T	litres/T	
1999-00	0	9813	178871	0.0	54.9	
2000-01	0	10575	191106	0.0	55.3	
2001-02	0	10951	184267	0.0	59.4	
2002-03	0	11566	167878	0.0	68.9	
2003-04	3479	9658	182215	19.1	53.0	Project commissioned
2004-05	3257	7723	196241	16.6	39.4	
2005-06	4831	8092	230079	21.0	35.2	
2006-07	5137	7760	231161	22.2	33.6	
2007-08	5705	7562	245471	23.2	30.8	

It may be evident from the above that the specific furnace oil consumption in the pre-project scenario (55 to 68 litres/tonne) has drastically reduced after the commissioning of the project activity (30 to 40 litres/tonne), which proves the fact that biogas has been generated and has substituted furnace oil in the lime kiln. This has been verified through external parties and published in the annual report as stated above.

Performance specifications to the third party O&M agency:

The operation and maintenance (O&M) of the biogas plant is outsourced to a third party, Global Environmental Engineering Limited (GENL), who is the also the equipment supplier for the project activity. In their O&M service contract to GENL, TNPL has specified the performance parameters of the gas plant to be maintained by GENL. The performance parameters specified include a biogas generation rate of 0.47 M^3 per kg of COD reduced which is to be maintained by the O&M agency only upon which payments are released. This can be confirmed from the O&M service contract and payments made by TNPL to the agency (Encl A.2). This further confirms the authenticity of biogas production.

[1] For years 1999-2003, furnace oil consumption is reported as Metric Tonnes in annual report, which has been converted to litres by applying a density of 0.85 kg/M3.

A.2 Authenticity of biogas metering equipment:

The presence of appropriate biogas monitoring equipments is also established beyond doubt through the following:

Physical verification and Photographs:

The DOE has physically verified the gas flow meters during the site visit. The photographs of the flow meters have been submitted to the DOE.

ISO quality plan and Calibration records:

TNPL is an ISO 9001 and ISO 14001 certified organization. The biogas monitoring equipments are also covered under the ISO quality management system which may be verified from the quality plan (Encl A.3 – ISO quality plan)

All the monitoring equipments are subject to calibration as per the schedule in the calibration plan. Relevant calibration records of all the monitoring equipments have been submitted to the DOE.

A.3 Method of gas flow recording:

Flow measurement at digester outlet and flare inlet:

The measured flow readings of the gas flow meters at digester outlet and at the flare inlet are indicated in the gas plant control panel display. Both the instantaneous flow rate (M^3/hr) and the cumulative flow quantity (M^3) are measured and indicated in the display (Encl A.4 – photograph of display). The cumulative flow quantity at digester inlet and flare inlet are recorded once in every shift (i.e., once in 8 hours) by the shift operator and also cumulated to arrive at the day's quantity. These shift-wise and daily **measured** flow data at the digester outlet and flare inlet are recorded in the gas plant log book (Encl A.5 – gas plant log book sample). The difference between the "digester outlet gas" and "flare inlet gas" is **calculated** and recorded as "limekiln inlet gas" in the gas plant log book (Encl A.5 – gas plant log book sample).

Flow measurement at limekiln inlet:

The measured flow readings of the gas flow meter at the limekiln inlet are indicated in the limekiln DCS display (Encl A.6 – photograph of DCS display). Both the instantaneous flow rate (M^3/hr) and the cumulative flow quantity (M^3) are measured and indicated in the DCS display. The cumulative flow quantity at limekiln inlet is recorded once in every shift (i.e., once in 8 hours) by the shift operator and also cumulated to arrive at the day's quantity. These shift-wise

and daily **measured** flow data at the limekiln inlet are recorded in the limekiln log book (Encl A.7 – limekiln log book sample). The limekiln inlet flow quantity **calculated** as the difference between the "digester outlet gas" and "flare inlet gas" is also recorded in the limekiln log book (Encl A.7 – limekiln log book sample).

The **difference between the measured and calculated data** of limekiln inlet gas is significant when considered on a shift-wise or daily basis, due to the difference in the timing of manual log book entry between gas plant and limekiln. However, when considered on a monthly basis, the time differences get adjusted and the deviation between **measured and calculated data** is only around 0.6% (Refer table A.2 below).

Table A.2: Difference between measured data and calculated data of limekiln inlet gas

Year 2007	Measured data	Calculated data	Difference	% difference
Months	M^3	M^3	M^3	%
January	453358	455800	2442	0.54
February	403209	406060	2851	0.70
March	416534	420000	3466	0.83
April	505476	507600	2124	0.42
May	571041	573900	2859	0.50
June	621275	624800	3525	0.56
July	615976	622000	6024	0.97
August	590757	593400	2643	0.45
September	440712	443100	2388	0.54
October	336196	337850	1654	0.49
November	265549	266800	1251	0.47
December	518208	521300	3092	0.59
Total	5738291	5772610	34319	0.59

The daily gas generation is an important performance parameter for the biogas plant. The

A daily performance report indicating the *biogas generation, biogas flared and biogas to limekiln* is submitted by the biogas plant to all the heads of departments (Encl A.8 – Biogas plant daily performance report).

Similarly, the daily specific[2] furnace oil consumption and specific biogas consumption are important performance parameters for the limekiln. A daily performance report indicating the furnace oil consumption and biogas consumption in limekiln is submitted by the limekiln to all the heads of departments (Encl A.9 – Limekiln daily performance report).

[2] Litres of furnace oil per tonne of limekiln production

The above performance reports are reviewed in the "Daily production performance review meeting". It was often observed during these meetings that the daily *biogas to limekiln* values reported by the gas plant and limekiln had significant deviations. Though this was identified to be due to the difference in the timings of data recording, it created contradictions between the performance reports of the two departments and was also raised as a point during the costing audit.

To resolve this matter, it was proposed that a computerized online DCS[3] recording system may be installed[4]. Till such time, it was decided to adopt the calculated *biogas to limekiln* value reported by the gas plant for the purpose of all performance reports (Encl A.10 – Circular). Therefore, only the calculated "*biogas to limekiln"* values have been adopted for internal performance reporting and for CDM purposes. The same data was produced in the monitoring report for CER verification since the difference between **measured and calculated data** is minimal (only around 0.6%). However, the ***actual measured values at limekiln are also being recorded,*** which is now presented for CDM purpose. A revised monitoring report and CER calculation are presented.

A summary of the monitoring and recording procedure is given in table A.3 below:

[3] Distributed Control System

[4] It may be noted that a computerized DCS recording system has been installed in June 2008 to record the limekiln inlet gas flow data.

Table A.3: Summary of monitoring and recording procedure:

Parameter	**Monitoring method**	**Recording**	**Data for CER calculation**	**Remarks**
Digester outlet gas flow	Measured	Measured data recorded in **gas plant log book.**	Measured data recorded in gas plant log book is used	
Flare inlet gas flow	Measured	Measured data recorded in **gas plant log book.**	Measured data recorded in gas plant log book is used	
Lime kiln inlet gas flow	Measured and Calculated	Measured data recorded in **lime kiln log book.** Calculated data recorded in **gas plant log book.** Calculated as: (Limekiln inlet flow = Digester outlet flow – Flare inlet flow).	Calculated data recorded in **gas plant log book** is used.	Difference between calculated and measured data is only 0.6%. **Measured data is being used in revised monitoring report being submitted.**

It may be clear from the above that the purported accuracy of readings is as a result of the data recording practice followed and not because of any estimation. We regret if the above method of data recording has lead to any misinterpretation and would ensure that only the measured data is recorded hereafter. A revised monitoring report with a revised CER calculation sheet and monitoring report are being submitted considering the measured data of limekiln inlet gas.

B. All flow readings are in multiples of 100s:

The quantity of flows are recorded once in every shift (i.e., once in 8 hours) by the shift operator and also cumulated to arrive at the day's quantity. The quantities of flow in each shift are to be recorded as follows:

Shift	Cumulative flow totaliser reading at end of shift	Cumulative flow totaliser reading at start of shift	Difference (Flow during shift) - To be recorded in log books
	M^3	M^3	M^3
A (6 AM to 2 PM)	349377	344200	5177
B (2 PM to 10 PM)	354234	349377	4857
C (10 PM to 6 PM)	358751	354234	4517
Total for day	358751	344200	14551

The above is the data to be recorded if the readings exactly at the starting and ending minute of the shift are to be considered. However, the above totaliser difference computation is done manually and the likelihood of computational error tends to increase with the increase in number of digits.

Therefore, for ease of calculations and to minimize the chance of errors, the shift operator waits for a few minutes till the reading becomes a multiple of 100 and then records the data as follows:

Shift	Cumulative flow totaliser reading at end of shift	Cumulative flow totaliser reading at start of shift	Difference (Flow during shift) –Is recorded in log books
	M^3	M^3	M^3
A (6 AM to 2 PM)	349400	344200	5200
B (2 PM to 10 PM)	354300	349400	4900
C (10 PM to 6 PM)	358800	354300	4500
Total for day	358800	344200	14600

This is the flow data actually recorded by the shift operator in log books. The average flow rate of gas is around 600 M^3/hr or 100 M^3 in every 10 minutes and therefore it is easy and convenient for

the operators to wait a few minutes till the flow reading reaches a multiple of 100 before recording the data. This practice also reduces the chance of computational errors by the operators. The only deviation is that a minor quantity of flow of the next shift (in the few minutes waiting time) would get recorded in the previous shift. However, this quantity would get balanced and would be negligible when taken for a year.

It may be clear from the above that the purported accuracy of readings is as a result of the data recording practice followed and not because of any estimation. We regret if the above method of data recording has lead to any misinterpretation and would ensure that the operators change their data recording procedures from "multiples of 100 to single digit recording".

TNPL is a reputed quasi-governmental corporate organization. Our annual records are also externally audited and published. The quantity of biogas generated is verified and published in our annual reports. We are anxious that our intention of minimizing the data errors could give the impression of a deed of misrepresentation. We hope that our above clarifications address your queries satisfactorily. We would be glad to furnish any further documents or data on this important matter.

Query 2:

As RIT member pointed out, the three flow rates are questionable even though they claimed it have been monitored but too accurate to believe. More clarification is required.

Response:

Since the query 2 dwells on the same issue as the query 1, our response to query 1 would address query 2 also.

Query 3:

As RIT member pointed out, the three flow rates are questionable even though they claimed it have been monitored but too accurate to believe. More clarification is required.

Response:

Since the query 3 dwells on the same issue as the query 1, our response to query 1 would address query 3 also.

****

We would be glad to provide any further clarifications on this important matter.

Yours truly,

For Tamil Nadu Newsprint and Paper Limited

(Mr.T.V.V. Satyanarayana)

Authorized Signatory