DET NORSKE VERITAS
Certification AS
Climate Change Services
Veritasveien 1
NO-1322 Høvik
Norway
Tel: +47-6757 9900
Fax: +47-6757 9911
http://www.dnv.com
NO 945 748 931 MVA

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

Att: CDM Executive Board

Your ref.:	Our ref.:	Date:
CDM Ref 1890	MLEH/KCHA	20 October 2008

Response to request for review "Biomass based Hot Air Generation at Fertilizer Unit of Tata Chemicals Ltd., Haldia, West Bengal" (1890)

Dear Members of the CDM Executive Board,

We refer to the requests for review raised by three Board members concerning DNV's request for registration of the "Biomass based Hot Air Generation at Fertilizer Unit of Tata Chemicals Ltd., Haldia, West Bengal" (1890)" project and would like to provide the following initial response to the issues raised by the requests for review.

Comment 1: The DOE is requested to further clarify the unit cost of energy, in particular, cost of coal and biomass representing the actual price at the time of investment decision.

DNV Response:

DNV would like to state that the detailed calculation for the unit cost of energy (as provided in Appendix-I attachment to this response) along with the evidences for the input parameters have been evidenced by DNV during the validation process.

The project was approved for installation in January 2006. The project proponent was prior to the installation of the project activity operating a furnace oil fired hot air generator (HAG), and was envisaging revamping the HAG to fire solid fossil fuels due to economic reasons. Thus the project proponent first thought of installing a coal-fired HAG and accordingly proposals were sought from suppliers of coal (attached as annex-1 in this response). The price of coal as used in the unit cost calculation is the average price of coal as sourced from the proposals of S. T Corporation (dated 5 June 2004) and Modern Services (dated 28 October 2004). The net calorific value of coal used in the calculation is the average of the useful heating values as sourced from the test reports of R.V. Briggs & Company Private Limited, (government recognized laboratory) on the coal samples of S. T. Corporation. The proposal obtained for the coal and the test reports are attached as annex-1 in this response.

Similarly, when the project proponent thought of using rice husk instead of coal, proposals were invited from suppliers of biomass suppliers as well. The average price of biomass that has been used in the unit cost calculation has been validated from the proposals received from I.K Enterprises (dated 8 August 2005) and Shyamal Kumar Das (dated 9 August 2005). The husk price provided by another supplier M/s M. N. Sultana Enterprise dated 5 July 2005 was not considered since the price provided was slightly higher than that provided by the other two suppliers and was not representative. The proposals received are attached as annex-1 of this response.

Hence DNV would like to reiterate that the price of coal and biomass and the corresponding useful heating value used in the calculations represents the actual values available at the time of investment decision.

Comment 2: The DOE is requested to provide further clarification on how it has been validated that coal-fired-HAG is the baseline scenario and not the furnace oil, used previously.

DNV Response:

As stated in the validation report, in the pre-project scenario, the project proponent was using furnace oil for the generation of hot air. However due to the increasing cost of FO, the project proponent decided to switch from furnace oil to coal which was identified as a cheaper alternative. DNV has validated coal-fired HAG as the most likely baseline scenario as good quality of coal is abundantly available in the region at a cheaper rate than furnace oil. It has also been validated by DNV that coal was the most economically attractive option compared to biomass and in the absence of the project, coal would have been used in the plant. The applied methodology clearly states that the baseline scenario is the scenario which would have been there in the absence of the project activity. Since the project proponent was already considering the switching to coal from furnace oil due to economical reasons and would have invested in retrofitting the HAG to firing solid fuels in the absence of the proposed CDM project activity, therefore the selection of coal-based HAG as the baseline scenario is justified. The selection of coal as the baseline scenario is further substantiated by the unit energy cost of hot air generation using coal, biomass and furnace oil at 736.42 INR/Gcal, 1 535.09 INR/Gcal and 2 136 INR/Gcal respectively.

DNV has verified all the supporting documents to arrive at the above conclusion. The detailed unit cost calculation has been provided as Appendix-I to this response.

Comment 3: The DOE is requested to further explain not meeting the methodology requirements, in particular, (a) baseline emissions not calculated as required; and (b) the validation of the technology's efficiency for the baseline based on only one supplier's technical information.

DNV Response:

DNV would like to reiterate and clarify that the baseline emissions have been calculated as per the methodology only. As per the methodology, the emission reductions are to be calculated as:

$BE_y = HG_y * EF\ CO_2 / \eta_{th}$

For *ex-ante* estimations, the equation mentioned in the PDD is:

$$BE_y = Q_B \times \frac{NCB_B}{NCV_C} \times \frac{\eta_{HA}}{\eta_C} \times EEF_C$$

Where;

Q_B: Amount of biomass combusted

NCV_b = Net Calorific value of biomass (Kcal/kg)
NCV_c = Net Calorific value of coal (Kcal/kg)
η_{HA} = Efficiency of the Hot Air Generator used in project scenario (%)
η_c = Efficiency of the coal based Hot Air Generator used in baseline scenario (%)
EEF_c = Effective Emission factor of coal (tCO_2/tonne of Coal)

This is the same equation as mentioned in the methodology in a different form since,

$$Q_B \times NCV_B \times \eta_{HA} = HG_y$$

$$\frac{EEF_C}{NCV_C} = \text{EF } CO_2$$

$\eta_{th} = \eta_C$

Thus the equation as mentioned in the PDD is the same equation as mentioned in the methodology.

Further since fossil fuel is fired in the project activity, as per the provisions of paragraph 18 to 22, the emission reductions have been calculated considering the amount of coal fired in the project scenario and the specific fuel consumption for biomass and coal. Please refer to the detailed calculation spreadsheet attached as Appendix-II to this response.

For the *ex-post* calculation of emission reductions, the heat generated by the HAG will be calculated as:

$$HG_y = F \times D \times Sp \times OP_{hours} \times \Delta T$$

Where,
F: Flow rate of hot air (Nm^3/hr)
D: Density of hot air (g/cc)
Sp: Specific heat of air (Kcal/kg-^{0}C)
OP_{hours}: Operating hours of the HAG (hours)
ΔT: Temperature gain of hot air in the HAG (^{0}C)
The heat generated from the use of coal as fuel will be deducted from the measured heat generation. The minimum of this calculated heat generation and the heat generation from using the specific fuel consumption of biomass and fuel consumption of biomass, will be used to calculate the emission reductions.

The validation of the technology's efficiency has been based on the efficiency value provided by two suppliers only as required by the methodology. The efficiency value has been validated from the documents of Energy Products and Services and Radhe Engineering. Both the technology providers guarantee an efficiency value of 95%. Hence this value has been used in the emission reduction calculations. The efficiency value provided by Energy Products and Services and the *ex-post* calculation of the heat generation have now been referenced in the revised validation report.

Comment 4: The monitoring plan should include parameters that are required as per the monitoring methodology (e.g. consumption of coal calculated ex-ante; and thermal energy generated)

DNV Response:
As mentioned in the response to comment 3 above, the thermal energy generated *ex-post* will be calculated from several parameters. All these parameters are already included in the monitoring plan. However, *ex-ante* calculated value of coal consumption, specific thermal energy generation

from coal and biomass in the PDD have now been included by the project proponent in the revised PDD.

We sincerely hope that the Board accepts our aforementioned explanations.

Yours faithfully
for DET NORSKE VERITAS CERTIFICATION AS

Michael Lehmann
Technical Director
International Climate Change Services

C Kumaraswamy
Manager
Climate Change Services

Annex-I

: 033-242-1949
: 03224-73780

S.T. COMMERCIAL CORPORATION

HEAD OFF : 36, N. S. ROAD,
KOLKATA - 700001

BR. OFF.: DURGACHAK INDUSTRIAL HOUSING ESTATE
EH/E-10 DURGACHAK, HALDIA, MIDNAPORE

05-06-2004

Ref. No.....

Date .....

To
The Purchase Manager.
TATA Chemicals Ltd.,
Durgachak, Haldia.

Kind Attn.: Mr. Rajib Neogi.

Dear Sir,

As per our verbal discussion, I am sending herewith the analysis report of 3-nos. coal sample marked as SB, K, MM.

We, also sending the rate of above marked coal respectively.

Particulars	SB	K	MM
Fixed carbon	42.80 %	40.82 %	35.80 %
Volatile Matter	21.87 %	20.70 %	21.20 %
Ash	34.26 %	37.72 %	42.12 %
Moisture	1.07 %	0.76 %	0.88 %
Useful Heat Value (Kilo Cal/Kg.)	4024	3590	2966
Gross Calorific Value (By BOMB Kilo Cal/Kg.	5220	4945	4482

	Basic Rate	Freight	Total
1) SB -	Rs. 2100/MT	Rs. 550/MT	Rs. 2650/MT
2) K -	Rs. 2100/MT	Rs. 550/MT	Rs. 2650/MT
3) MM -	Rs. 1950/MT	Rs. 550/MT	Rs. 2500/MT

Thanking you,

With regards,
For S. T. COMMERCIAL CORPORATION

(SUMAN SARKAR)

FROM : MODERN SERVICES CALCUTTA PHONE NO. : 91 33 3595571 Oct. 29 2004 12:14AM P01

MODERN SERVICES

HANDLING AGENTS & TRANSPORTER OF COAL & COKE
135A, Biplabi Rash Bihari Basu Road, 3rd Floor, West Gate, Kolkata - 700 001
Phone : 2242-9744/2164, Fax : 91-33-2359-3571

Tata Chemicals Ltd.
PO. Durgachak, Haldia,
East Midnapur,
West Bengal : 721 602

Date : 28.10.2004

Kind Attn : Mr. H.U.Doshi (Senior Mfg. Mgr)

Dear Sir,

We thank you for the kind courtesy extended to the undersigned on his visit to your office on 16.10.2004.
As desired we are furnishing our proposal for supply of sized coal (0 - 6 mm) for your plant Haldia.

Specification	:	3650 4300 GCV Avg. Range (At 60% humidity & 40°C)
2. Size	:	0mm - 6 mm (tolerance of 10% oversize & undersize)
3.Quantity Offered	:	300 M.T.
4.Price	:	Rs.2070/- per M.T. free deliverd Haldia Plant excl.unfonding .
5. Weighment	:	Weighment of the trucks at your plant on a valid certified weighbridge will be treated as the final weight & will form the basis of billing Payment.. Cost of the weighment will be borne by you.
6.Quality Control	:	In this respect we would like to emphasis, being mineral *commodity our best effort is to deliver you* [illegible] immediately for doing the needful action (if possible prior to unloading of the loaded material) .
7.Delivery Schedule	:	*10 days from the date of receipt of written order.*
8.Payment	:	Full payment within 7 days from the date of delivery of *materials.*
9. Revision of Prices	:	Rates are subject to increase /decrease with change in prices of coal, diesel or statutory levies incl. Octroi etc. as per imposition by state/central govt.
10. Validity	:	15 days from the date of issue.

The above offer is furnished as per present market condition which is subject to change with change in market scenario.
Assuring you of our best professional services at all times.

Yours truly
For Modern Services

P. Kajaria

(P.Kajaria)

ANALYTICAL CHEMISTS
9, BENTINCK STREET, KOLKATA-1
POST BOX NO. 279

Telegrams :
"ANALYTICAL KOLKATA"
Fax : 33-2248-0447

(GOVERNMENT RECOGNISED)

Telephones :
2248-
e-mail :

Certificate of Examination

SAMPLE NOT DRAWN BY US

We hereby certify that a sample of "COAL" contained in ... SUBMITTED to us on the 14/05/04 by M/s. S.T. CORPORATION, Haldia, ... has been analysed with the following results :—

Analysis on 72 mesh sample equilibrated at 40°C ±2°C and 60% Relative Humidity for 72 hours (inherent)

Fixed Carbon	...	42.80 %
Volatile matter	...	21.67 %
Ash	...	
Moisture	...	1.07 %
		100.00
Useful Heat Value (Kilo Cal/Kg.)	-- 4024	
Gross Calorific Value (BY BOMB) Kilo Cal/Kg.	.. 5220	

REMARKS : The above described sample consists of Grade "E" non-coking Coal as per Notification of Ministry of Energy (Department of Coal) New Delhi, 13th February 1996.

MARKED : S.B.
Date of Sub: 14/5/04.

(K.P. DE)
TECHNICAL DIRECTOR

SEALED : NIL

AK:

...5479

May 20, 2004.

R. V. BRIGGS & Co. PRIVATE LTD.

ANALYTICAL CHEMISTS
9, BENTINCK STREET, KOLKATA-1
POST BOX NO. 279

Telegrams : "ANALYTICAL KOLKATA"
Fax : 33-2248-0447

(GOVERNMENT RECOGNISED)

Telephones : 2248-3681
2248-2069
e-mail : rvbriggs @ sify.com

Certificate of Examination

SAMPLE NOT DRAWN BY US

We hereby certify that a sample of ..... "COAL" ..... contained in a Packet,
..... SUBMITTED to us on the 14/05/04. by M/s. S.T. COMMERCIAL
CORPORATION, Haldia, ~~Kolkata~~, has been analysed with the following results :—

Analysis on 72 mesh sample equilibrated at 40°C
±2°C and 60% Relative Humidity for 72 hours
(inherent)

Fixed Carbon	...		40.82 %
Ash	...		51.42 %
Moisture	...		0.76 %
Useful Heat Value (Kilo Cal/Kg.)	...	3590	100.00
Gross Calorific Value (BY BOMB) Kilo Cal/Kg.	..	4945	

REMARKS : The above described sample consists of Grade "E" non-coking Coal as per Notification of Ministry of Energy (Department of Coal) New Delhi, 13th February 1981.

MARKED : 'K'
Date of Sub: 14/05/04.

(K.P. DE)
TECHNICAL DIRECTOR

SEALED : NIL

AK:

5280

May 20, 2004

R.V. BRIGGS & Co. Pvt. Ltd.

POST BOX NO. 279

Telegrams : ALYTICAL KOLKATA
Fax : 33-2248-0447

(GOVERNMENT RECOGNISED)

Telephones : 2248-
2248-
e-mail : rvbriggs@sify.

Certificate of Examination

SAMPLE NOT DRAWN BY US

We hereby certify that a sample of "COAL" contained in a Packet,
SUBMITTED to us on the 14/05/04, by M/s. S.T. COMMERCIAL
CORPORATION, Haldia, has been analysed with the following results :—

Analysis on 72 mesh sample equilibrated at 40°C
±2°C and 60% Relative Humidity for 72 hours
(Inherent)

Fixed Carbon	...	35.80 %
Volatile matter	...	21.20 %
Ash	...	42.12 %
	...	
		100.00
Useful Heat Value (Kilo Cal/Kg.)	-- 2966	
Gross Calorific Value (BY BOMB) Kilo Cal/Kg.	.. 4482	

REMARKS : The above described sample consists of Grade "F" non-coking Coal as p
Notification of Ministry of Energy (Department of Coal) New Delhi, 13th February 1981.

(K.P. DE)
TECHNICAL DIRECT

MARKED : M.M.
Date of Sub: 14/5/04.

SEALED : NIL

AK:

May 20, 2004

IKE
I. K. ENTERPRISES
ENGINEERING
Mob. : 9332936487
9733630198, 943464169
BRANCH OFFICE :
Baishnabchak Bazar.
Chiranjibpur, Haldia
H.O. : Quarter No. EF/F2, Industrial Housing Estate, Haldia, Purba Medinipur-721602, W.B.

Ref. No. ..... Date 08:08:2005

To
The Asst. purchase Manager
TATA chemicals ltd
Durga chak. Haldia

Sub:- Quotation for supply of Rice Husk

Dear Sir,

With your Reference to your enquiry we Quotation our current lowest Prices subject to terms mentioned below.

Sl. No	Description	unit	Rate	Amount
1.	Rice Husk Rate Per M-T		3500/P.M-T	

Net calorfic value 2400 Kcal/kg

Thanking you
yours faithfully
[illegible]

Mob. - 9434161169
Ph. – (03224) 273593

SHYAMAL KUMAR DAS

General Order Supplier

Basudevpur, Khanjanchak, Durgachak, Haldia, Purba Medinipur - 721602. W.B.

Ref no - - - - -

Date - 9-8-2005

To

The Asst. Purchase Manager
Tata Chemicals Ltd.
Durgachowk, Haldia

Sub :- Quotation for Supply of Rice Husk

Dear Sir,

This has reference to your Purchase enquiry for Supply of Rice Husk for use as fuel for industrial purposes.

I want to Supply These material as per your requirement.

The following Instruction below:-

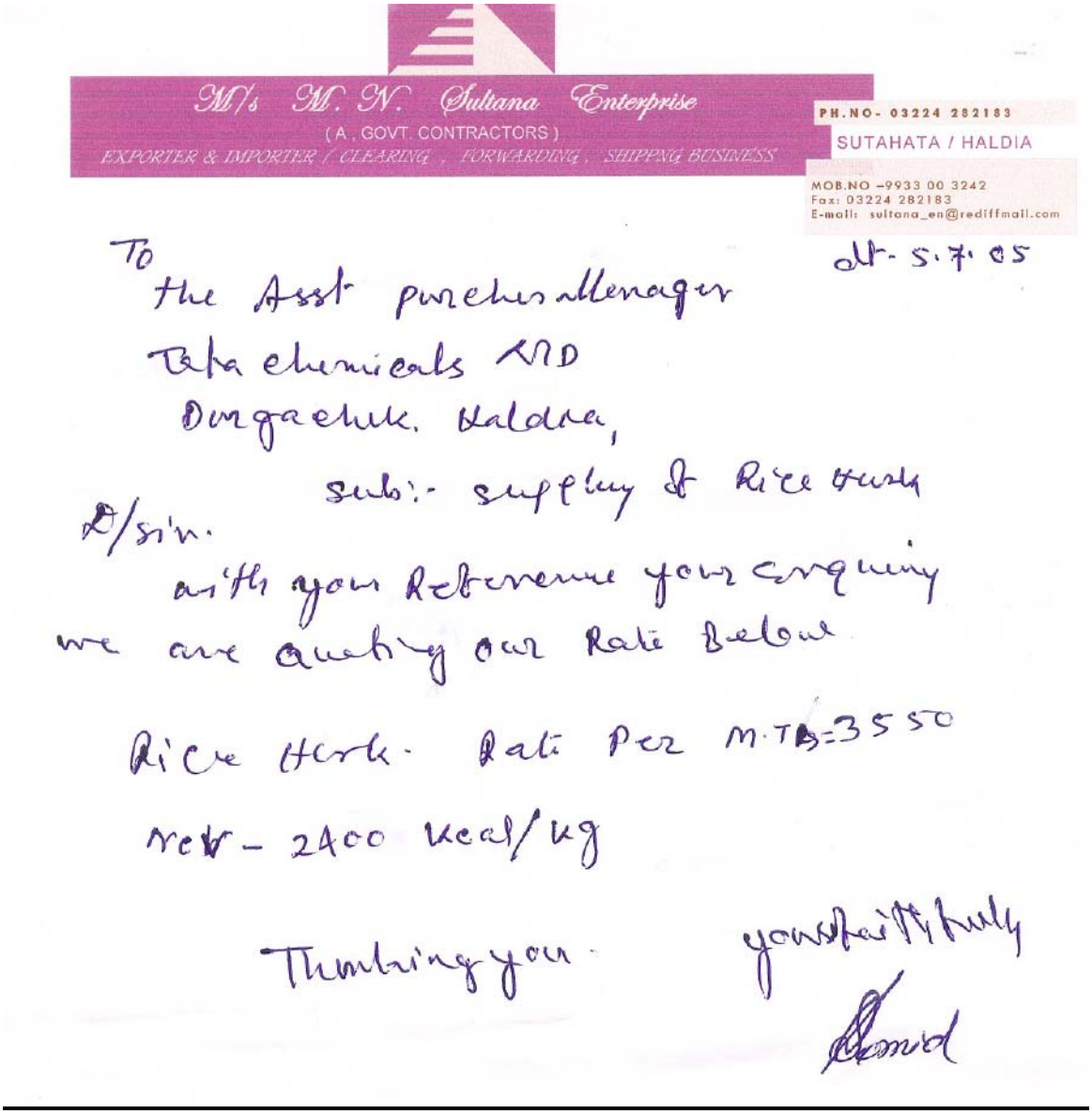
SL.NO	Description	unit	Rate	Amount
1.	Rice Husk Rate Per M.Ton		3500/Per M/Ton	

2400 K cal / Kg -
Net cal value

Thanking you

your faithfully

SKDas



M/s M. N. Sultana Enterprise
(A . GOVT. CONTRACTORS)
EXPORTER & IMPORTER / CLEARING , FORWARDING , SHIPPING BUSINESS

PH.NO- 03224 282183
SUTAHATA / HALDIA
MOB.NO -9933 00 3242
Fax: 03224 282183
E-mail: sultana_en@rediffmail.com

dt- 5.7.05

To
the Asst purchase Manager
Tata chemicals LTD
Durgachak. Haldia,

sub:- supply of Rice Husk

D/sir.

with your Reference your enquiry we are quoting our Rate Below

Rice Husk. Rate Per M.T=3550

Net- 2400 Kcal/kg

Thanking you.

yours faithfully