JQA

June 18, 2008

CDM Executive Board
The UNFCCC Secretariat
Martine Luther King Strasse 8
P.O. Box 260124, D-53153, Bonn Germany
Attention: Mr. Kai-Uwe Barani SCHMIDT

Initial comments by JQA on the request for review
"A power generation project using waste heat from the Coke Dry Quenching (CDQ) equipment in China" (Ref. 1625)

Dear Mr. Kai-Uwe Barani SCHMIDT,

We hereby respond to the request for review on "A power generation project using waste heat from the Coke Dry Quenching (CDQ) equipment in China" to achieve the immediate registration of the proposed project activity by the decision of the next EB meeting.

Yours sincerely,

Matsuno

Tsutomu Matsuno
Senior Executive
Japan Quality Assurance Organization

Initial comments by JQA on the request for review for:
“A power generation project using waste heat from the Coke Dry Quenching (CDQ) equipment in China” (Ref. 1625)

1. Further clarification is required how the DOE has validated the suitability of the benchmark.

JQA’s Response:

The benchmark is referred to “Economic Evaluation Method and Parameters of Construction Project, Third edition”, issued in 2006 by NDRC and Ministry of Construction. The value of the benchmark, 12% is for the investment in the sector of the production of organic chemistry materials and intermediates (No. 063), which applies to the coke production industry.

JQA regarded the document as the publicly authorized and the widely utilized in China. Therefore, the benchmark, 12% is considered appropriate for this project activity.

2. Further clarification is required how the DOE has validated the barrier analysis.

JQA’s Response:

1) Investment Barrier

<u>Huge initial capital investment</u>

The validation report states in page 11 “As compared with a similar project already registered as a CDM project, the amount of investment cost of the project activity is considered reasonable”, taking into account the differences of their power capacities of 12MW of this case to 25.5MW of Baotou Project (ref. 1281) and their total investments of 187.79 million Yuan of this case to 320.56 million Yuan of Baotou Project.

The financial statements of Antai Group Company are publicly available on the website as below.

According to the financial statements in 2004 when Antai Group Company decided the implementation of the CDM project activity, the liquid capital at hand accounted for 1210.73 million Yuan, while the current debt was exceeding it, 1508.58 million Yuan.

The amount of CDQ project initial investment was 187.79 million Yuan, and JQA considers the estimation appropriate that the amount of the liquid capital at hand cannot be used for the project initial investment. Furthermore, the investment recovery of the CDQ equipment is long-term comparing with the coke production plant and accompanied with unpredictable risk.

In view of Antai Group Company's financial situation, JQA acknowledged the investment barrier against this project activity, considering the initial investment amount of the CDQ project, 187.79 million Yuan as "Huge initial capital investment" for the company.

Profit and loss statement : http://share.jrj.com.cn/cominfo/lrfpb_600408.htm

Balance sheet : http://share.jrj.com.cn/cominfo/zcfzb_600408.htm

Low profitability

As mentioned in "Investment Analysis" of B.4. of the PDD, IRR without CERs is calculated as 8.21%, and it is very low compared to 12% of the benchmark, although the project activity needs a huge initial capital investment.

The value of benchmark above-mentioned is derived from the study on actual cases of project investment in China. Therefore, JQA considered the project activity as not low-hanging fruits due to "Low profitability".

Negative incentive

The weight loss caused by the CDQ treatment is likely to be around 4-5%, compared to the CWQ treatment. The amount of coke to be treated by CDQ and sold to external buyers will be 300kt/year in weight before the CDQ treatment. Consequently 4% of 300kt will be the weight loss.

JQA considered that the weight loss is disadvantageous to the company and also the negative incentive for Antai Group Company.

Difficulty in obtaining the bank loan

Through the investigation of statistics on the financial situation in China, JQA found the important points as bellow;

1) The share of private companies in the total short-term loan is 2.7%, very low in China, as shown in Table 1,
2) The share in Shanxi Province is 2.1% and lower than 2.7% in whole China as shown in Table 1, and
3) Not only the share of private companies in the total short-term loan but also the amount of loan money for private companies had decreased from 1999 to 2003, although the amount of short-term loan in China had increased by 30 percent at the same period, as shown in Table 2.

From the above-mentioned, JQA confirmed that the financial situation of Antai Group Company was severe to obtain the bank loan, taking into account that the project activity had the investment risk due to the "first of its kind" in the region and the long-term investment recovery.

Table 1 Comparison of short-term loans of financial institutions in 2006 between China and Shanxi Province

Year	**China**	**Shanxi Province**
Total short-term loan (100 million Yuan)	95,535	2,310
Percentage constituent (%)	100.0	100.0
Government-owned company (%)	49.7	47.6
Non government-owned company (%)	10.9	15.3
small village-owned company (%)	6.3	12.5
private company (%)	**2.7**	**2.1**
company in corporation with foreign capital (%)	1.9	0.6
Agriculture	13.4	21.8
Others	26.0	15.3

Source: National Bureau of Statistics of China, China Statistical Yearbook: 2007, p769; Shanxi Province Statistical Bureau, Shanxi Statistical Yearbook: 2007, p498

Table 2 Chinese financial institutions' short-term loans composition change

	1999	**2000**	**2001**	**2002**	**2003**
Total short-term loan (100 million Yuan)	63,888	65,748	67,320	74,248	83,661
Percentage constituent (%)	100.0	100.0	100.0	100.0	100.0
Government-owned company (%)	61.5	55.5	58.4	55.1	52.3
Non government-owned company (%)	15.2	14.9	15.7	14.2	14.0
small village-owned company (%)	9.6	9.2	9.5	9.2	9.2
private company (%)	**4.7**	**4.6**	**4.8**	**3.6**	**3.1**
company in corporation with foreign capital (%)	0.9	1.0	1.4	1.4	1.7
Agriculture (%)	7.5	7.4	8.5	9.3	10.1
Others (%)	15.8	22.2	17.4	21.4	23.6

Source: National Bureau of Statistics of China, China Statistical Yearbook

2) Technological Barrier

The process and the equipment of CDQ are described in details in A.4.3. of the PDD. Regarding the technological barrier, the validation report quotes the PDD's description that the CDQ penetration rate is very small, less than 3% in the case of small and medium sized companies with less than five million steel ton/year in China, and that CDQ installation is limited to state-owned steel companies. Further, the validation report quotes that the proposed project activity would be the first CDQ installation by a private company in Shanxi Province.

While it is described in “Technological Barrier” in the PDD that the more complicated civil works and operation skills are required for the CDQ technology, Table 3 summarized the comparison between CWQ and CDQ in details. JQA confirmed the significant technological barrier against CDQ.

Table 3　CWQ and CDQ comparison: from construction to operation

	CWQ	**CDQ**
Civil Work	Only Quenching towers built in brick.	Quenching towers, boiler chambers and power generation plants.
Equipment Installment	Simple equipment for water spraying and baffle plates against the flow of powder coke.	Quenching towers, boiler chambers, steam turbines, power generators, dust collectors, blowers, etc.
Process	Simple process. Cooling of red-hot coke taken out of the coke ovens in the quenching tower through water spraying treatment.	Complicated process. 1. Bring red-hot coke taken out of the coke ovens up to the upper part of quenching tower for charge. 2. Heat inactive gas by cooling coke and generate steam by hot inactive gas in boiler. 3. Supply steam into turbine and generate electricity. 4. Preheat water for boiler through heat exchanger with exhaust gas from boiler.
Operational Knowledge	Simple process requires no special operational knowledge.	Need to supply coke uniformly to upper part of quenching tower and to supply cooled gas to lower part through heat exchanger. Expertise is necessary for boiler control, power generator operation, and heat exchange.

3. Further clarification is required how the DOE has validated the start date of the project activity.

JQA's Response:

The validation report states in page 10 "The starting date of the project activity was revised to 9 October 2004, based on the correspondence between the President of Shanxi Antai Group Holding Co., Ltd. and a professor of Tohoku University".

The correspondence signed by the President of Shanxi Antai Group Holding Co., Ltd., stated that Antai Group Company decided the implementation of the project activity as a CDM project.

Considering the definition of start date of the project activity as "the earliest date at which either the implementation or construction or real action of a project activity begins" shown in "Glossary of CDM terms (Version 03)", the PDD set the start date of the project activity at 9 October 2004.

The main timeline after 9 October 2004 is given below.

04/2005	The EIA report of the project activity was prepared.
20/06/2005	Approval letter [2005] No.185 for EIA report on the CDQ project of Antai Group issued by Environmental Protection Department of Shanxi Province.
03/2007	Foundation work started.
27-28/09/2007	Local stakeholder interviews were conducted.
19/11/2007	Approval letter [2007] No.711 for the continuation of the approval letter [2005] No.185 issued by Environmental Protection Department of Shanxi Province.

After the start date of the project activity, PPs prepared the EIA report and applied for its approval, and implemented foundation work. JQA confirmed that the project activity as CDM was seriously considered by PPs through the correspondence.

4. Further clarification is required how the DOE has validated the prior consideration of CDM.

JQA's Response:

The original PDD set the start date of the project activity at 1 July 2007. However, taking into account the prior consideration of CDM and the definition of the term in "Glossary of CDM terms", 9 October 2004 when the correspondence showing the decision of the implementation of the project activity as CDM was sent, was set as the start date of the project activity.

5. Further clarification is required how the DOE has validated the baseline determination, in particular that the continuation of grid electricity imports and use of existing captive power plants is a more economically attractive alternative than the project activity undertaken without CDM.

JQA's Response:

The validation report describes "While six alternative baseline scenarios are given in the methodology, alternative scenario (d) is chosen as a baseline scenario in the PDD. A mix of "(b) Import of electricity from the grid" and "(c) Existing or new captive power generation on-site" is considered the most economically attractive alternative."

As shown in "IRR calculation for Antai CDQ project" attached to the PDD, the value of the outflow cash (992,21 million Yuan) including investment of fixed assets, cash flow, operating cost and taxes divided by electricity generated per year (84 GWh) is 596.56 Yuan/MWh, a little higher than the price of electricity imported, 538.43 Yuan/MWh. Considering the capital procurement cost including the interest, the investment risk and the operating risk due to the technological barrier, JQA judged that scenario (d) is much more economically attractive than scenario (a).

6. Further clarification is required how the DOE has validated the emission factor of captive power plants, in particular the carbon emission factors of coke oven gas, blast furnace gas and coal waste.

JQA's Response:

The three-year (2004-2006) average of the emission factors of captive power plants is "2.0637 kg-CO_2/kWh" shown in Table 13 in page 29 of the PDD.

Antai Steelworks has measured the amounts of fuel consumption for each captive power plant. PDD calculates the CO_2 emission factors based on the actual analysis of the carbon contents of each fuel as shown in Table 12 in page 28 of the PDD, and estimates the amounts of CO_2 emission by multiplying the amounts of fuel consumption by the CO_2 emission factors.

And also Antai Steelworks has measured the amounts of generated electricity for each generator of captive power plants. PDD calculates the averaged emission factor of captive power plants, by dividing the three-year total amount of CO_2 emission by the three-year total amount of generated electricity.

The values of the actual analysis of the carbon contents of each fuel such as Coke Oven Gas (COG)、Blast Furnace Gas (BFG) and Coal Waste (CW), are measured in the laboratory of Antai Group Holding Co., Ltd. To ensure the both stability of blast furnace operation and the quality of the products, the constant quality and stable

conditions of the coal consumed in Antai steelworks have maintained. Consequently the carbon contents of COG, BFG and CW produced as by-products have been also constant. JQA considered the values reasonable, comparing with the representative values of COG and BFG, and the typical values of CW as shown in Table 4 and 5 below.

GB10410-1989 is the national standard applied to the analysis of the carbon contents of COG and BFG, and GB/T212-2001, GB/T213-2003 and GB/T 478-2001 are applied to CW.

The measuring instruments of fuel consumption and generated electricity, their specifications, measuring sites and the national standards applied to the measurements were confirmed by JQA as shown in Table 6 below.

JQA judged that the monitoring, the analysis and the calculation of the emission factors of captive power plants were implemented appropriately.

In addition, the amount of electricity generated by each captive power plant was including the in-plant electricity consumption by captive power plant itself. The averaged emission factor of captive power plants, "2.0637 kg-CO_2/kWh" is smaller than the emission factor of captive power plants based on the amount of net generated electricity. Therefore, JQA confirmed that "2.0637 kg-CO_2/kWh" is conservative and leads to an underestimation of emission reductions.

Table 4 Composition analysis results on Coke Oven Gas and Blast Furnace Gas, Comparison of Antai analysis figures and representative figures

	CO	**CO_2**	**O_2**	**N_2**	**CH_4**	**C_2H_4**	**H_2**
Coke Oven Gas analysis figures [1)]	6.99	3.61	0.42	4.09	22.95	1.7	60.23
Blast Furnace Gas analysis figures [1)]	24	14.4	0.9	59	----	----	1.7
Coke Oven Gas representative figures [2)]	5~8	1.5~3	0.3~0.8	3~7	23~27	2~4	55~60
Blast Furnace Gas representative figures [2)]	23~27	15~19	0.2~0.4	55~60	0.2~0.5	-----	1.5~3.0

1) Antai analysis

2) Textbook for university, Metallurgy Industry Publishing Company; "Coke Manufacturing Engineering" p.254

Table 5　Comparison of calorific values of coal wastes from Antai and other company in Shanxi

	ash (dry base)	volatile (dry base)	fixed carbon (dry base)	total	water content (%)	calorific value (kcal/kg)
Antai analytical figures[1)]	45.03	16.38	38.59	100.0	5.9	4164
Typical figures[2)]	42.6	10.5	46.9	100.0	3.3	4330

1) Antai analysis

2) New Energy and Industrial Technology Development Organization, “coal waste and coal gas premixed combustion technology” P85, publicly available at http://www.tech.nedo.go.jp/WWWROOT/HOKOKUSYO/DOWNLOAD/01001886560.pdf

Table 6　Instrument, accuracy and national standard for measuring by gas flow meter and coal waste scale

Generator	Name	Model Number	Measurement Accuracy	Standard
1#	gas flow meter	SBL-CQ400CCIXN	1.5[1)]	Q/BET05-2006
	Electricity meter	DssD666	1	DL/T614-1997
2#	gas flow meter	SBL-CQ400CCIXN	1.5[1)]	Q/BET05-2006
	Electricity meter	DssD666	1	DL/T614-1997
3#	belt scale[2)]	XK-3101	0.5	GB/7721-1987
	Electricity meter	DssD666	1	DL/T614-1997
4#	belt scale[2)]	XK-3101	0.5	GB/7721-1987
	Electricity meter	DssD666	1	DL/T614-1997
5#	gas flow meter	XMJ5266V	1.5[1)]	GB/2624-1993
	Electricity meter	DS864-2	1	GB39243-83
7#	Electricity meter	DssD50	0.2	DL/T614-1997, DL/T17883-1999
	gas flow meter	PDS443H-1DSO-A1DN1Z	—	GB/T2624-1993
	orifice flow meter	LGBQ-C	COG：±0.69	
			BFG：±0.68	

※COG: cokes oven gas,　BFG: blast furnace gas

1) Gas flows of COG and BFG are measured, with the same accuracy.

2) Scale for measuring coal waste weight