
Validation Report

Client: Marubeni Corporation

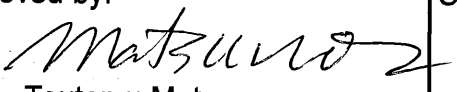
“Ningxia Yinchuan No.1 Natural Gas
Cogeneration Project”

Project No. JQA-C0087

Date: 26 February 2009



JAPAN QUALITY ASSURANCE ORGANIZATION

Date of issue: 26 February 2009	Project No. JQA-C0087
Approved by:  Tsutomu Matsuno	Client: Marubeni Corporation

Summary:

This is the Validation Report of the project activity "Ningxia Yinchuan No. 1 Natural Gas Cogeneration Project". JQA contracted with Marubeni Corporation for validation. This project activity involves the cogeneration system that consists of a 51MW gas turbine generating unit, a waste heat boiler and a 13MW steam turbine generating unit. The approved baseline and monitoring methodology, AM0029 Version 02 "Baseline Methodology for Grid Connected Electricity Generation Plants using Natural Gas" and "Grid Connected Electricity Generation Plants using Non-Renewable and Less GHG Intensive Fuel" are applied.

Japan Quality Assurance Organization (JQA) as a DOE conducted the validation on the basis of UNFCCC, Kyoto Protocol and relevant decisions of COP/MOP and CDM-EB. It was confirmed through the Desk Review and the Site-visit that the application of AM0029 Version 02 to the proposed project activity is appropriate and the additionality is appropriately demonstrated and assessed in accordance with the methodology and the Tool.

The estimated annual average of emission reductions in tons of CO₂ is 49,041 t-CO₂e/year.

The project activity meets all relevant criteria. JQA concludes that the project activity is valid as a CDM project activity.

Report No : JQA-C0087-VaR (Ver 02.1)	Title: Ningxia Yinchuan No. 1 Natural Gas Cogeneration Project
Assessed by : Team Leader: Itaru Watanabe Member : Toshimizu Okada	Verified by: Leader: Mr. Shigenari Yamamoto Member: Dr. Hiroshi Kuribayashi Dr. Takahisa Yokoyama

Abbreviations

BM	Build Margin
CAR	Corrective Action Request
CCChina	Clean Development in China
CDM	Clean Development Mechanism
CDM-EB	CDM Executive Board
CER	Certified Emission Reduction
CL	Clarification Request
CM	Combined Margin
COP	Conference of the Parties
COP/MOP	Conference of the Parties serving as the Meeting of the Parties
DRC	Development and Reform Commission
DNA	Designated National Authority
EIA	Environmental Impact Assessment
EPB	Environmental Protection Bureau
FAR	Forward Action Request
ERPA	Emission Reduction Purchase Agreement
FSR	Feasibility Study Report
GHG	Greenhouse Gas
GWP	Global Warming Potential
JQA	Japan Quality Assurance Organization
LoA	Letter of Approval
NDRC	National Development and Reform Commission (in China)
NWPG	North West Power Grid (in China)
OM	Operating Margin
PDD	Project Design Document
PP	Project Participant
QA/QC	Quality Assurance and Quality Control
SD	Sustainable Development
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Clean Development Mechanism Validation and Verification Manual

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1 INTRODUCTION

1.1 Objective

The objective of the validation is to review whether the project activity is in conformance with the requirements defined by the UNFCCC, the Kyoto Protocol, CDM Modalities and Procedures and related decisions by COP/MOP and EB. The most important thing to be confirmed is to achieve GHGs emissions reductions against the baseline in along with the host country's sustainable development policy.

1.2 Scope

The scope of this validation process is set as follows:

- a) Documentary
 - UNFCCC
 - Kyoto Protocol
 - Relevant decisions of COP/MOP and CDM-EB
 - AM0029 Version 02 "Baseline Methodology for Grid Connected Electricity Generation Plants using Natural Gas" and "Grid Connected Electricity Generation Plants using Non-Renewable and Less GHG Intensive Fuel"
 - Tool to calculate the emission factor for an electricity system (version 01)
 - Tool for the demonstration and assessment of additionality (Version 04)
 - PDD (Version 01(28/Mar/2008) – 04(13/Jan/2009))
 - Guidance on the Assessment of Investment Analysis (Version 02)
 - Guidance on the Demonstration and Assessment of Prior Consideration of the CDM
 - EB38/para54
 - CDM Validation and Verification Manual (Version01)
- b) Physical

The project site is located at Jinfeng District, Yinchuan City, Ningxia Hui Autonomous Region
- c) Organizational
 - Ningxia HANAS Natural Gas Thermal Power Co., Ltd.
- d) Temporal
 - The first crediting period of the project activity: 7 years (renewable).

1.3 GHG Project Description

- a) Project Participants:
 - Ningxia HANAS Natural Gas Thermal Power Co., Ltd.
 - Marubeni Corporation
- b) Non-Annex 1 Party : China
- c) Annex 1 Party : Japan
- d) Project Site : Jinfeng District, Yinchuan City, Ningxia Hui Autonomous Region, China
- e) Coordinates of the site: 106°16`E, and 38°27`N
- f) Starting date of the project activity : 15/May/2007
- g) Expected operation lifetime of the project activity : 20 years
- h) Starting date of the first crediting period : 01/Apr/2009 or date of registration (whichever is later)
- i) Length of the first crediting period : 7 years 00 month

- j) Project Technology : Combined cycle power generation by cogeneration system consisted of a 51 MW gas turbine, a 43.3 t/h waste heat boiler and a 13 MW steam turbine generating unit
- k) The estimated annual average of emission reductions in tons of CO₂:
49,041 t-CO₂e

1.4 Validation Team

The validation team was assigned on 28 April 2008 in accordance with the JQA CDM Quality Manual/ *Version 8(01/04/2008)*.

Team Leader	Itaru Watanabe	JQA Certified CDM Lead Assessor
Member	Toshimizu Okada	JQA Certified CDM Assessor

The sectoral scope (1: Energy industries (renewable - / non-renewable sources)) relating to the project is covered by the validation team leader. Certificates of the validation team members are attached (Appendix B).

The role and responsibility of the team leader is mainly to prepare the validation plan including the Desk Review, the Site-visit and related documentation and to manage the validation activities of the team. And the leader is responsible for preparing Desk Review Report, Site-visit Report and Validation Report that states the validation opinion and conclusion.

The role and responsibility of the member is to implement the Desk Review and the Site-visit including the investigation and collection of background information and interviews with the project participants and related stakeholders, and also to indicate potential CARs and/or CLs through the validation activities.

Itaru Watanabe, who is the team leader, is a chemical engineer and qualified as a lead assessor of CDM. Before entering this department he worked as a lead assessor for environmental management systems (ISO 14001) in the department of environmental management system. Since he was engaged in the validation of the Nubarashen LFG project in Yerevan, Armenia (Ref. No. 69), through which JQA was accredited the scope of (1) and (13), he has participated in several validations of registered CDM project activities relating to LFG recovery and power generation, manufacturing factory's energy efficiency and HFC23 decomposition.

Toshimizu Okada is a team member of the validation team. He has Master Degree of Forest Resources. He has experiences as assessor of ISO 14001 in JQA and as CDM assessor for small-scale renewable energy with biomass utilization and factory energy-efficiency improvement projects through CDM validation.

2 VALIDATION PROCESS

The validation process of JQA consists of the following phases:

- 1) Desk Review of the PDD,
- 2) Background Investigation with Site-visit for collecting the local information and interviewing with local governmental officials and stakeholders,
- 3) Preparation of the Validation Report after clarification requests (CLs), corrective action requests (CARs), if any.

The PDD shall be submitted to EB for inviting the public stakeholders' comments immediately after the check for the completeness of the PDD received and before validation. If JQA receives any public comments, the comments are informed to the

project participants and the CDM secretariat for uploading them on the UNFCCC website. The reports including the Site-visit report are prepared after the relevant documents/evidence are provided to the validation team.

In the validation, the CDM Validation Checklist is utilized as a tool. The checklist serves the following purposes:

- It organizes, details and clarifies the requirements that a CDM project is expected to meet; and
- It ensures the validator achieves a transparent and complete validation process and, as the result, contributes to enhance a high validation quality.

In case, any non-conformance is identified in the process, “CAR” (Corrective Action Request) or “CL” (Clarification Request) is marked in the checklists with comments.

CAR requires the project participants to take some corrective actions without fail, while CL indicates that it is desirable that the project participants take some corrective actions or provide relevant justification.

The validation process does not provide the project participants with any consulting service. If they take justifiable and appropriate corrective action for CAR and CL items, it will contribute to substantial improvement of the PDD.

Criteria for CAR or CL are as follows:

<CAR (Corrective Action Request)>

- a) Non-compliance with laws and regulations of the host country;
- b) Non-conformance with requirements defined by the UNFCCC, COP/MOP, Kyoto Protocol, Decision 3/CMP.1, EB; or
- c) Items, which would affect CER calculation significantly.

<CL (Clarification Request)>

- a) Insufficient description from the view of accuracy, reliability, completeness and /or consistency;
- b) Vague expressions

All correspondences by the PPs against the CARs and CLs are described in italics in the checklist with the validation comments.

2.1 Schedule

2.1.1 Validation Process

The process was implemented as follows:

- 13 May 2008: Start of GSP on the UNFCCC website
- 20 May 2008: Submission of the Desk Review Checklist
- 25 -29 May 2008: Site-visit to the project site
- 11 June 2008: End of GSP
- 24 October 2008: Submission of the Site-visit Report
- 08 December 2008: PDD Version 02
- 18 December 2008: PDD Version 03
- 09 January 2009: Validation Report (Version01)
- 13 January 2009: Certification Committee of JQA
- 13 January 2009: PDD Version 04
- 15 January 2009: Validation Report (Version02)
- 19 January 2009: Submission for request for registration
- 26 February 2009: Validation Report (Version 02.1)
- 26 February 2009: Resubmission for request for registration

2.1.2 Note on the Validation Schedule

The Desk Review Checklist was prepared and submitted to the project participants on 20 May 2008 during the GSP period, due to the Site-visit that was planned in the period. There was no comment received.

The Validation Report Version 02 was prepared based on the PDD version 04 and submitted for request for registration on 19 January 2009 (Reference Number: 2373). Having received the comment on “Baseline Emission Factors for Regional Power Grids in China” from NDRC on 09/02/2009 and taking into account the data availability at GSP of the PDD version 01, JQA decided to resubmit the PDD and Validation Report through communicating with the CDM team.

2.2 Desk Review of Documents

The Desk Review is conducted using the CDM Validation Checklist (Appendix A), which is prepared for a CDM project activity.

2.2.1 Purpose of the Desk Review

The main purposes of the Desk Review are as follows:

- Confirm the completeness of the PDD in accordance with the “Guidelines for Completing the PDD (CDM-PDD)” and “Glossary of CDM terms”
- Review the PDD in order to judge the conformity of the project activity against the requirements
- Collect information regarding the project activity from an independent source, if necessary
- Identify the issues at the Site-visit

And also, it focuses on:

- Justification and appropriateness of the baseline and monitoring methodologies for the proposed project
- Transparency and conservativeness of the assumptions for the baseline
- Technological, political, socio-demographic and environmental and legal aspects and trends relevant to the proposed project
- Additionality of the proposed project activity
- Appropriateness of the calculation of GHG emission reductions
- Responsibility and authority for monitoring, measurement and recording activities in the monitoring plan including quality control and quality assurance

2.2.2 Project Design Document

The validation team confirmed that the PDD is described in compliance with the relevant forms and the Guidelines/Version 07 and Glossary of CDM terms/Version04.

2.3 Background Investigations

The background investigations include the Site-visit to the project site and the interviews mainly with the key persons in the host country including local project participants and governmental officials.

On this process, the followings are investigated:

- SD policy in the host country including Environmental Impact Assessment
- CDM approval and authorization procedures by DNA
- Technologies related to the project activity in the host country

2.4 Resolution of Clarifications and Corrective Action Requests

The project participants are requested to resolve the CLs and CARs or and/or provide relevant justification by revising the PDD.

2.5 Internal Quality Control

The manager of Global Environmental Assessment Division organizes the validation team after considering the expertise of the project, the assessor qualification suitable for the technical and regional aspects of the project, and the knowledge of environmental laws and regulations in the host country. Through the validation process, the validation team establishes the draft validation report including draft conclusion. The team leader of the validation team submits the documents including the outline of the validation result and the conclusion of the team to the Certification Committee of JQA, as a function to ensure that the validation is appropriately carried out. The Certification Committee, upon receipt of the draft validation report from the team, deliberates appropriateness of the validation, procedures and the conformity with the VVM. It reports the result of judgment to the Senior Executive of JQA after having been reviewed by the management representative.

Finally the Senior Executive decides the validity of the project activity as DOE.

3. Validation Findings

There are six CARs pointed out in Table 2 of the CDM Validation Checklist.

- 1) Information on sub-critical and super-critical coal fired plant: CAR 1 (Checklist B.4)

The sub-critical and super-critical coal fired plants are listed as the alternative scenarios. However, the information was insufficient for the relevant assumptions and parameters for the calculation of levelized costs.

- 2) Efficiencies of the alternative 3-1 and 3-2: CAR2 (Checklist B.4)

- 3) Emission factors: CAR 3 (Checklist B.6.2)

Lower limit of the uncertainty at a 95% confidence interval for IPCC default values is not considered.

Finally the emission factor in the latest document published by Chinese DNA was adopted based on the instruction by Chinese authority.

- 4) Data and parameters monitored: CAR 4, 5, 6 (Checklist B.7.1)

The PDD version 01 listed only the data and parameters for monitoring the baseline emissions.

There were many CL issues, relating to the identification of the baseline scenario and additionality, etc. Issues are also pointed as “N/A” at the Desk Review.

They were confirmed through conducting the Site-visit, the observation of the project site, interviewing, as well as obtaining relevant documents/evidence followed by the visit. Issues were resolved and they were shown in the checklist.

The findings through the visits and interviews at Site-visit are follows:

- *The project boundary at the project site
- *EIA approval (January 2008) by Ningxia EPB (&Yinchuan EPB) based on F/S reports and approvals
- *Ningxia DRC as authority for official approval of the construction of the project activity,

- *The basic concept for clean energy and higher priority on environmental aspect, using natural gas
- *PPA to be signed during the test run for 3 months before operation (inspection by Yinchuan & Ningxia DRC)
- *The price in the PDD based on the document of the Price Department /Ningxia Cogeneration No.1&2 Process (with the condition of disulfide)
- *Supportive comments for the project activity by the local residents interviewed at the Site-visit

3.1 Approval and Participation

The project participants are Ningxia HANAS Natural Gas Thermal Power Co., Ltd. (China) and Marubeni Corporation (Japan).

3.1.1. Letter of Approval

The validation team has received the Letters of Approval issued by DNA of China and DNA of Japan from the project participants. The team confirmed;

- Letter of Approval (China): 25 June, 2008
- Letter of Approval (Japan): 01 August, 2008

The following items were confirmed.

- (a) China and Japan are Parties to the Kyoto Protocol
China has ratified the KP on 30 August 2002 and Japan has ratified it on 04 June 2002.
- (b) Statement of Voluntary participation in each Letters of Approval
- (c) In the case of the host Party, the proposed CDM project activity contributes to the sustainable development of the host country
- (d) LoAs refer to the same title in the PDD

And the letters of approval are unconditional with respect to (a) to (d) above.

There is no other issue raised in the LoAs. There is no doubt in their authenticities.

3.1.2. Participation

The validation team confirmed the approval of participation of the project participants through checking the LoAs. The DNA of China has issued a Letter of Approval that authorizes Ningxia HANAS Natural Gas Thermal Power Co., Ltd. as a project participant. The DNA of Japan has issued a Letter of Approval that authorizes Marubeni Corporation.

3.2 Project Description

A cogeneration system that consists of a 51MW gas turbine generating unit, a waste heat boiler and a 13MW steam turbine generating unit will be installed. Natural gas from Shaanxi-Gansu-Ningxia gas field are to be consumed by the project activity that is located in Jinfeng District, Yinchuan City, Ningxia. The power generated will substitute a part of power that would have been generated by Northwest Power Grid (NWPG) which is dominated by coal-fired power plants and thus reduces GHG emission.

Electricity generated by the proposed project will be delivered to Northwest Power Grid (NWPG) via Ningxia Power Grid. The annual power delivered to the grid will be 307,200MWh.

In the design process, the capacity of the project had gone through several changes and adjustments as follows:

- *The project (Phase I) was initially designed as 2*12.5MW gas turbine generating unit with 2*52t/h waste heat boiler cogeneration system in 2003. However, due to the increase of demand on electricity and heat using, the project owner decided to integrate Phase I project to Phase II project in year 2005, and the system was then designed as 1*50 MW gas turbine generating unit with 1*70t/h waste heat boiler.
- *Subsequently, the capacity of gas turbine had to be adjusted from 50MW to 51MW due to the production of equipment. Moreover, realized that if only adopting gas turbine, the portion of discharged gas and steam will be directly vented into air and result in the loss of heat and air pollution, the design institution optimized the capacity by installing a 13MW steam turbine generating unit combining with a 51MW gas turbine generating unit and a 43.30t/h waste heat boiler to improve the energy efficiency.
- *Thus, the FSR(2007) based on this combined cycle system was compiled and approved by local DRC, which is the ultimate design and used as data source for investment analysis in PDD. In table A4-1, the technique parameters of waste heat boiler is consistent with technical specification of waste heat boiler.

The estimated annual average of emission reductions to be achieved by the project activity will be 49,041 t-CO₂e.

The description was confirmed through checking the PDD and the supporting documents including the specifications of gas turbine, waste heat boiler and steam turbine generator, as well as through conducting the Site-visit to the project site and interviews with local stakeholders.

3.3 Baseline and Monitoring Methodology

3.3.1 Applicability of the selected methodology to the project activity

The original PDD was made publicly available from 13/May to 11/June/2008. The methodology and tools had been correctly applied, as follows:

- *Approved baseline methodology AM0029 – “Baseline Methodology for Grid Connected Electricity Generation Plants using Natural Gas” (Version 02);
- Approved monitoring methodology AM0029 – “Grid Connected Electricity Generation Plants using Non-Renewable and Less GHG Intensive Fuel” (Version 02);
- *“Tool to calculate the emission factor for an electricity system” (Version 01);
- *“Tool for demonstration and assessment of additionality” (Version 04).

The methodology AM0029/Version 02 sets three applicability conditions. The PDD explain the applicability to each bullet.

Condition 1: The validation team confirmed that the project activity is “the construction and operation of a new natural gas fired grid-connected electricity generation plant” through the visit to the project site where the construction of plant had started and the check of the layout of the project site.

Condition 2: “The geographical/physical boundaries of the baseline grid and information pertaining to the grid and estimating baseline emissions” were confirmed by checking the official data published by the DNA of China

Condition 3: The validation team confirmed the descriptions with references in the PDD, regarding “the sufficient availability of the natural gas for the projects comparable in size to the project activity, the size of natural gas reserve in the region and the current and future transmission capacities”.

Through the Desk Review and the Site-visit, the validation team confirmed that the methodology is applicable under all the conditions.

3.3.2 Project boundary

The validation team conducted the Site-visit to the project site and observed the physical site. Figure B3-1 “The emission sources included within the project boundary” was added.

3.3.3 Identification of the Baseline Scenario

The most plausible baseline scenario is identified in accordance with the methodology requirements.

Step 1: Identification of plausible baseline scenario

The following four alternatives are listed and analyzed.

- Alternative 1:
 - The proposed project activity not implemented as a CDM project;
- Alternative 2:
 - Power generation using natural gas, but technologies other than the proposed project activity (Gas single cycle power generation);
- Alternative 3:
 - Power generation technologies using energy sources other than natural gas (Sub-critical coal-fired power plant as Alternative 3-1, and Super critical coal-fired power plant as Alternative 3-2);
- Alternative 4:
 - Import of electricity from connected grids, including the possibility of new interconnections.

Although all four alternatives can provide the same level of services, alternatives 2 and 4 were excluded from the candidates of the plausible baseline by the following reasons:

- It is clear that Alternative 2 is less efficient than Alternative 1.
- Alternative 4 is not practical for the project participants (or project proponents) as the NWPG has no electricity imported from connected grids.

The technological information on Alternatives 1, 3-1 and 3-2 are listed in the table B4-1 of the PDD.

Step 2: Identification of the economically most attractive baseline scenario alternative

The levelized costs of remaining three alternatives (Alternative 1, 3-1 and 3-2) are calculated. In the calculation, the technical and financial assumptions and parameters are referred from reliable data source in China.

The sensitivity analysis is done for two key factors: load factor and fuel cost. Through the discussion, Alternative 1 is not the most financially attractive scenario. Alternative 3-1 would be the most plausible baseline scenario among the four alternatives.

CAR1 was resolved: Information on “annual operational hours”, “discount period”, “discount rate” and “efficiency” of three alternatives were added.

For the alternative scenario 1 in Table B4-1, the data of the F/S Report is used.

CAR2 was resolved: The efficiency was added. The reference for the alternatives 3-1 and 3-2 was shown in the footnote.

3.4 Additionality of the Project Activity

The additionality was assessed and demonstrated in accordance with the three steps 1-3 of the methodology.

3.4.1 Benchmark Investment Analysis (Step 1)

Step 1: Benchmark investment analysis

A benchmark investment analysis is applied to demonstrate that the proposed CDM project activity is unlikely to be financially attractive.

The PPs selected the project IRR as the financial indicator and compared it against the benchmark.

The PPs has identified the benchmark for this project activity as 8% which is sourced from the official document published by the Chinese government. The rate is appropriate as benchmark at the time of the decision making in 2007.

The calculation for the project IRR and supporting documents were submitted for validation. The input values used in the analysis were sourced from the FSR (2007). These values included:

Static total investment: The value of static total investment is 298 million RMB. The validation team confirmed that the value in the FSR(2007) was appropriate at the time of investment decision.

O&M cost: The annual average O&M cost is 91.23 million RMB. The fuel cost accounts for 76.42 million RMB and 84% of the total O&M cost. The rest costs including water material, wage/welfare and overhaul account for 16%. The Minutes dated on 16 May 2006 regarding the gas supply between HANAS and the gas supplier was provided. The price of natural gas was confirmed in the Minutes.

Electricity Tariff: The tariff that has been approved by the local price bureau and the official document for Electricity Price (No.116, 21/July/2004) was confirmed. The price to the grid of NWPG was set as 0.402RMB/kWh and is used in the final FSR (2007) approved.

Period of Assessment: The expected operational lifetime of the project activity is 20 year and 0 month. The project IRR is calculated for the period of the lifetime.

Project participants rely on values from FSR(2007) that are approved by the Local DRC for proposed project activities and has been the basis of the decision to proceed with the investment in the project.

The finalization of the FSR was made in April 2007, followed by the investment decision at the board meeting of the Ningxia HANAS Natural Gas Thermal Power Co., Ltd. on 09/May/2007. It was confirmed that the input values were consistent with the FSR. They are valid and applicable at the time of the investment decision.

The project IRR was determined as 6.66% in the absence of the CER revenues. This was lower than the benchmark. The sensitivity analysis was appropriately carried out. Critical parameters, such as static total investment, annual O&M cost including the fuel cost and period of assessment are analyzed and discussed.

The validation team confirmed the IRR calculated, the benchmark and sensitivity analysis, and also concluded that the project is financially unattractive.

3.4.2 Common Practice Analysis (Step 2)

The power grid in Ningxia is dominated by power generation of coal-fired power plants and there is no consumption of natural gas for the Build Margin calculation. The project activity is “first-of-its kind” in Ningxia.

3.4.3 Impact of CDM Registration (Step 3)

It is confirmed that the project IRR with the CER revenue of CDM is higher than the benchmark. The positive impact makes the project activity financially viable. The success of the project activity is expected as it would promote the less carbon intensive power generation technology.

3.4.4 Evidence of Prior Consideration of the CDM

In consideration of the definition specified in the “Glossary of CDM terms”, the starting date of the project activity was changed from 08/Oct/2007 to 15/May/2007, which is the date for the purchase contract of main equipment.

The description for the early consideration of implementing the project as CDM and the timeline of the proposed project activity were added in the revised PDD/B.5. The Minutes of the board meeting was provided for confirmation.

It is demonstrated in the Minutes that the incentive from the CDM was seriously considered as the decisive factor for the investment decision and the implementation of the project.

It was confirmed that the date for the prior consideration of the CDM is 09/May/2007. The serious consideration of the CDM was also confirmed by checking ERPA between the project participants signed on 10 September 2007.

3.5 Monitoring Plan

All data and parameters required by the methodology are included in the section B.7.1 and the details (e.g. data unit, source of data, QA/QC procedures) are appropriately shown in the tables.

Following monitoring items are provided in the Section B.7.1. in accordance with the methodology.

- $EG_{out,y}$: Power delivered to the grid
- $FC_{NG,y}$: Annual quantity of natural gas consumed in proposed project activity
- $E_{in,y}$: The electricity consumed by the project which is imported from the NWPG.
- $OXID_{NG}$: Oxidation factor of natural gas
- $EF_{CO_2,NG}$: CO_2 emission factor per unit of energy of natural gas
- $COEF_y$: Emission coefficient of fuel
- PE_y : Project emission during the year y.
- NCV_{NG} : Net Calorific Value of natural gas consumed by the proposed project. The value will be recorded fortnightly.
- $EF_{grid,BM,y}$: Build margin emission factor of the project electricity system in year y
- $EF_{grid,CM,y}$: Combined margin emission factor of the project electricity system in year y

For ex-ante calculation, the data in the latest document published by Chinese DNA is adopted and shown in B.6.2, while the monitoring item is provided in B.7.1. The validation team considers that the value used is acceptable for the ex-ante estimation.

The details of operational and management structure, monitoring equipment and installation, data collection, calibration, data management and monitoring report are provided in the section B.7.2.

It was confirmed that all data/parameters including the items in B.6.2 are appropriately listed in accordance with AM0029 Version 02.

*CAR4, 5, 6 was resolved: Data of " $EF_{CO_2,NG}$ " was listed in B.7.1. and is to be monitored in accordance with the methodology.
" $OXID_{NG}$ " was added.
" $COEF_y$ " and " PE_y " were added.*

3.6 Calculation of GHG Emissions and Reductions including Algorithms and/or Formulae used to Determine Emission Factors

Baseline emission factor is determined for the crediting period. The Build Margin/Option 1 was selected as the lowest emission factor based on the conservative comparison between options of Baseline Emission in the "Tool to calculated emission factor for an electricity system". The baseline emission factor is calculated as 0.5739 tCO₂/MWh.

For the ex-ante calculation of the project emission, the validation team considers that the use of the conservative emission factor of natural gas is acceptable. As the

data from their supplier and other sources were not available, the lower limit value of IPCC is used. As listed in B.7.2, the emission factor is to be monitored ex-post during the crediting period in accordance with the methodology. No start-up fuel is used.

Only the natural gas is used in the project activity. Based on the estimation of the upstream fugitive methane emission factor, the calculation resulted in the minus. It was confirmed that leakage emissions is evaluated as zero.

It was confirmed that the emission reductions are appropriately calculated.

CAR3 was resolved: The values for the emission factors were revised.

3.7 Sustainable Development

It was confirmed through obtaining the letter of approval issued by DNA of China that the project activity assists sustainable development of China.

3.8 Environmental Impacts

EIA for this project activity has been prepared in June, 2003. After the changes in capacity of equipment, the final approval letter from the local EPB was issued in January, 2008.

The environmental analysis of the project activity is appropriately conducted for construction and operation period. The environmental impacts such as NO₂ and SO₂, water and noise were considered insignificant.

3.9 Local Stakeholders Consultation

3.9.1 Local Stakeholder Consultation by Project Participants

The announcements to the local stakeholders were released two months before the consultation meeting held on 29 October 2007. The stakeholders including officials, workers, and residents were asked to make comments on the project activity.

At the Site-visit, the validation team interviewed with three local residents who attended the stakeholder consultation meeting.

They provided supportive comments about the project activity.

Information on the announcement and the local stakeholder consultation meeting were provided.

3.9.2 Interview by the Validation Team with Government Officials

The validation team interviewed the official of Yinchuan DRC about the approvals of the F/S reports of the project activity and the official of Yinchuan EPB about the approvals of EIA.

4. Global Stakeholder Process

1) Description of how and when the PDD was made publicly available:

The comments by Parties, stakeholders and NGOs were invited from 13/May/2008 to 11/Jun/2008 on the UNFCCC website.

2) Description of how comments were received and made publicly available:

There was no comment received.

3) Explanation of how due account has been taken of comments received:

Not applicable.

5 Validation Opinion

- 1) JQA started the validation by conducting Desk Review of the PDD. CARs and CLs pointed out have been resolved in the revised PDD (Version 04, 13/Jan/2009). The comments by the validation team are provided in italics in the checklist of this validation report.
- 2) Applicability conditions of AM0029 are met and the baseline is appropriately established.
- 3) The additionality of the project is assessed and demonstrated in accordance with the Additionality Tool. The project IRR is calculated and the Sensitivity analysis is conducted in accordance with "Guidance on the Assessment of Investment Analysis (Version02)". It was confirmed that the IRR calculated in the absence of the CDM project is lower than the benchmark. The early consideration of the CDM, the starting date of the project activity are determined in accordance with "Guidance on the Demonstration and Assessment of Prior Consideration of the CDM". The validation team concludes that the project activity is additional.
- 4) In the calculation of the emission reductions, all data and parameters are used in transparent and conservative manners, including project emissions and leakage. All parameters required by AM0029 are listed and appropriately described in the section B.6.2. and B.7.1.
- 5) The baseline emission factor is determined ex-ante as 0.5739 tCO₂/MWh. The estimated annual average of emission reductions is 49,041 t-CO₂e/year.
- 6) The validation team interviewed the local government official with an interpreter about the EIA report and confirmed that no significant environment impacts is expected.
- 7) The project activity meets all relevant criteria of COP/MOP and EB decisions including the VVM.

6 Conclusion

JQA concludes that the project activity is valid as a CDM project activity.

7 References

Category 1 Documents:

- 1 PDD (Version 01, 28/Mar/2008)
PDD (Version 02, 08/Dec/2008)
PDD (Version 03, 18/Dec/2008)
PDD (Version 04, 13/Jan/2009)
- 2 Letter of Approval (Japan): Approval of a CDM Project and Authorization of Voluntary Participation under the Kyoto Protocol by the Government of Japan (01 August 2008)
- 3 Letter of Approval (China): Letter of Approval for Ningxia Yinchuan No. 1 Natural Gas Cogeneration Project as a Clean Development Mechanism Project by National Development and Reform Commission of the People's Republic of China No.1224 (25 June 2008)
- 4 Statement on Modalities for Communicating with the Executive Board and the UNFCCC Secretariat between Marubeni Corporation and Ningxia HANAS Natural Gas Thermal Power Co., Ltd. (04 December 2008)

Category 2 Documents:

- 5 Design of Connection System (Mar/2008)
- 6 Information about Local Stakeholder Consultation
 - Announcement of distributing Questionnaires for Local Stakeholder (08/Sep/2007)
 - Minutes of Stakeholder Consultation Meeting with signatures of attendants (29/Oct/2007)
 - Questionnaire & Answers from Stakeholders (Oct-Nov/2007)
- 7 Layout of the Project Site
- 8 Information before the Starting Date of the Project
 - Research on potential CDM Projects in Ningxia, including the Project (Ningxia CDM Service Centre, 10/Jun/2004)
 - Training Meeting regarding China-Canada Cooperation Pilot Project Ningxia CDM Capacity Building (15/Sep/2004)
 - Document submitted to the Department of Science & Technology of Ningxia for Technical Instruction on the CDM development (HANAS, 17/Nov/2005)
 - Reply from the Department of Science & Technology of Ningxia (29/Nov/2005)
 - Potential CDM Project in Ningxia, including the Project (January/2006)
 - Emission Reduction Purchase Agreement between HANAS and Marubeni Corporation (10/Sep/2007)
- 9 Document for Electricity Price/Ningxia Price Bureau (No.116, 21/Jul/2004)
- 10 Letter from Northwest Power Construction Supervision Co., Ltd regarding the Start of Construction as of 10 Sep 2007 (12/Jun/2008)
- 11 - FSR (April/2007) and Approval [2008] No. 275 by Ningxia DRC (04/May/2008)
- FSR (April/2005) and Approval [2005] No. 671 by Ningxia DRC in 24/Oct/2005
- FSR (February/2003) and Approval [2003] No. 365 by Ningxia DRC in 10/Jun/2003
- 12 - EIA (YHPB2008-017, 31/Jan/2008) and Approval (23/Jan/2008)
- EIA (YHPB2003-030, Jun/2003) and Approval (06/Jul/2003)
- 13 Minutes of Board Meeting of Ningxia Hanas Natural Gas Thermal Power Co., Ltd

- [2007] No.47 (09/May/2007, English & Chinese)
- 14 - Contract of Gas Turbine (HANAS, 15/May/2007)
 - Contract of Heat Boiler (HANAS, 16/Jul/2007)
 - Contract of Steam Turbine (HANAS, 13/Jun/2007)
 - 15 - Technology Specification of Gas Turbine for FSR
 - Mechanical Systems (Chapter 2) of Specification of Gas Turbine-rev2 (Project-10791 Ningxia, GT Type-Trent60)/Turbomach Industrial Energy Systems
 - Technology Specification of Heat Boiler for FSR
 - Technology Specification of Steam Turbine for FSR
 - 16 Minutes of Supply and Price of Natural Gas (HANAS, 16/May/2006)
 - 17 IRR Calculation spreadsheet with Sensitivity Analysis
 - 18 Clarification request on the emission factor of China grid from JQA to CCChina (25/Nov/2008)
 - 19 Clarification request on the emission factor of China grid from JQA to NDRC (04/Feb/2009)
 - 20 Response to the emission factor of China grid from NDRC to JQA (09/Feb/2009)
 - 21 Revision request of Ref. 2373 documents from JQA to PPs (20/Feb/2009)

8 List of Interviewed Persons

- Mr. Shigeki Kanai, Pulp & Paper Machinery Sec.-1 (Sec.Code B749), Pulp & Paper Machinery Dept.
- Mr. Jin Xiao Dong, Secretary of General Manager, Ningxia Hanas Natura Gas Co. Ltd.
- Mr. Shi Chongqi, Vice President, Ningxia CDM Service Centre
- Mr. Zhang Jisheng, Director, Ningxia CDM Service Center
- Mr. Zhang Yukun, Project Manager, Beijing Keji Consulting Ltd.
- Mr. Chen Shu Yi, Site Manager, TBM Turbomach
- Mr. Lin Gan Hung, local resident
- Ms. Wang Zhi Fang, local resident
- Mr. Jia Bao Yu, local resident
- Mr. Du Yanzhong, Chairman of the Board, Ningxia Hanas Natura Gas Co. Ltd.
- Mr. Shi Hong Tao, Vice Manager, Ningxia Hanas Natura Gas Co. Ltd.
- Ms. Tan Yao, Assistant Researcher, Ningxia CDM Service Centre
- Ms. Zhang Xue Ying, Assistant Researcher, Ningxia CDM Service Centre
- Mr. Li Guan Zhang, Industry Development, Yinchuan Development and Reform Committee
- Mr. Jin Long Gao, Engineer, Environment Supervision Department, Yinchuan Environment Protection Bureau

CDM VALIDATION CHECKLIST

Marubeni Corporation

“Ningxia Yinchuan No.1 Natural Gas Cogeneration Project”

Project No. JQA-C0087

(1812000099)

26 February 2009



Japan Quality Assurance Organization

Appendix A

Table 1 Comprehensive Checklist for CDM Project Activities

Requirements	Reference	Conclusion	Evidence
1. The purpose of the CDM	Kyoto Protocol Article 12.2		
1.1. The project activity shall assist the host country in achieving sustainable development		OK	Approval letter of China dated on 25 June 2008
1.2. The project activity shall assist the host country in contributing to the ultimate objective of the Convention.		OK	Approval letter of China dated on 25 June 2008
1.3. The project activity shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3.		OK	Approval letter of Japan dated on 01 August 2008
2. Emission reductions resulting from the project activity shall be certified by DOE on the basis of:	Kyoto Protocol Article 12.5		
2.1. Voluntary participation approved by each Party involved (and Authorization of a private and/or public entity)	(a)	OK	Both LoAs are obtained from the project participants. Information of the issuance of LoAs were confirmed on the websites of both governments.
2.2. Real, measurable and long-term benefits related to the mitigation of climate change	(b)	OK	
2.3. Reductions in emissions that are additional to any that would occur in absence of the project activity	(c)	OK	
3. CDM Modalities and Procedures (Decision 17/CP. 7)	Paragraph 37		
3.1. Participation requirements	(a)	OK	
3.1.1. Participation in a CDM project activity is voluntary.	Paragraph 28	OK	Approval letter of China dated on 25 June 2008

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3.2. A written approval constitutes the authorization by a DNA of specific entity(ies)' participation as project proponents in the specific CDM project activity.	Glossary of CDM terms Version 04	OK	Authorization: (Nigxia HANAS Natural Gas Thermal Power Co., Ltd.)
		OK	Authorization: (Marubeni Corporation)
3.2.1. Parties participated in the CDM shall designate a national authority for the CDM.	Paragraph 29	OK	http://cdm.unfccc.int/DNA/view.html?CID=46 DNA (China): National Development and Reform Commission of the People's Republic of China DNA (Japan): The Liaison Committee for the Utilization of the Kyoto Mechanisms KP ratification China: 30 August 2002 Japan: 04 June 2002
3.2.2. A host country may participate in a CDM project activity if it is a Party to the Kyoto Protocol.	Paragraph 30	OK	http://maindb.unfccc.int/public/country.pl?country=CN Refer to 3.2.1.
3.3. Comments by local stakeholders	37 (b)	OK	

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3.4.	Analysis of the environmental impacts of the project activity	37 (c)	OK	
3.5.	Additionality	37 (d)	OK	
3.6.	Use of the approved baseline and monitoring methodologies	37 (e)	OK	AM0029: Approved baseline methodology "Grid Connected Electricity Generation Plants using Natural Gas (Version 02)" AM0029: Approved monitoring methodology "Grid Connected Electricity Generation Plants using Non-Renewable and Less GHG Intensive Fuel (Version 02)"
3.7.	Provisions for monitoring, verification and reporting	37 (f)	OK	
3.8.	Other requirements including relevant decisions by the COP/MOP and the executive board	37 (g)	OK	
3.9.	Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for 30 days, and the project design document and comments have been made publicly available.	40 (c)	OK	Start date: 13/05/2008 Close date: 11/06/2008 No comment received.
4. PDD Format				
4.1.	If project participants wish to submit a project activity for validation and registration, they shall submit a fully completed CDM-PDD.	PART I Paragraph 3	OK	
4.2.	The CDM-PDD shall be completed and submitted in English language to the Executive Board.	PART I Paragraph 12	OK	
4.3.	The CDM-PDD template shall not be altered, that is, shall be completed using the same font without modifying its format, font, headings or logo.	PART I Paragraph 13	OK	CDM-PDD template (latest version)

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			CDM Guidelines Version7
4.4. Tables and their columns shall not be modified or deleted. Rows may be added, as needed.	PART I Paragraph 14	OK	
4.5. The CDM-PDD shall include in A.1 the version number and the date of the document.	PART I Paragraph 15	OK	<i>Version 04 13 January 2009</i>
4.6. If section of the PDD is not applicable, it shall be explicitly stated that section is left blank on purpose.	PART I Paragraph 16	OK	
4.7. The CDM-PDD is not applicable to A/R CDM project activity.	PART I Paragraph 17	OK	
5. Modalities of communication	CDM Guideline		
5.1 The modalities of communication between project participants and the Executive Board are indicated at the time of registration by submitting a statement signed by all project participants.		OK	<p>The modalities of communication dated on 04 December 2008</p> <ul style="list-style-type: none"> - Nigxia HANAS Natural Gas Thermal Power Co., Ltd. - Marubeni Corporation

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Table 2 PDD Requirements

Section	Requirements	MoV	Comments	Draft Conc.	Final Conc.
Section A	General description of the project activity				
A.1	Title of the project activity				
	Title of the project activity	DR	Ningxia Yinchuan No.1 Natural Gas Cogeneration Project	OK	
	Version number and date of the doc.	DR	Version 01: Mar. 28, 2008 Version 04, 13 Jan 2009	OK	OK
A.2	Description of the project activity				
	The purpose of the project activity	DR		OK	
	* Scenario prior to the start of the project activity	-	<i>The scenario prior to the start of the project activity is to be described.</i> <i>The power is generated by NWPG that is dominated by the coal fired power generation.</i>	CL -	 OK
	* Project scenario		<i>The cogeneration system is described.</i>	-	OK
	* Baseline scenario	-	<i>Brief explanation regarding the baseline scenario is to be provided.</i> <i>The power is generated by NWPG that is dominated by the coal fired power generation.</i>	CL -	 OK

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	What type of technology is being employed What exact measures are undertaken	DR	<i>Equipment of the cogeneration system to be installed were added.</i> - 51MW gas turbine generating unit, - 43.3 t/h waste heat boiler - 13MW steam turbine generating unit	OK	OK
	The view of the PPs on Contribution to SD	DR	The contribution to local sustainable development is described.	OK	OK
A.3	Project participants				
	List of PPs and Parties involved	DR	- Nigxia HANAS Natural Gas Thermal Power Co., Ltd.	OK	OK
		DR	- Marubeni Corporation	OK	OK
	Provide contact information in Annex 1	DR		OK	OK
A.4	Technical description of the project activity				
A.4.1	Location of the project activity				
A.4.1.1	Host Party	DR		OK	OK
A.4.1.2	Region/State/Province, etc.	DR		OK	OK
A.4.1.3	City/Town/Community, etc.	DR		OK	OK
A.4.1.4	Detail of physical location				
	Fill in the field and do not exceed one page.	DR	The coordinates of the proposed project location are provided.	OK	OK
A.4.2	Type and category(ies) and technology				
	Specify the category into which this project activity falls. If no suitable	DR		OK	OK

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	category can be identified, suggest a new category descriptor and its definition.				
A.4.3	Technology to be employed by the project activity				
	<p>What kinds of technologies are employed?</p> <p>Description of the project activity</p> <ul style="list-style-type: none"> * Scenario existing prior to the start of the implementation of the project activity * Scope of activities/measures * Baseline scenario <p>Description of the scenarios</p> <ul style="list-style-type: none"> * A list and the arrangement of the main manufacturing/production technologies, systems and equipment involved. Include in the description information about the age and 	<p>DR</p> <p>-</p> <p>-</p> <p>-</p> <p>-</p>	<p>The technology is a combined-cycle gas turbine system.</p> <p><i>To be described.</i></p> <p><i>The power is generated by NWPG that is dominated by the coal fired power generation</i></p> <p><i>To be added.</i></p> <p><i>The technical parameters of the combined cycle units from the F/S Report were added.</i></p> <p><i>To be described.</i></p> <p><i>The power is generated by NWPG that is dominated by the coal fired power generation</i></p> <p><i>There is a list and the arrangement of the main manufacturing/production technologies, systems and equipment involved. However, further description on the information about the age and average lifetime of the equipments is to be added. And the monitoring equipments and their location in</i></p>	<p>OK</p> <p>CL</p> <p>CL</p> <p>CL</p> <p>CL</p>	<p>OK</p> <p>OK</p> <p>OK</p> <p>OK</p>

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	average lifetime of the equipments based on manufacturer's specifications and industry standards, and existing and forecast installed capacities, load factors and efficiencies. The monitoring equipments and their location in the systems is of particular interest.		<i>the systems are to be described.</i>		
	* Emission sources and GHGs involved in the project activity, according to the methodology used; and existing and forecast energy and mass flows and balances of the systems and equipments included in the project activity;	-	<i>The project is newly installed.</i> <i>Technical lifetime is shown in Table B4-1 based on the F/S Report.</i> <i>The explanation of the monitoring equipment was added.</i>	CL	OK
	* Types and levels of services provided by the systems and equipments The description should clearly explain how the same types and levels of services provided by the project activity would have been provided in the baseline scenario.	-	<i>The existing and forecast energy and mass flows and balances of the systems and equipments included in the project activity are to be described.</i> <i>It is shown in Figure A.4.3. and Table A4-1.</i>	CL	OK
	How environmentally safe and sound technology, and know-how to be used, is transferred to the host Party.	DR	<i>Further description is to be added.</i> <i>The same types and levels of services in the NWPG are identified as Sub-critical coal-fired power generation with a unit capacity of 600MW.</i>	CL	OK
			The explanation on how the technology is environmentally safe and sound should be added.	CL	

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			<i>The explanation was added.</i>		OK
		DR/ SV	Specification of the technology is to be provided.	N/A	
			<i>The documents of the specifications were provided as listed in the Reference.</i>		OK
		-	<p><i>In the design process, the capacity of the project had gone through several changes and adjustments as follows:</i></p> <p><i>The project (Phase I) was initially designed as 2*12.5MW gas turbine generating unit with 2*52t/h waste heat boiler cogeneration system in 2003. However, due to the increase of demand on electricity and heat using, the project owner decided to integrate Phase I project to Phase II project in year 2005, and the system was then designed as 1*50 MW gas turbine generating unit with 1*70t/h waste heat boiler. Subsequently, the capacity of gas turbine had to be adjusted from 50MW to 51MW due to the production of equipment. Moreover, realized that if only adopting gas turbine, the portion of discharged gas and steam will be directly vented into air and result in the loss of heat and air pollution, the design institution optimized the capacity by installing a 13MW steam turbine generating unit combining with a 51MW gas</i></p>		OK

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			turbine generating unit and a 43.30t/h waste heat boiler to improve the energy efficiency. Thus, the FSR(2007) based on this combined cycle system was compiled and approved by local DRC, which is the ultimate design and used as data source for investment analysis in PDD. In table A4-1, the technique parameters of waste heat boiler is consistent with technical specification of waste heat boiler.		
A.4.4	Estimated amount of emission reductions				
	Indicate the chosen crediting period	DR		OK	OK
	Provide the total estimation of emission reductions as well as annual estimates.	DR	The estimation of the emission reductions is to be confirmed.	N/A	
	Information on the emission reduction shall be indicated using the format.		<i>The starting date was changed.</i>		OK
A.4.5	Public funding of the SS project activity				
	In case public funding from Annex 1 Parties, provide information in Annex 2. Such funding does not result in a diversion of ODA.	DR		OK	OK
Section B	Application of a baseline and monitoring methodology				
B.1	Title and reference of the approved baseline and monitoring methodology applied				

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	Refer to the UNFCCC CDM web site - Approved methodology(ies) and version(s) - Tools and their versions	DR	AM0029/Version 02: - Baseline Methodology for Grid Connected Electricity Generation Plants using Natural Gas - Grid Connected Electricity Generation Plants using Non-Renewable and Less GHG Intensive Fuel	OK	OK
		DR	Tool to calculate the emission factor for an electricity system (Version 01)	OK	OK
		DR	Tool for demonstration and assessment of additioality (Version 04)	OK	OK
B.2	Justification of the choice of the methodology and why it is applicable to the project activity				
	Justify the choice of methodology by showing that the proposed project activity meets each of the applicability conditions. (Applicability condition) <ul style="list-style-type: none"> Construction and operation of a new natural gas fired grid-connected electricity generation plant Identification of clear geographical/physical boundaries and public availability of information Natural gas availability in the region 	DR	The description for the first applicability condition doesn't correctly refer to the methodology. The methodology covers only the construction and operation of a new natural gas fired grid-connected electricity generation plant. <i>The description was revised to "the construction and operation" of a new natural gas fired grid-connected electricity generation plant..</i>	CL	OK

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		DR/ SV	<p>Natural gas availability in the region is to be confirmed at the Site-visit.</p> <p><i>As described in the revised PDD, It will not be constrained, because of the size of natural gas reserve and the current and future transmission capacities.</i></p>	N/A	OK
	Explain documentation has been used and provide the references to the document or include the documentation in Annex 3.	DR		OK	OK
B.3	Description of the sources and gases included in the project boundary				

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	<p>Describe which emission sources and gases are included in the project boundary for the purpose of calculation project emissions and baseline emissions, using the table.</p> <p>Present a flow diagram of the project boundary, physically delineating the project activity, particularly represent in the diagram the emission sources and gases included in the project boundary and the monitoring variables.</p> <p>In cases where the methodology allows project participants to choose whether a source or gas is to be included in the project boundary, explain and, where necessary, justify the choice.</p>	<p>DR</p> <p>-</p> <p>DR</p>	<p><i>To be described.</i></p> <p><i>Figure B3-1 “The emission sources included within the project boundary” was added. Monitoring points of the gas and electricity meters are shown in Figure B3-1.</i></p>	<p>OK</p> <p>CL</p> <p>OK</p>	<p>OK</p> <p>OK</p> <p>OK</p>
B.4	Description of how the baseline scenario is identified and description of the identified baseline scenario.				
	<p>Explain how the most plausible baseline scenario is identified. Where the procedure involves several steps, describe how each step is applied and transparently document the outcome of each step.</p> <p>Explain and justify key assumptions and rationales.</p>	<p>DR</p> <p>DR</p>	<p>”Notice on Requirement of Planning and Construction of Coal Fired Power Plants” is to be provided.</p>	<p>OK</p> <p>N/A</p>	<p>OK</p>

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	Provide relevant documentation or references. Illustrate in a transparent manner all data used to determine the baseline scenario (variables, parameters, data sources etc.), preferably in a table form.	DR	<p><i>It was provided for confirmation.</i></p> <p>The description to exclude alternative 4 is vague.</p> <p><i>The electricity import from the connected grids is not expected as alternative of the project participant.</i></p>	CL	OK
		DR	<p>Information on sub-critical and super-critical coal fired plant, selected as alternative scenarios should be provided.</p> <p><i>Information on “annual operational hours”, “discount period”, “discount rate” and “efficiency” of three alternatives were added.</i></p> <p><i>For the alternative scenario 1 in Table B4-1, the data of the F/S Report is used.</i></p>	CAR1	OK
		DR	<p>The efficiencies of the alternatives 3-1 and 3-2 are not described and provided in the PDD.</p> <p><i>The efficiency was added. The reference for the alternatives 3-1 and 3-2 was shown in the footnote.</i></p>	CAR2	OK
	Provide a transparent and detailed description of the identified baseline scenario, including a description of the technology that would be employed and/or the activities that	DR	<p>Information on the technical lifetime for the coal-fired power plants shall be provided.</p> <p><i>The technical lifetime of the alternatives 3-1 and 3-2 were revised to 20 years.</i></p>	CL	OK

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	would take place in the absence of the proposed project activity, taking into account relevant national and/or sectoral policies and circumstances, such as sectoral reform initiatives, local fuel availability, power sector expansion plans, and the economic situation in the project sector.	DR	For the levelized cost of electricity production, the explanation of discount rate should be provided. Fuel price projections should also be provided <i>The discount rate is same as the benchmark for the project activity. Fuel price for alternative 3-1 and 3-2 were increased from 260 to 430 RMB/t.</i>	CL	OK
		DR	Evidences of data source in Table B4-1. and sensitivity analysis are to be provided. The calculation is to be confirmed and the excel sheet is to be provided. <i>The data for the project alternative 1 is sourced from the F/S Report. The source of alternatives 3-1 and 3-2 was provided in the footnote. It was confirmed that, even after the revisions of the data of the other alternatives 3-1 and 3-2, the levelized cost of the project alternative 1 is higher than the others. The calculation of the project IRR was confirmed in the excel sheet.</i>	N/A	OK OK OK
B.5	Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the				

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	registered CDM project activity (assessment and demonstration of additionality)				
	<p>Explanation of how and why this project activity is additional and therefore not the baseline scenario in accordance with the selected baseline methodology.</p> <p>Where the procedure involves several steps, describe how each step is applied and transparently document the outcome of each step.</p> <p>Where the barriers are involved in demonstrating additionality, only select the (most) relevant barriers.</p> <p>Explain and justify key assumptions and rationales, including contractual requirements, mandatory regulations, or other requirements.</p> <p>Provide relevant documentation or references.</p> <p>Illustrate in a transparent manner all data used to assess the additionality of the project activity (variables,</p>	<p>DR</p> <p>DR SV</p> <p>-</p>	<p>The description for “Impact of CDM registration: Step 3” to be added.</p> <p><i>“Step 3: Impact of CDM Registration” was added.</i></p> <p>Data source and evidences for Table B5-1 should be provided. Comparison of the IRR with the benchmark is to be confirmed in the calculation sheet. The approval of the power price by the local government is to be confirmed. “The Preliminary Design report (PDR)” is to be provided.</p> <p><i>The basic parameters for calculation of financial indicators are shown in Table B5-2. The calculation of the project IRR to be confirmed.</i></p> <p><i>The calculation in the excel sheet was confirmed.</i></p>	<p>OK</p> <p>N/A</p> <p>CL</p>	<p>OK</p> <p>OK</p>

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	parameters, data sources etc.), preferably in a table form.	-	<i>Tender documents for equipment from suppliers, applicable at the time of the investment decision (for FSR in 2007), to be provided.</i>	CL	
			<i>The data in the Table B5-2 is sourced from the FSR (2007) approved.</i>	-	OK
			<i>The specifications of the main equipment in the PDD, such as gas turbine, heat boiler, and steam turbine are sourced from FSR.</i>	-	OK
			<i>The technical specifications were provided.</i>		
		-	<i>Evidence of natural gas price, applicable at the time of the investment decision (for FSR in 2007) to be provided.</i>	CL	
	If the starting date of the project activity is before the date of validation, provide evidence that the incentive from the CDM was seriously considered in the decision to proceed with the project activity.		<i>The Minutes dated on 16 May 2006 regarding the gas supply between HANAS and the gas supplier was provided. The price of natural gas was confirmed in the Minutes.</i>	-	OK
		-	<i>There is an inconsistency between the dates of the decision making (09/05/2007) and the evidence document of the electricity tariff (No 116, 21/07/2004). Justification or another document is to be provided.</i>	CL	

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	<p>This evidence shall be based on (preferably official, legal and/or other corporate) documentation that was available at, or prior to, the start of the project activity.</p> <p>In such cases, provide an implementation timeline of the proposed CDM project activity</p> <p>And the timeline of events and actions which have been taken to achieve CDM registration, with description of the evidence used to support these actions is to be provided.</p>		<p><i>The price is used in the FSR (2007). The approval for the electricity price issued by Ningxia Price Bureau (No 116) is referred for finalization of FSR.</i></p>	-	OK
		DR/SV	Relevant documents are to be provided.	N/A	
		-	<p><i>The detailed timeline including the following issues is to be provided in the PDD:</i></p> <p><i>*Date of investment decision made</i></p> <p><i>*Date of construction works started</i></p> <p><i>*Date of commissioning started</i></p>	CL	
			<p><i>The table (B5-1) for “Timeline of the Project Activity” was added and the related documents of the key events are provided and confirmed by the validation team.</i></p>	-	OK
		DR/SV	<p>The evidence that the incentive from the CDM was seriously considered is to be confirmed.</p> <p><i>The evidences of the prior consideration of the project activity were provided by the PPs.</i></p> <p><i>At the board meeting of HANAS, the final investment decision was discussed and the Minute of the Board Meeting of Ningxia HANAS Natural Gas Thermal Power Co., Ltd. dated on 09 May 2007 was confirmed.</i></p>	N/A	OK

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			<p><i>The ERPA that was signed on 10 September 2007 between the project participants was confirmed.</i></p> <p>- <i>How “the CDM revenue could overcome the economic barrier of the project” is to be explained in the PDD.</i></p> <p><i>“Impact of CDM Registration” was added.</i></p> <p>- <i>It was confirmed by the validation team that the project activity is in accordance with the Guidance (Annex46 of EB41).</i></p>	CL	OK
				-	OK
B.6	Emission reductions				
B.6.1.	Explanation of methodological choices:				
	<p>Explain how the procedures, in the approved methodology to calculate project emissions, baseline emissions, leakage emissions and emission reductions are applied to the proposed project activity.</p> <p>Clearly state which equations will be used in calculating emission reductions.</p>	DR/SV	<p>The NCV of natural gas is to be confirmed and “the proposed project feasibility study” is to be provided.</p> <p>Contract with the gas supplier is to be confirmed.</p> <p><i>The F/S Report was provided.</i></p> <p><i>NCV of natural gas was confirmed</i></p>	N/A	OK
		DR	<p>Justification for Formula (13) is to be confirmed.</p> <p><i>Formula (13) was deleted.</i></p>	N/A	OK
B.6.2	Data and parameters that are available at validation				
	This section shall include a compilation of information on the data	DR	Values applied are to be confirmed at Site-visit.	N/A	

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	<p>and parameters that are not monitored throughout the crediting period but that are determined only once and thus remains fixed throughout the crediting period AND that are available when validation is undertaken.</p> <p>Data that becomes available only after validation of the project activity (e.g. measurements after the implementation of the project activity) should not need to be included here but in the table in section B.7.1.</p> <p>This may includes data that is measured or sampled, and data that is collected from other sources (e.g. official statistics, expert judgment, proprietary data, IPCC, commercial and scientific literature, etc.).</p> <p>Data that is calculated with equations provided in the methodology or default values specified in the methodology should not be included in the compilation.</p> <p>Provide for each data or parameter the chosen value or, where relevant, the qualitative information, using the table provided below. Particularly:</p> <ul style="list-style-type: none"> - Provide the actual value applied. <p>Where time series of data is used,</p>		<p><i>For the IPCC value of the carbon emission factor of fuel used for ex-ante calculation, the lower limit is adopted and shown in B.6.2, while the monitoring item is provided in B.7.1.</i></p> <p>➤ <i>Finally the value was adopted based on the Chinese DNA document after JQA was instructed by Chinese authority.</i></p>		<p>OK</p> <p>OK</p>
		DR	<p>Lower limit of the uncertainty at a 95% confidence interval for IPCC default values shall be used for calculation of “EF_{grid, BM,y}” and “EF_{grid, CM,y}”.</p> <p>➤ <i>Finally the value was adopted based on the Chinese DNA document after JQA was instructed by Chinese authority.</i></p>	CAR3	
		DR	<p>The values applied for EF CO_{2, i} are to be confirmed.</p>	CL	OK

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	<p>where several measurements are undertaken or where surveys have been conducted, provide detailed information in Annex 3.</p> <ul style="list-style-type: none"> - Explain and justify the choice for the source of data. <p>Provide clear and transparent references or additional documentation in Annex 3.</p> <ul style="list-style-type: none"> - Where values have been measured, include a description of the measurement methods and procedures (e.g. which standards have been used), indicate the responsible person / entity having undertaken the measurement, the date of measurement(s) and the measurement results. - More detailed information can be provided in Annex 3. 	<p>DR</p> <p>Unit of the variables for FCs</p> <p>DR</p>	<p><i>The values for calculation of the emission factors were revised.</i></p> <p><i>The source of data was added.</i></p>	<p>CL</p> <p>OK</p>	<p>OK</p> <p>OK</p> <p>OK</p>
B.6.3.	Ex-ante calculation of emission reductions				
	<p>Provide a transparent ex-ante calculation of project emissions, baseline emissions (or, where applicable, direct calculation of emission reductions) and leakage emissions expected during the crediting period, applying all relevant equations provided in the approved methodology.</p>	<p>DR</p> <p>DR</p>	<p>Calculation of EF_{BL,CO_2} is to be confirmed. Refer to B.6.2.</p> <p><i>The data is shown Table 3-13. Calculation was revised to 0.5739.</i></p> <p>The amount of power delivered is to be confirmed.</p>	<p>N/A</p> <p>N/A</p>	<p>OK</p>

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	<p>Use estimations for parameters that are not available when validation is undertaken or that are monitored during the crediting period.</p> <p>Document how each equation is applied, in a manner that enables the reader to reproduce the calculation. Where relevant, provide additional background information and/or data in Annex 3, including relevant electronic files (i.e. spreadsheets).</p>	<p>DR</p> <p>DR</p>	<p><i>The power amount is based on the F/S Report.</i></p>	<p>OK</p> <p>OK</p>	<p>OK</p> <p>OK</p> <p>OK</p>
B.6.4.	Summary of the ex-ante estimation of emission reductions				
	Summarize the results of the ex-ante estimation of emission reductions for all years of the crediting period, using the table	DR	<p>To be confirmed.</p> <p><i>Refer to A.4.4.</i></p>	N/A	OK
B.7.	Application of the monitoring methodology and description of the monitoring plan				
B.7.1	Data and parameters monitored				
	This section shall include specific information on how the data and parameters that need to be monitored would actually be collected during monitoring for the project activity. Data that is determined only once for the crediting period but that becomes available only after	DR	<p>"EF_{CO2, NG}" is not listed in B.7.1. and the justification for using IPCC value in B.6.1. is not appropriate.</p> <p><i>Data of "EF_{CO2, NG}" was listed in B.7.1. and monitored in accordance with the methodology.</i></p>	CAR4	OK

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	validation of the project activity (e.g. measurements after the implementation of the project activity) should be included here.	DR	"OXID _{NG} " as current IPCC default for the natural gas is not listed. <i>The "OXID_{NG}" was added.</i>	CAR5	OK
	Provide for each parameter the following information, using the table provided: <ul style="list-style-type: none"> - The source(s) of data that will be actually used for the proposed project activity (e.g. which exact national statistics). - Where several sources may be used, explain and justify which data sources should be preferred. - Where data or parameters are supposed to be measured, specify the measurement methods and procedures, including a specification which accepted industry standards or national or international standards will be applied, which measurement equipment is used, how the measurement is undertaken, which calibration procedures are applied, what is the accuracy of the measurement method, who is the responsible person / entity that should undertake the measurements and what is the 	DR	"COEF y" and "PE y" are not listed. <i>"COEF y" and "PE y" were added.</i>	CAR6	OK

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	<p>measurement interval.</p> <ul style="list-style-type: none"> - A description of the QA/QC procedures (if any) that should be applied: - Where relevant: any further comment. - <p>Provide any relevant further background documentation in Annex 3.</p>				
B.7.2.	Description of the monitoring plan				
	<p>Provide a detailed description of the monitoring plan. Describe the operational and management structure that the project operator will implement in order to monitor emission reductions and any leakage effects generated by the project activity.</p> <p>Clearly indicate the responsibilities for and institutional arrangements for data collection and archiving. The monitoring plan should reflect good monitoring practice appropriate to the type of project activity.</p> <p>Provide any relevant further background information in Annex 4.</p>	DR	<p>The description of this section is to be confirmed at the Site-visit.</p> <p><i>Description of the data readers, verifier and financial officer who are responsible for monitoring were added.</i></p> <p><i>The training for monitoring task as well as for the CDM knowledge are described.</i></p> <p><i>The descriptions of the bidirectional electricity meter and gas meter at the supply line of were added.</i></p> <p><i>The description in the monitoring flow diagram was corrected</i></p>	N/A	<p>OK</p> <p>OK</p>
B.8.	Date of completion of the application of the baseline and monitoring methodology and the name of responsible				

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	person(s)/entity(ies):				
	Provide date of completion of the application of the methodology to the project activity study in DD/MM/YYYY. Provide contact information of the persons(s)/entity(ies) responsible for the application of the baseline and monitoring methodology to the project activity and indicate if the person/entity is also a project participant listed in Annex 1.	DR		OK	OK
Section C	Duration of the project activity/Crediting period				
C.1	Duration of the project activity				
C.1.1	Starting date of the project activity				
	The starting date of a CDM project activity is the date on which the implementation or construction or real action of a project activity begins.	DR/ SV	The starting date is set as 08/10/2007. The evidence for setting the date is to be confirmed. <i>The data was changed to 15/05/2007 with justification. The evidence was confirmed.</i>	N/A	OK
C.1.2	Expected operational lifetime				
	State the expected operational lifetime in years and months	DR/ SV	The lifetime set as 20 years is to be confirmed. <i>The operation lifetime of the equipment is based on the F/S Report.</i>	N/A	OK
C.2	Choice of crediting period and related information				
	State whether the project will use a renewable or fixed crediting period			-	-

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	and complete C.2.1 or C.2.2 accordingly.				
C.2.1	Renewable crediting period				
	Each crediting period shall be at most 7 years	DR		OK	OK
C.2.1.1	Starting date of the first crediting period				
	State the dates in DD/MM/YYYY	DR	01/10/2008 <i>The date was changed to "01/04/2009 or date of registration (whichever is later)"</i>	OK	OK
C.2.1.2	Length of the first crediting period				
	State the length of the first crediting period in years and months	DR	7y-0m	OK	OK
C.2.2	Fixed crediting period				
	Fixed crediting period shall be at most 10 years.			N/A	-
C.2.2.1	Starting date of the first crediting period				
	State the dates in DD/MM/YYYY			N/A	-
C.2.2.2	Length				
	State the length in years and months			N/A	-
Section D	Environmental impacts				
D.1	Documentation on the analysis of the environmental impacts, including transboundary impacts:				
	Attach the documentation to the CDM-PDD.	DR/SV	The descriptions are to be confirmed at the Site-visit. <i>Both EIA reports were approvals were confirmed by obtaining the documents. - The approval of the original EIA report are dated on 06 July 2003.</i>	N/A	OK

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			- The approval of the final EIA report are dated on 23 January 2008.		
D.2.	If environmental impacts are considered significant by the project participants or the host Party, please provide conclusions and all references to support documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party.				
		DR/ SV	To be confirmed at the Site-visit. <i>The description in the PDD was confirmed through the interviews at the Site-visit.</i>	N/A	OK
Section E	Stakeholders' comments				
E.1	How comments by local stakeholders have been invited and compiled				
	Describe the process by which comments by local stakeholders have been invited and compiled. An invitation for comments by local stakeholders shall be made in an open and transparent manner, in a way that facilitates comments to be received from local stakeholders and allows for a reasonable time for comments to be submitted. In this regard, project participants shall describe a project activity in a manner which allows the local	DR/ SV	Material used for local stakeholders consultation are to be confirmed. <i>The announcements to the local stakeholders were released two months before the consultation meeting held on 29 October 2007. The stakeholders including officials, workers, and residents were asked to make comments on the project activity.</i> <i>The announcement dated on 08/Sep/2007 and the minutes dated on 29/Oct/2007 were provided. In the Minutes, the signatures of</i>	N/A - -	OK OK

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	stakeholders to understand the project activity, taking into account confidentiality provisions of the CDM modalities and procedures. The local stakeholder process shall be completed before submitting the proposed project activity to a DOE for validation.		<i>officials listed were confirmed.</i>		
E.2	Summary of the comments received				
	Identify stakeholders that have made comments and provide a summary of these comments	DR/ SV	<p>Summary is to be confirmed.</p> <p><i>The interview with the three local residents who attended the local stakeholder consultation meeting was conducted at the Site-visit.</i></p> <p><i>The residents provided supportive comments to the project, while expecting the waste heat utilization for neighboring residents within 5-10km from the project site and the proper management of water treatment facility.</i></p>	N/A -	OK
E.3	Report on how due account was taken of any comments received				
	Explain how due account have been taken of comments received.	DR/ SV	<p>To be confirmed at the Site-visit.</p> <p><i>Their comments have been taken into account in order to proceed with the project activity.</i></p>	N/A	OK
Annex 1	Contact information on PPs				
	Copy and paste table as needed.	DR		OK	OK

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	Fill for each organization listed in section A.3 the following mandatory fields: Organization, Name of contact person, Street, City, Postfix/ZIP, Country, Telephone and Fax or e-mail.				
Annex 2	Information regarding public funding				
	Provide information from Parties included in Annex I on sources of public funding for the project activity which shall provide an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of those Parties	DR		OK	OK
Annex 3	Baseline information				
	Provide any further background information used in the application of the baseline methodology. This may include tables with time series data, documentation of measurement results and data sources, etc.	DR	To be confirmed. <i>Data are confirmed.</i>	N/A	OK
Annex 4	Monitoring information				
	Provide any further background information used in the application of the monitoring methodology. This may include tables with time series data, additional documentation of measurement equipment, procedures, etc.	DR	No additional information. <i>As described in Section B.6.2. and B.7., the monitoring plan are confirmed to be appropriate.</i>	OK	OK

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Remarks: MoV: Means of Validation (Desk Review, Site-visit, Interview)

CAR: Corrective Action Request

CL: Clarification Request

OK

N/A : Not Applicable at Desk Review

Certificate

Mr. Itaru WATANABE

Grade: Lead Assessor

Assessor No.: CDM - LA002

Assigned Date: 2003.08.11

This is to certify that Mr. Itaru WATANABE is assigned as
CDM Lead Assessor by the Japan Quality Assurance Organization.

Date: February 26. 2007

Japan Quality Assurance Organization

M. Ueda

President Matahiro UEDA

Grant of sectoral scope to CDM/JI assessor

Assessor Name: Mr. Itaru WATANABE
Grade: Lead Assessor
Assessor No.: CDM-LA002 / JI-LA002

Sectoral Scope	Granted date
1. Energy industries (renewable - / non-renewable sources)	1 Jun. 2003
2. Energy distribution	1 Jun. 2003
3. Energy demand	17 Sep. 2004
4. Manufacturing industries	1 Jun. 2003
5. Chemical industry	1 Jun. 2003
6. Construction	-
7. Transport	-
8. Mining/Mineral production	1 Jun. 2003
9. Metal production	-
10. Fugitive emissions from fuels (solid, oil and gas)	1 Jun. 2003
11. Fugitive emissions from production and consumption of halocarbons and sulphur hexafluoride	1 Jun. 2003
12. Solvents use	1 Jun. 2003
13. Waste handling and disposal	17 Sep. 2004
14. Afforestation and reforestation/Land use, land-use change and forestry	-
15. Agriculture	-

This is to certify that Mr. Itaru WATANABE is granted by the Japan Quality Assurance Organization.

Date: 18/APR/2007

Director of the Global Environment Department
Japan Quality Assurance Organization


Masaki MAEGAITO

Certificate

Mr. Toshimizu OKADA

Grade:	<u>Assessor</u>
Assessor No.:	<u>CDM - AS004</u>
Assigned Date:	<u>2003.10.01</u>

This is to certify that Mr. Toshimizu OKADA is assigned as CDM Assessor by the Japan Quality Assurance Organization.

Date: February 26, 2007

Japan Quality Assurance Organization

M. Ueda

President Matahiro UEDA

Grant of sectoral scope to CDM/JI assessor


Assessor Name: Mr. Toshimizu OKADA
Grade: Assessor
Assessor No.: CDM-AS004 / JI-AS004

Sectoral Scope	Granted date
1. Energy industries (renewable - / non-renewable sources)	1 Nov. 2006
2. Energy distribution	-
3. Energy demand	-
4. Manufacturing industries	-
5. Chemical industry	-
6. Construction	-
7. Transport	-
8. Mining/Mineral production	-
9. Metal production	-
10. Fugitive emissions from fuels (solid, oil and gas)	-
11. Fugitive emissions from production and consumption of halocarbons and sulphur hexafluoride	1 Nov. 2006
12. Solvents use	-
13. Waste handling and disposal	25 Sep 2003
14. Afforestation and reforestation/Land use, land-use change and forestry	27 Jul. 2004
15. Agriculture	27 Jul. 2004

This is to certify that Mr. Toshimizu OKADA is granted by the Japan Quality Assurance Organization.

Date: 18/APR/2007

Director of the Global Environment Department
Japan Quality Assurance Organization



Masaki MAEGAITO