

Gold Standard Monitoring Report

(Version 3.0)

Title: CECIC Zhangbei Dayangzhuang Wind Farm Project

UNFCCC Reference Number: 1855

(GS Number 514)

Under GS version 1

Start monitoring period: 11 May 2008

End monitoring period: 26 Oct 2008

CECIC Wind Power (Zhangbei) Yunwei Co. Ltd.

Dated: 30 December 2010

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1 Introduction

The purpose of this Monitoring Report is to calculate the emission reductions achieved by the project activity in the period covered by this report, and to serve as the basis for the verification of these reductions and issuance of the GS VCUs.

1.1 Monitoring period

11 May 2008 - 26 Oct 2008

2 Project description

2.1 Title

CECIC Zhangbei Dayangzhuang Wind Farm Project

2.2 UNFCCC Reference Number

1855

2.3 Project summary

The CECIC Zhangbei Dayangzhuang Wind Farm Project is located in Zhangbei County, Hebei Province, P.R.China, consists of the implementation and operation of 66 wind turbines each with a unit capacity of 750 kW. The total capacity of the project is 49.5 MW and the estimated annual electricity supplied to the grid is about 96,530MWh at the full capacity.

2.4 Implementation Status

The project was implemented as described in the PDD. During this monitoring period, the project had a good running, smooth data transfer and grid connection, and no permanent changes impact the additionality, scale of project activity and the applicability of the approved methodology.

2.5 Category of project activity

Using the agreed methodology ACM0002 the category of the project activity is:

- Sectoral scope 1: Energy industries

3 Project timeline

Starting date of the electricity production	11 May 2008
CDM Registration date	27 Oct 2008
GS registration date	05 May 2010

GS crediting period	7*3
First Renewable crediting period under CDM	27 Oct 2008 - 26 Oct 2015
First Renewable crediting period for GS CER	27 Oct 2008 - 26 Oct 2015
The GS monitoring period of Pre-CDM VER	
Start of monitoring period	11 May 2008
End of monitoring period	26 Oct 2008

* Note: According to V.a.2. of the GS requirements, project activities proceeding under the retroactive project cycle, may be eligible for retroactive crediting for realised emission reductions prior to Gold Standard registration of a maximum period of two years. The project was registered as GS project on 05/05/2010, therefore, the start date of the crediting period can be chosen as 05/05/2008 or after. The PP chose 11/05/2008 as the start date of the GS VER, the project was registered under CDM on 27 Oct 2008, therefore the GS monitoring period of Pre-CDM VER is claimed to be from 11 May 2008 to 26 Oct 2008.

4 Calculation Methodology

The project participants use the approved baseline and monitoring methodology ACM0002 (version 7) "Consolidated baseline methodology for grid-connected electricity generation from renewable sources".

Using ACM0002, the emission reductions achieved by the project activity can be calculated by multiplying the net electricity supplied to the grid and the appropriate emissions factor of the grid.

The emission reductions ER_y by the project activity during a given year y is

$$ER_y = BE_y = EG_y * EF_y$$

Where EG_y is the net electricity supplied to the grid, EF_y is the CO_2 emission factor of the grid and BE_y is the baseline emissions.

The emission factor EF_y of the grid is represented as a combination of the Operating Margin and the Build Margin, and was fixed for the duration of the first crediting period in the PDD.

The Operating Margin emission factor $EF_{OM,y}$ was calculated in the PDD as 1.1202tCO₂/MWh. The Build Margin emission factor $EF_{BM,y}$ was calculated as 0.9404tCO₂/MWh. The weighted average of Operating and Build Margin emission factors is:

$$EF_y = W_{OM} * EF_{OM,y} + W_{BM} * EF_{BM,y} = 0.75 * 1.1202 + 0.25 * 0.9404 = 1.0753tCO_2/MWh.$$

5 Monitoring Process

5.1 Data/parameter monitored with regard to emission reductions

The electricity supplied to NCPG is continuously measured by the main meter installed in Zhangbei substation of the power grid. The readings at 24:00 of the main meters were read and recorded by the grid company at the end of every month by assigned staff. The electricity exported and imported by the wind farm were both measured by the same procedures.

The monitored data are listed in the table below:

Table 1 Monitored data

ID	Variable	Source of data
1	EG: Net electricity supplied to the grid by the project	$EG_{\text{export}} \text{ minus } EG_{\text{import}}$
2	EG_{export} : Electricity exported to the grid by the project	$EG_{\text{export}} = EG_{\text{total}} \frac{E_I}{E_I + E_{II}}$
3	EG_{total} : Electricity exported to the grid by the project and the other project which share the same main meter with the project	Electricity meter installed in the substation
4	E_I : Electricity exported to the grid by the project	Electricity meter installed in the wind farm
5	E_{II} : Electricity exported to the grid by the other project (Gaojialiang project) which shares the same main meter with the project	Electricity meter installed in the wind farm
6	EG_{import} : Electricity imported from the grid by the project	Electricity meter installed in the substation

The main meter (Serial No. 200407007z0071) which monitors the power exportation (EG_{total}) and importation (EG_{import}) is installed in the 220kV Zhangbei substation of NCPG and the meters (Serial No. 30087146 and 30087147) which monitor E_I and E_{II} are installed in the onsite substation of the wind farm as the following diagram shows.

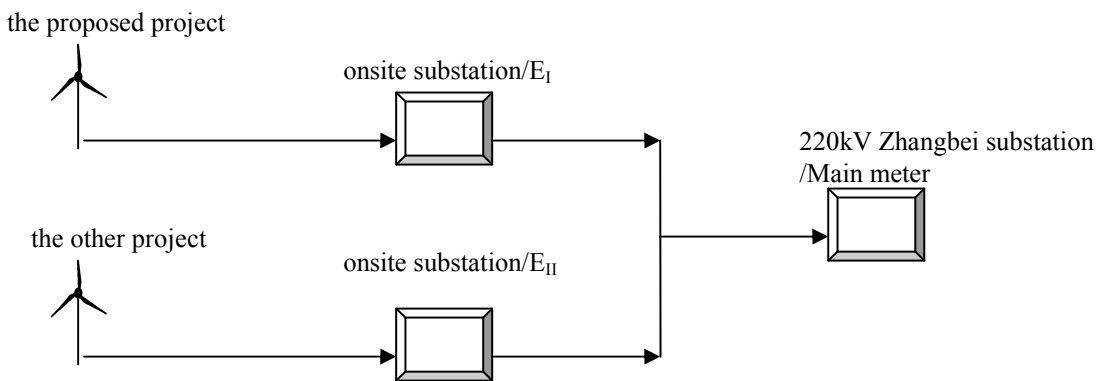


Table 2 Monitored electricity and calculation (MWh)

Period	E_I	E_{II}	EG_{Total}		EG_{export}	EG_{import}		EG
			Data from the Meter	Data on the sales receipt		Data from the Meter	Data on the sales receipt	
11/05/2008 - 31/05/2008	805.816	0.000	803.352	803.352	803.352	6.072	6.072	797.280
01/06/2008 - 30/06/2008	4519.064	0.000	3706.824	3706.824	3706.824	64.944	64.944	3641.880
01/07/2008 - 31/07/2008	5135.680	0.000	5121.732	5121.732	5121.732	33.264	33.264	5088.468
01/08/2008 - 31/08/2008	5955.840	0.000	5942.640	5942.640	5942.640	16.104	16.104	5926.536
01/09/2008 - 30/09/2008	6182.880	0.000	6164.004	6164.004	6164.004	14.124	14.124	6149.880
01/10/2008 - 26/10/2008	8956.640	0.000	8927.556	8927.556	8927.556	4.224	4.224	8923.332
Total								30527.376

5.2 Indicators monitored with regard to sustainable development

In line with the registered GS PDD, the choice of indicators for the Gold Standard is based on the issues that have been highlighted in the sustainable development assessment as critically important for the sustainable development contribution of the project. The selected indicators and the monitoring information are displayed as below:

ID	Indicator	Monitoring approach	Monitoring information
1	Number of jobs additional to the baseline (No-job)	Jobs created by the proposed project, during operation of the project. This indicator will be monitored through checking the staff roster and employment contract.	According to the staff roster, the project provided 17 job positions during the operational period.
2	Employment quality	The project will offer training for employees for the operating the wind farm. This indicator will be monitored through Personnel records of the training schedule undertaken by employees of the wind farm.	<p>The project offer trainings for employees for the operating the wind farm, several trainings had been taken since the construction of the project, as summarized below:</p> <p><u>Topic 1: Technical training(April 2008)¹</u></p> <p>This training was conducted by the engineers of Zhejiang Windey Wind Generating Engineering Co. Ltd, which is the turbine supplier of the wind farm. The training lasted 10 days from 7 April 2008 to 16 April 2008, all the operation staffs of the wind farm attended. It was mainly related with the installation and maintenance for the wind turbine WD49/750kW. Training certification was issued for the attendees. The certification sample of Zhou Baotong is attached in Annex I of this monitoring report.</p> <p>The training about installation and maintenance by the turbine supplier was only organized before the operation of the project. But the technical training will be conducted by project developer once a year.</p> <p><u>Topic 2: Security training(8 June 2008, 20 Sept. 2008)²</u></p> <p>This is internal training, all the operation staffs including Mr. Xing Zhigang, Mr. Zhou Baotong attended. The</p>

¹ Technical training records and certificates of operation personnel

² Security Training records for 2008

			<p>training was taken at the meeting room of the wind farm, and lasted for one day. In the morning, security training regarding working at Heights was conducted; in the afternoon, substation security was introduced and trained. Mr. Shen Jianlei, who is the director of the operational department of the wind farm, conducted the training.</p> <p>The security training will be conducted once a year.</p> <p><u>Topic 3: Rescue training(20 May 2008, 12 Sept. 2008)</u>³</p> <p>It is internal training and has been taken several times. All the operational staffs attended. The training was conducted by Mr. Shen Jianlei who is the director of the operational department of the wind farm. The training was taken firstly in the meeting room by the way of PPT presentation, and then practiced at the turbine tower. There were training records and evaluation forms for each attendee, as attached in annex I of this monitoring report.</p> <p>The rescue training will be conducted once a year.</p> <p><u>Topic 4: Sanitation training(July 2008)</u>⁴</p> <p>This training was conducted by experts of Hebei Red Cross for occupational health. All the staffs attended. It was taken at the meeting room by the way of PPT presentation and lasted for one day. Training certification was issued.</p> <p>The sanitation training will be conducted once a year.</p>
3	Emission reduction of soot, SO ₂ and NO _x (ER-soot, ER-so ₂ , ER-no _x)	<p>Monitored via the monitoring of the net supplied power, together with the use of publicly available data on average emissions per GWh of the thermal power plant in China.</p> <p>ER-soot=EF-soot* EGy ER-so₂=EF-so₂* EGy ER-no_x =EF-no_x * EGy</p> <p>According to the registered GS PDD, the per GWh emission of the soot, SO₂ and NO_x (EF-soot, EF-so₂, EF-no_x) of the baseline are: EF-soot =3.27 t/GWh, EF-so₂=5.82 t/GWh, EF-no_x=3.27 t/GWh</p>	<p>As calculated in this monitoring report, the net supplied power during this monitoring period is 30527.376MWh.</p> <p>The emission reduction of soot, SO₂ and NO_x is calculated as: ER-soot=3.27*30527.376/1000=99.82t ER-so₂=5.82*30527.376/1000=177.66t ER-no_x =3.27*30527.376/1000=99.82t</p>

³ The photos for rescue training

⁴ Sanitation training certificates issued by Hebei Red Cross

		EGy(GWh) is the net supplied power during the monitoring period y, monitored in line with CDM criterion.	
4	Water quantity	Monitored via the monitoring of the net supplied power, together with the use of publicly available data on average water consumption per MWh of thermal power plant in China. As fixed in the registered GS PDD, water consumption of thermal power plant is 3.54 t/MWh.	As calculated in this monitoring report, the net supplied power during this monitoring period is 30527.376MWh. Water quantity=3.54*30527.376=108066.91t
5	Mitigation measures	Effective measurements should be taken to mitigate the influence to local environment in accordance with the requirements of EIA, such as sprinkling, vegetation planting, time and area constrain of construction, collection and management of wastes, etc.	<p>According to the Environmental Test and Acceptance Report, necessary mitigation measurements required in the EIA have been put in place and have been verified.</p> <ul style="list-style-type: none"> - Experienced and talented construction team was selected; - The construction area was strictly controlled to avoid the damage to the grass; - Instead of pitch, sand stone was selected as the raw material for the construction of the road, to avoid road harden; - The occupied surface land was collected refilled, and the wastes was collected and well managed; - The temporary ground was cleared up after the construction is completed. New vegetation was planted in time; - Appropriate location was selected to place the wastes, to avoid the flying dust; - Effective measurements have been taken to dispose wastes (solid, gas, water, noise) produced during the construction. <p>According to the conclusion of the Environmental Test and Acceptance Report, the construction of the proposed project has no impact to local ecological environment.</p>

6 Quality assurance and quality control measures

6.1 Roles and responsibilities

Overall responsibility for monitoring and carrying out the monitoring following this monitoring plan lies with CECIC Wind Power (Zhangbei) Yunwei Co. Ltd.

6.2 Training

A comprehensive training course including operation of wind turbines, use of monitoring equipments, safety and other relative skill was given to relative staff assigned by the CDM project management office. Carbon Resource Management Ltd. has advised the project developer on monitoring work.

6.3 Calibrations

The metering equipments are calibrated and checked periodically by qualified third party for accuracy. No errors occurred during this monitoring period of the wind farm.

The detailed calibration information is listed as follows:

Meter	SN	Calibration date
Main meter	200407007z0071	10/03/2008
Separate meter which monitors E_I	30087147	03/03/2008
Separate meter which monitors E_{II}	30087146	14/11/2008*

* Note: The meter (30087146) which monitors E_{II} was installed on 27 October 2008, and the Gaojialiang project started to generate electricity from 25 April 2009. The calibration of meter E_{II} was performed on 14 November 2008 and therefore is before the operation start date of the Gaojialiang project. During 11 May 2008 to 26 October 2008, the Gaojialiang project had not started to generate electricity. The relevant document has been submitted to DOE.

The calibration results show that all meters operate in accordance with the industry standards and are qualified to measure the electricity supplied to the grid and consumed by the project.

6.4 Quality control

Monthly net generation data will be approved and signed off by CDM manager before it is accepted and stored.

The internal audit will also identify potential improvements to procedures to improve monitoring and reporting in future years. If such improvements are proposed these will be reported to the DOE and only operated after approval from the DOE.

7 Emission reduction calculations

7.1 Project emissions

As a renewable energy project, project emissions are zero.

7.2 Baseline emissions

Table 3 Baseline emission calculation

Period	EGy(MWh)	EF(tCO ₂ e/MWh)	Baseline emissions (tCO ₂ e)
11/05/2008 - 26/10/2008	30527.376	1.0753	32826

7.3 Leakage emissions

As a wind energy project, leakage from the project is negligible.

7.4 Summary of emission reductions during the monitoring period

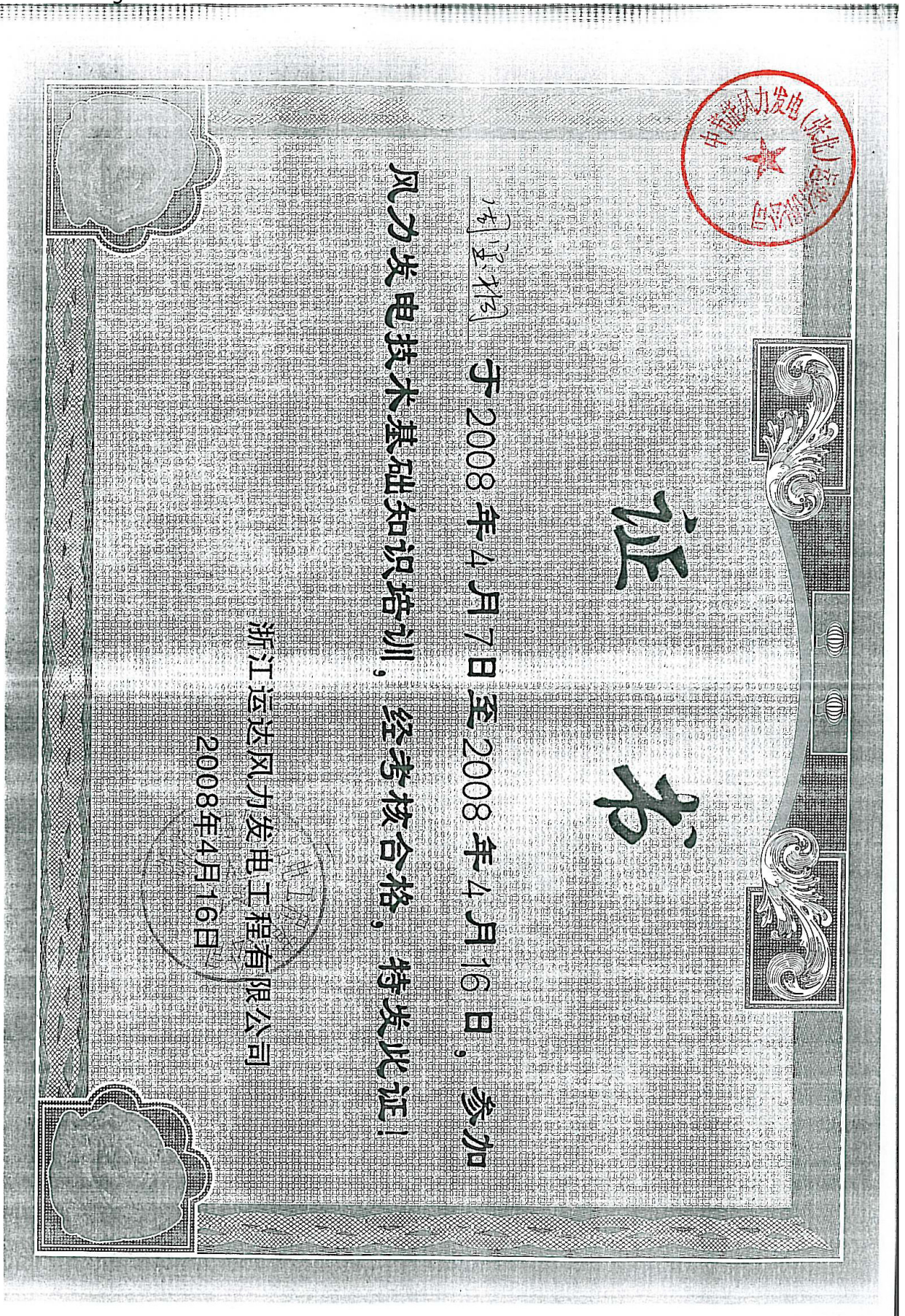
Table 4 Emission reduction calculation (tCO₂e)

Period	Baseline emission	Project emission	Leakage	Emission reduction
11/05/2008 - 26/10/2008	32826	0	0	32826

According to the registered PDD, the ex-ante estimated average annual emission reductions are 103796tCO₂e. This monitoring period covers 169 days, therefore the ex-ante estimated emission reductions should be 48058tCO₂e as per registered PDD ($103796 \times 169 / 365 = 48058$).

The actual emission reductions during this monitoring period of 32 826 tCO₂e is lower than the estimated emission reductions. This monitoring period started from 11 May 2008 to 26 October 2008, the first five months since its operation started, during which the project activity was under testing and the turbines are partly commissioned and operated; and therefore, the emission reduction during this monitoring period is less than the estimation in the registered PDD.

Annex1: Training records and certificates:





培训记录 and 评估
Training Record and Evaluation

编号: L-02-14 HR.F.008.A
部门 Department: 运行部 姓名 Name: 杨勇 岗位 Position: 主任

培训课程 Training Course	日期 Date		地点 Training Place	教师签名 Teacher signature
	由 From	至 To		
新员工培训	7:00	8:00	会议室	李群星

培训评估 Training Evaluation (受训人填写 Filled by trainee)

评估内容 Evaluation Content	优秀 Excellent	良好 Very Good	好 Good	差 Fail
1. 培训资料 The training material	✓			
2. 教师能力 Ability of Instructor	✓			
3. 培训措施 Training Facilities	✓			
4. 日程安排 Program Period	✓			
5. 培训地点 Program Place	✓			
6. 培训总体水平 Program General Level	✓			
7. 建议或意见 Proposals				

培训评估 Training Evaluation (直接领导填写 Filled by directlead)

培训前状况 situation before training	培训后状况 situation after training
评价 Evaluation:	签名: 沈建雷



培训记录 and 评估
Training Record and Evaluation

编号: L-02-14 HR.F.008.A
部门 Department: 运行部 姓名 Name: 李海明 岗位 Position:

培训课程 Training Course	日期 Date		地点 Training Place	教师签名 Teacher signature
	由 From	至 To		
高空安全培训	2008.5.18	2008.5.18	会议室	李群星

培训评估 Training Evaluation (受训人填写 Filled by trainee)

评估内容 Evaluation Content	优秀 Excellent	良好 Very Good	好 Good	差 Fail
1. 培训资料 The training material	✓			
2. 教师能力 Ability of Instructor	✓			
3. 培训措施 Training Facilities	✓			
4. 日程安排 Program Period		✓		
5. 培训地点 Program Place	✓			
6. 培训总体水平 Program General Level	✓			
7. 建议或意见 Proposals				

培训评估 Training Evaluation (直接领导填写 Filled by directlead)

培训前状况 situation before training	培训后状况 situation after training
评价 Evaluation:	签名: 沈建雷