# JCM Verification Report Form

## A. Summary of verification

A.1. General Information

| | |
|---|---|
| Title of the project | Promotion of green hospitals by improving efficiency / environment in national hospitals in Vietnam |
| Reference number | VN002 |
| Monitoring period | 06/08/2015 – 31/10/2016 |
| Date of completion of the monitoring report | 24/12/2016 |
| Third-party entity (TPE) | Lloyd's Register Quality Assurance Limited |
| Project participant contracting the TPE | Mitsubishi Corporation |
| Date of completion of this report | 01/03/2017 |

A.2 Conclusion of verification and level of assurance

| | |
|---|---|
| Overall verification opinion | ☒ Positive<br>☐ Negative |
| ☐ Unqualified opinion | Based on the process and procedure conducted, *Lloyd's Register Quality Assurance Limited (LRQA)* (TPE's name) provides reasonable assurance that the emission reductions for *Promotion of green hospitals by improving efficiency / environment in national hospitals in Vietnam* (project name)<br>✓ Are free of material errors and are a fair representation of the GHG data and information, and<br>✓ Are prepared in line with the related JCM rules, procedure, guidelines, forms and other relevant documents |
| *(If overall verification opinion is negative, please check below and state its reasons.)*<br>☐ Qualified Opinion<br>☐ Adverse opinion<br>☐ Disclaimer | <State the reasons> |

A.3. Overview of the verification results

| Item | Verification requirements | No CAR or CL remaining |
|---|---|---|
| The project implementation with the eligibility criteria of the applied methodology | The TPE determines the conformity of the actual project and its operation with the eligibility criteria of the applied methodology. | ☒ |
| The project implementation against the registered PDD or any approved revised PDD | The TPE assesses the status of the actual project and its operation with the registered/validated PDD or any approved revised PDD. | ☒ |
| Calibration frequency and correction of measured values with related requirements | If monitoring Option C is selected, the TPE determines whether the measuring equipments have been properly calibrated in line with the monitoring plan and whether measured values are properly corrected, where necessary, to calculate emission reductions in line with the PDD and Monitoring Guidelines. | ☒ |
| Data and calculation of GHG emission reductions | The TPE assesses the data and calculations of GHG emission reductions achieved by/resulting from the project by the application of the selected approved methodology. | ☒ |
| Avoidance of double registration | The TPE determines whether the project is not registered under other international climate mitigation mechanisms. | ☒ |
| Post registration changes | The TPE determines whether there are post registration changes from the registered PDD and/or methodology which prevent the use of the applied methodology. | ☒ |

| | | |
|---|---|---|
| Authorised signatory: | Mr. ☒ | Ms. ☐ |
| Last name: Chiba | First name: Michiaki | |
| Title: Climate Change Manager - Asia & Pacific | | |
| Specimen signature: [redacted] | | Date: 01/03/2017 |

## B. Verification team and other experts

| | Name | Company | Function* | Scheme competence* | Technical competence* | On-site visit |
|---|---|---|---|---|---|---|
| Mr. ☒ Ms. ☐ | Michiaki Chiba | LRQA Ltd. | Verification team leader | ☒ | Technical competence authorised | ☒ |
| Mr. ☒ Ms. ☐ | Nguyen Thang | External expert | Host country expert | ☐ | N/A | ☒ |
| Mr. ☐ Ms. ☐ | | | | ☐ | | ☐ |
| Mr. ☒ Ms. ☐ | Xianxin Yan | LRQA China | Internal reviewer | ☒ | N/A | ☐ |

*Please specify the following for each item.*

* *Function: Indicate the role of the personnel in the validation activity such as team leader, team member, technical expert, or internal reviewer.*

* *Scheme competence: Check the boxes if the personnel have sufficient knowledge on the JCM.*

* *Technical competence: Indicate if the personnel have sufficient technical competence related to the project under validation.*

## C. Means of verification, findings and conclusions based on reporting requirements

C.1. Compliance of the project implementation and operation with the eligibility criteria of the applied methodology

**<Means of verification>**

LRQA has determined during the verification process that the actual implementation and operation of the project has been conducted in conformance with the eligibility criteria of the applied methodology.

The project applied the approved methodology: JCM_VN_AM002_ver01.0 "Introduction of room air conditioners equipped with inverters".

LRQA assessed by means of an on-site visit that the physical features of the project are in place and that the project participants (PPs) have operated the project as per the eligibility criteria of the applied methodology. The steps taken to verify each eligibility criterion and the conclusions about implementation of the project are summarised as below.

Criterion 1: The methodology is applicable to the following types of projects:

・Installation of inverter room air-conditioners (RACs) to public sector buildings.

・Replacement of existing non-inverter RACs by inverter RACs in all types of buildings.

Justification in the PDD: The project newly introduces RACs equipped with inverters, and

replaces some existing non-inverter RACs by inverter RACs at People's Hospital 115 and Viet Duc Hospital.
Both People's Hospital 115 and Viet Duc Hospital are national hospitals, administrated by national government.
Steps taken for assessment: The verification team reviewed the project documentation and conducted on site assessment including physical visits to the hospitals, interviews and observation of project RACs.
Conclusion: The verification team confirmed that the project introduced total 1,011 units of inverter RACs to the 2 national hospitals. Some replaced the existing non-inverter RACs and the others were newly installed. Both new installation of inverter RACs and replacement of existing non-inverter RACs by inverter RACs meet the requirements of the criterion.

Criterion 2: Rated cooling capacity of a project RAC is within the applicable range of the Vietnamese national standard TCVN7831:2012.
Justification in the PDD: TCVN7831:2012 is applicable to non-ducted air conditioners with a rated cooling capacity up to 14kW.
Rated cooling capacity of project RACs are between 2.6kW and 3.65kW, within the applicable range of the standard.
Steps taken for assessment: The verification team reviewed the technical specification of the project RACs, the requirements of the national standard and conducted on-site assessment.
Conclusion: The verification team confirmed that the rated cooling capacity of the project RACs are within the range of the National Standard TCVN 7831:2012 is applicable and the criterion is met by the project.

Criterion 3: Ozone Depletion Potential (ODP) of the refrigerant used for project RAC is zero.
Justification in the PDD: Refrigerant used for project RACs is R410A whose ODP is zero.
Steps taken for assessment: The verification team reviewed technical specification of project RACs and the Safety Data Sheet of refrigerant used and physically observed through the on site assessment.
Conclusion: The verification team confirmed that the project RACs use R410A as the refrigerant and its ODP is zero. Therefore the requirement of the criterion is met by the project.

Criterion 4: Plans to prevent release of refrigerants into the atmosphere at the time of RAC removal are prepared for both project RACs and the existing RACs replaced by the project. In the case of replacing existing RACs by project RACs, execution of the prevention plan is checked at the time of verification, in order to confirm that refrigerant used for the existing RACs removed by the project is not released to the air.

Justification in the PDD: To prevent release of refrigerants into the atmosphere due to the project, at the time of RAC removal, the project plans to collect refrigerants from RACs removed and ensure storage of collected refrigerants by using refrigerant recovery check sheet. In addition, the project plans to provide relevant training for local workers to acquire adequate refrigerant collecting technique. Procedures of refrigerant collection are outlined in refrigerant recovery process.

Steps taken for assessment: The verification team reviewed the procedures and records of the plan implemented including the refrigerant collection, storage, and treatment.

Conclusion: The verification team reviewed the records and confirmed proper implementation of refrigerant recovery, collection and storage. The recovered refrigerant from the existing RACs was kept in the dedicated storage throughout the monitoring period. CL2 and FAR1 were issued related to this requirement as below.

The verification team confirmed that the eligibility condition is satisfied by the project by reviewing records of activities and interviewing the PPs through the on site assessment.

The details of the persons interviewed and the documents reviewed are shown in the Section F of this report.

<**Findings**>

*Please state if CARs, CLs, or FARs are raised, and how they are resolved.*

Grade / Ref: CL 2

Nature of the issue raised: The PPs were requested to clarify the procedures to prevent release of refrigerant and address lost refrigerant from the air-conditioner PAC-C1-1.44.1 of Viet Duc Hospital (Zone Clinics #107) in March 2016.

Nature of responses provided by the PPs: In order to comply with the eligibility criterion 4, a plan to prevent release of refrigerant into the atmosphere at the time of RAC removal was prepared and the procedures for refrigerant recovery were submitted. The PPs also submitted, as part of evidence for proper storage of the recovered refrigerant, record of refrigerant storage, as well as the set of document which record that collected and stored refrigerant was handed to the authorized entity for decomposition process following Vietnamese regulation.

During the monitoring period, an incident of a project RAC (PAC-C1-1.44.1 placed at Zone Clinics #107) not providing sufficient cooling was reported by Viet Duc Hospital staff in March 2016. While all the project RACs were properly functioning for a few months after initial operation, the trouble was observed after winter season when the RAC was not in operation for a few months due to the low ambient temperature. The PPs will continue to periodically monitor this specific RAC to prevent the refrigerant leakage in the future.

Assessment of the responses: A few RACs out of total 1,011 units installed in the project was reported technical trouble during the monitoring period and the PPs took prompt actions to check and repair to recover the normal operation. The subject RAC was noted loss of refrigerant gas at

start of hot season and the cooling operation. Proper functioning of the RAC was confirmed after the initial installation. The verification team reviewed the procedures and records of measures preventing release of refrigerant gas into the atmosphere and interviewed the PPs. The cause of refrigerant lost during the operation was considered as the installation work and it is difficult to totally prevent. The loss of refrigerant gas during operation was outside the scope of plan to prevent release of refrigerant but the PPs confirmed to periodically monitor operation of RACs including the one reported the refrigerant lost. The CL was closed.

Grade / Ref: FAR 1

Nature of the issue raised: During the on-site assessment, the verification team noted that air-conditioners were temporarily removed as below.

1) Outdoor units of air-conditioners were moved for B015 and B016 of the People's Hospital 115 on 24/11/2016 due to construction of a new building. The re-installation completed on the roof-top of the new building.

2) 12 indoor units were uninstalled on 03/12/2016 and 9 indoor units are planned to be uninstalled due to renovation in the Grand Floor of B-2 Building at the People's Hospital 115. The un-installed indoor units will be re-installed in the same locations after the renovation.

The PPs were requested to maintain and present records of the works to particularly demonstrate that the plan to prevent release of refrigerant into the atmosphere has been applied to the verification of the next monitoring period.

**<Conclusion based on reporting requirements>**

*Please state conclusion based on reporting requirements.*

The verification team confirmed that the project has been implemented in conformity with the eligibility criteria of the applied methodology. Actions to FAR 1 will be confirmed in the next verification.

C.2. Assessment of the project implementation against the registered PDD or any approved revised PDD

**<Means of verification>**

The project is to reduce CO2 emissions by facilitating the utilisation of more energy efficient inverter RACs in place of the conventional and more energy intensive non-inverter RACs in Vietnam. Inverter technology enables air conditioners to operate with less electricity consumption compared to the conventional types by varying revolution speed of the compressor according to the desired room temperature and operating conditions.

The JCM project has been implemented at two national hospitals in Vietnam, that are People's Hospital 115 in Ho Chi Minh City and Viet Duc Hospital in Hanoi. The PPs are Energy Conservation Center Ho Chi Minh City (ECC) from the Socialist Republic of Viet Nam, Mitsubishi

Electric Corporation, Mitsubishi Corporation and Mitsubishi UFJ Morgan Stanley Securities Co., Ltd. from Japan.

The start date of project operation is on 06/08/2015 and the expected operational lifetime of the project is for 10 years.

Total 1,011 units of energy efficient inverter RACs manufactured by Mitsubishi Electric Corporation, Japan, have been introduced by the project. The project also introduces Energy Management System (EMS), which is also designed by Mitsubishi Electric Corporation and optimises operation of multiple inverter RACs. While energy efficiency improvement by EMS is not numerically counted as the emission reductions by the project, introduction of EMS will enhance efficient energy use in the public sector buildings.

The project has been selected as a demonstration project by the New Energy and Industrial Technology Development Organization (NEDO) of Japan, and receives partial financial support from Japanese public funding.

The verification team assessed the Monitoring Report (MR) and the supporting documents, conducted a physical site visit to assess the status of the actual project and its operation in accordance with the registered PDD. No revision to the registered PDD was requested.

The details of the persons interviewed and documents reviewed are provided in the Section F of this report.

The verification team determined through the verification process that the implementation and operation of the project has been in accordance with the description contained in the registered PDD. The verification team, by means of a desk review and an on-site visit, assessed that:

- all physical features of the JCM project described in the registered PDD are in place, and
- the PPs have operated the JCM project as per the registered PDD.

The MR follows the Monitoring Plan (MP) of the registered PDD consisting of the Monitoring Plan Sheet (MPS) and Monitoring Structure Sheet (MSS) that have been established based on the approved methodology. There are monitoring points as the methodology provides, namely Nos. 1-21 for the parameters EC_PJ,1,p to EC_PJ,21,p: Electricity consumption by project RACs group 1 to 21 during the period p, No. 26 for the parameter ηREF: Highest energy efficiency (cooling seasonal performance factor (CSPF)) of reference RACs and No. 27 for the parameter ηPJ: Lowest energy efficiency (CSPF) of project RACs. Number of RACs groups remained 21 as originally planned and the monitoring points Nos. 22-25 were not applicable for the monitoring period.

Electricity consumption by the project RACs has been measured by electricity meters installed for each group of RACs. The parameters are monitored continuously and recorded electronically or manually every month. The electricity meters have accuracy class of 0.5s.

CSPF is determined ex-post based on the tests by third party testing facility once during the project life using a calorimeter in line with ISO 5151 and the testing procedures and conditions

outlined in the latest version of the Vietnamese National Standard TCVN 7831. The project introduced balanced ambient room type calorimeter to an independent national institute in the host country. The highest value is to be chosen for the reference RACs and the lowest value is to be applied for the project RACs as CSPF from the measured values for conservative calculation of the reference emissions in accordance with the applied methodology.

The management structure has been designed and roles and responsibilities have been assigned to the Project Manager, Monitoring Manager and Facilities Manager as specified in the MSS for each of 2 hospitals included in the project. The team of Japanese experts and the contractors support the monitoring management as covered by NEDO model project for the initial years of the implementation including the monitoring period.
Through the processes taken, CAR 1 and CAR 3 were raised and subsequently closed as the resolution detailed below.
The details of the persons interviewed and the documents reviewed are shown in the Section F of this report.

<**Findings**>

*Please state if CARs, CLs, or FARs are raised, and how they are resolved.*

Grade / Ref: CAR 1
Nature of the issue raised: Data of the parameters Nos. 11 to 21 monthly recorded for August 2016 was lost. Although the parameters are continuously monitored by electricity meters without interruption, the PPs were requested to take measures and prevent it from occurring in the future monitoring periods.
Nature of responses provided by the PPs: The electricity meters continuously measured and kept accumulated data without interruption during the monitoring period. Therefore the lost records of meter readings in August 2016 do not affect the completeness of the monitored data. In order to prevent the same from occurring in the future, the PPs clarified the monitoring procedures including the timing for visiting the hospitals, reporting and sharing the records among parties, data back-up and internal checks.
Assessment of the responses: The verification team reviewed the monitored data, conducted on site visit and physical observation of the electricity meters and confirmed that the electricity meters were continuously measuring the data and accumulated data during the monitoring period is available for the parameters. The monitoring procedures were confirmed including the preventive actions for the future monitoring periods through the on site assessment and interviewing the responsible persons. The CAR was closed.

Grade / Ref: CAR 3
Nature of the issue raised: The PPs were requested to demonstrate that the values of parameter

Nos. 26 and 27 have been determined at a third party testing facility with submission of the supporting evidence.

Nature of responses provided by the PPs: The PPs have submitted the certification documents issued by the testing entity for review by the verification team.

Assessment of the responses: The verification team reviewed the submitted evidence and confirmed that the values of parameters are as determined at the third party testing facility. The CAR was closed.

<**Conclusion based on reporting requirements**>

*Please state conclusion based on reporting requirements.*

The verification team confirmed that the project was implemented and operated in accordance with the registered PDD and no revision to the same was requested for the monitoring period.

C.3. Compliance of calibration frequency and correction of measured values with related requirements

<**Means of verification**>

The parameter Nos. 1-21 EC_PJ,1,p to EC_PJ,21,p applies the monitoring Option C and the monitoring of the parameters use electricity meters as the measuring equipment. Although the meters are not used for billing purpose and not a subject of the national regulations for calibration of meters, the PPs applied similar quality controls as specified in the National Standard DLVN 39:2012 with either regular calibration or replacement with new meters in 3 years. Initial calibration is in January 2015 for electricity meters in the People's Hospital 115 and in May 2015 for electricity meters in Viet Duc Hospital. Therefore the next calibration is planned to be conducted after December 2017. No correction was required to the measured values to calculate emission reductions in line with the PDD and Monitoring Guidelines during the monitoring period.

<**Findings**>

*Please state if CARs, CLs, or FARs are raised, and how they are resolved.*

No issue was raised to the requirements of the section.

<**Conclusion based on reporting requirements**>

*Please state conclusion based on reporting requirements.*

The verification team confirmed that the measuring equipment applied for the parameter satisfied the requirements of the MP concerning the regular calibration and no correction was required to the measured values during the monitoring period.

C.4. Assessment of data and calculation of GHG emission reductions

<**Means of verification**>

The MR is developed using the Monitoring Report Sheet (MRS) applied to the registered JCM

project that is confirmed fulfilment of the requirements of the MRS of the applied methodology.
LRQA has determined whether:
1. a complete set of data for the specified monitoring period is available,
2. information provided in the MR has been cross-checked with other sources such as plant log books, inventories, purchase records, laboratory analysis,
3. calculations of reference emissions and project emissions, as appropriate, have been carried out in accordance with the formulae and methods described in the MP and the applied methodology,
4. any assumptions used in emission calculations have been justified, and
5. appropriate emission factors, default values and other reference values have been correctly applied.
The project utilises energy efficient inverter RACs to reduce electricity consumption in the hospitals. The sources of GHG emissions are electricity consumption by reference RACs and project RACs and CO2 is the GHG to be accounted. The reference emissions are determined as a product of monitored electricity consumption of project RACs, ratio of energy efficiency of reference RACs and project RACs based on CSPF, and CO2 emission factor of the electricity. The CO2 emission factor of the grid electricity is 0.560 tCO2/MWh as fixed ex-ante at the validation. The number of RACs group was set at 21 that was also fixed ex-ante.
The GHG emission reductions during the monitoring period are calculated as: ERp = REp - PEp 1,989.4 – 1,263.1 = 726.3 tCO2e for the location 1 and 552.7 – 400.2 = 152.6 tCO2e for the location 2. 726.3 + 152.6 = 878 tCO2e in total.
The verification team assessed the reported data with documented evidence and by means of on site visit. Through the processes taken, CAR 2 and CL1 were raised as the resolution detailed below.
The details of the persons interviewed and the documents reviewed are shown in the Section F of this report.

| Parameters | Monitored values | Method to check values in the monitoring report with sources |
|---|---|---|
| EC_PJ,1-10,p | 2,254 MWh/p | Assessement was conducted based on records of monthly meter readings and on site assessment. |
| EC_PJ,11-21,p | 714 MWh/p | Assessement was conducted based on records of monthly meter readings and on site assessment. |
| $\eta$ REF | Location 1<br>3.2<br>3.2 | Assessment was conducted based on test records of the third party entity and on site assessment |

| | | |
|---|---|---|
| $\eta$ PJ | Location 2<br>5.0<br>4.4 | |

**<Findings>**

*Please state if CARs, CLs, or FARs are raised, and how they are resolved.*

Grade / Ref: CAR 2

Nature of the issue raised: The parameters Nos. 11 to 21 included data during the months of heating operation that the CSPF of the approved methodology is not applicable.

Nature of responses provided by the PPs: For the parameters No. 11, 12, 14 to 21, electricity consumption between 10 December 2015 to 6 March 2016 were excluded from emission reduction calculation in order to avoid counting heating operation of the RACs connected to the relevant electricity meters. For the parameters No. 13, no RAC capable of heating operation is connected to the electricity meter; therefore no winter month's electricity consumption was deducted from the emission reduction calculation. As the result, Ex-post calculation of CO2 emission reductions for location 2 (i.e. Viet Duc Hospital) was reduced to 152 tCO2/p. Monitoring report has been revised to reflect this result.

Assessment of the responses: The PPs excluded monitored data of the parameters Nos. 11-12 and 14-21 to which RACs having heating function are connected during the cool months from 10/12/2015 to 06/03/2016. The data after deduction of 50.2 MWh in total was reflected in the revised MRS and the emission reductions of the location 2 were decreased from 163 tCO2e to 152 tCO2e. The verification team assessed the revised MRS and data sheets, and confirmed the calculation was correctly revised. The CAR was closed.

Grade / Ref: CL 1

Nature of the issue raised: The PPs were requested to provide detailed information on the mal-functions of the project air-conditioners below.

1) An air-conditioner of People's Hospital 115 reported not cooling in September 2015

2) Air-conditioner PAC-B3-1.12 of Viet Duc Hospital (B-3 Orthopedic Zone 1F) reported not cooling and replaced its circuit board

Nature of responses provided by the PPs: The PPs provided information and related records for the mal-functions and corrective measures.

Assessment of the responses: The verification team reviewed the information and records. The manufacturer took relevant measures to quickly recover normal operation of the equipment minimising impact to the GHG emission reductions by the project. The CL was closed.

**<Conclusion based on reporting requirements>**

*Please state conclusion based on reporting requirements.*

The verification team confirmed that appropriate methods and formulae for calculating reference emissions and project emissions have been followed. The verification team is of the opinion that all assumptions, emission factors and default values applied in calculations have been justified.

C.5. Assessment of avoidance of double registration

<**Means of verification**>

The verification team assessed and confirmed relevance of the written confirmation from the PPs that the project is not registered under the other international climate mitigation mechanisms.

The team in addition to the interviews with the PPs checked publicly accessible information of Clean Development Mechanism (CDM), Joint Implementation (JI), Verified Carbon Standard (VCS) and Gold Standard (GS) and found no identical project as the JCM project in terms of the name of entities, applied technology, scale and the location. The result of researches confirmed that the project was not registered under the other international climate mitigation mechanisms than JCM and it will not result in a double counting of GHG emission reductions.

Through the processes taken, CAR 4 was raised and subsequently closed as the resolution detailed below.

The details of the persons interviewed and the documents reviewed are shown in the Section F of this report.

<**Findings**>

*Please state if CARs, CLs, or FARs are raised, and how they are resolved.*

Grade / Ref: CAR 4

Nature of the issue raised: The PPs were requested to submit a written confirmation on that the project is not registered under other international climate mitigation mechanisms.

Nature of responses provided by the PPs: The PPs have submitted the written confirmations for review by the verification team.

Assessment of the responses: The verification team confirmed that the PPs have submitted written confirmations and the project was not registered under the other international climate mitigation mechanisms. The CAR was closed.

<**Conclusion based on reporting requirements**>

*Please state conclusion based on reporting requirements.*

The verification team confirmed that the project was not registered under the other international climate mitigation programs.

C.6. Post registration changes

<**Means of verification**>

The verification team assessed the project documentation and through the on site visit and

confirmed that there was no post registration change from the registered PDD or the approved methodology.

**<Findings>**

*Please state if CARs, CLs, or FARs are raised, and how they are resolved.*

No issue was raised to the requirements of this section.

**<Conclusion based on reporting requirements>**

*Please state conclusion based on reporting requirements.*

Through the verification processes, the verification team determined that there was no post registration change from the registered PDD or approved methodology which prevent from use of the applied methodology.

## D. Assessment of response to remaining issues

An assessment of response to the remaining issues including FARs from the validation and/or previous verification period, if appropriate

No FAR was issued in the validation and this is the first verification of the project.

## E. Verified amount of emission reductions achieved

| Year | Verified Reference Emissions ($tCO_2e$) | Verified Project Emissions ($tCO_2e$) | Verified Emission Reductions ($tCO_2e$) |
|---|---|---|---|
| 2013 | | | |
| 2014 | | | |
| 2015 | 733 | 470 | 263 |
| 2016 | 1,808 | 1,193 | 615 |
| 2017 | | | |
| 2018 | | | |
| 2019 | | | |
| 2020 | | | |
| Total ($tCO_2e$) | | | 878 |

## F. List of interviewees and documents received

F.1. List of interviewees

Mitsubishi Corporation

Yosuke Kuroda, Assistant General Manager, Head of Hydrogen & Environment Business Team, Environment Business, R&D Dept., Environmental Business Div.

Tamaki Inoue, Hydrogen & Environment Business Team, Environment Business, R&D Dept., Environmental Business Div.

Mitsubishi Corporation (Vietnam) Co., Ltd.

Naohiko Miki, Vice President

Ryosuke Ogata, Researcher, Senior Deputy Manager, Corporate Planning & Administration Dept.

Tran Thi Thanh Ha, Business Manager, Machinery Department 1

Hua Quang Thang, Senior Associate, Infrastructure & Machinery Department, Ho Chi Minh City Branch

Mitsubishi Electric Corporation

Hiroaki Makino, Manager, Engineering Sect. B, Room Air Conditioner Dept., Shizuoka Works

Mitsubishi UFJ Morgan Stanley Securities Co., Ltd.

Chisato Nakade, Consultant, Clean Energy Finance Division

Energy Conservation Center Ho Chi Minh City
Le Thi Kim Yen, Oversea Projects Coordinator
Pham Hoang Hai Quan, Energy Efficiency Consultant, Technical Department
Hoang Anh Tai
Hoang Anh Nhat
Nguyen Ngoc Nhat

Green Development Center
Mai Van Huyen, Director
Vu Thi Lan Anh, Project Coordinator, Head of Planning Department
Bui Thanh Son, Project officer

People's Hospital 115
Nguyen Dinh Phu, Vice Director
Nguyen Tuan Thanh, Manager
Nguyen Van Hieu, Manager of Administration Department
Nguyen Quoc Bao
Nguyen Ngoc Phu

Viet Duc Hospital
Nguyen Thi Bich Huong, Director, Medical
Nguyen The Dat, Deputy Manager, Equipment Department
Hoang Anh Toan, Staff of Equipment Department
Nguyen Nhat Duan, Staff of Equipment Department
Nguyen Thanh Tan, Staff of Equipment Department
Nguyen Cong Hoan, Staff of Equipment Department

Institute of Energy and Mining Mechanical Engineering (IEMM)
Vietnam National Coal and Mineral Industries Holding Corporation Limited
Nguyen Thu Hieu, Vice Director
Pham Thi Thu Thuy, M.Fin, Head, Project Management – Investment
Tran Thanh Chi, Expert of Project Development
Bach Duang, Operator
Luong Xuan Hung, Deputy Director of Center, Testing and Verification Center for Industry

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| Tonets Vietnam Co., Ltd.<br>Takeshi Hashimoto, General Director<br>Toru Takahashi, Project Director<br>Do Anh Tuan, Chief Manager & Engineer |

F.2. List of documents received

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|---|
| - Monitoring Report completed on 02/12/2016 and 24/12/2016<br>- Monthly electricity meter readings records for People's Hospital 115 from August 2015 to October 2016<br>- Monthly electricity meter readings records for Viet Duc Hospital from August 2015 to October 2016<br>- Technical specification of project RACs MSY-GH and MSZ-GH series<br>- Specification of balanced ambient room type calorimeter<br>- TVCN 7830: 2012 Non-ducted Air Conditioners – Energy efficiency<br>- TVCN 7831: 2012 Non-ducted Air Conditioners – Method for determination of energy efficiency<br>- Power supply system diagram<br>- Technical specification of electricity meters<br>- Inspection certificates for electricity meters<br>- Accreditation certificate for the calibration entity<br>- List of electricity meters<br>- Test reports issued by TVCI on energy efficiency of reference and project RACs<br>- Profile of TVCI and IEMM<br>- Specification of balanced ambient room type calorimeter, Ohnishi Netsugaku Co., Ltd.<br>- Refrigerant recovery check sheet<br>- Records of refrigerant recovered, Tonets<br>- Refrigerant storage reports, Tonets<br>- Stored refrigerant hand-over report, Tonets<br>- Minutes of handover for recovered refrigerant<br>- Information of Geocycle and destruction of recovered refrigerant gas<br>- License on hazardous waste treatment<br>- Specification of the kiln and the procedures for destruction of the refrigerant gases<br>- Certificates for treatment of recovered refrigerant gas, Holcim<br>- Manifestos for transportation and treatment of recovered refrigerant<br>- Power Meter Report August 2016<br>- Records of monthly electricity meter readings |

- Monitoring procedures
- Training records dated 30/09/2015
- Declaration letters from the project participants on avoidance of double registration
- Records of corrective measures, Mitsubishi Electric Corporation
- PDD Version 02.0 dated 25/08/2015 including the annexes
- Validation Report
- JCM_VN_AM002_ver01.0 Introduction of room air conditioners equipped with inverters
- JCM Project Cycle Procedure JCM_VN_PCP_ver03.0
- JCM Guidelines for Validation and Verification JCM_VN_GL_VV_ver01.0
- JCM Guidelines for Developing PDD and MR JCM_VN_GL_PDD_MR_ver01.0 and JCM_VN_GL_PDD_MR_ver02.0
- JCM Glossary of Terms JCM_VN_Glossary_ver01.0
- Approved Small Scale Methodology AMS II.C. Demand-side energy efficiency activities for specific technologies
- ISO 5151:2010 Non-ducted air conditioners and heat pumps – Testing and rating for performance
- JIS C 9612:2013 Room Air Conditioner
- The Ministry of Science and Technology Circular No. 23/2013/TT-BKHCN on Group 2 Measuring Instruments dated 26/09/2013
- Decision No.02/2007/QD-BCN Issuing the provisions required technical equipment for electricity meters counting the power plant, the Ministry of Industry, 09/01/2007
- DLVN 07:2012 Alternating current induction watt-hour meters Verification procedures, 2012
- DLVN 39:2012 Alternating current static watt-hour meters Verification procedures, 2012
- TCVN 7589-11:2007 (IEC 62053-11:2003) Electricity metering equipment (a.c.) – Particular requirements – Part 11: Electromechanical meter for active energy (classes 0.5, 1 and 2)
- Outline of balanced ambient room type calorimeter, Ohnishi Netsugaku Co., Ltd.

## Annex Certificates or curricula vitae of TPE's verification team members, technical experts and internal technical reviewers

*Please attach certificates or curricula vitae of TPE's validation team members, technical experts and internal technical reviewers.*

Certificate of Appointment is attached to this report.

## Joint Crediting Mechanism Certificate of Appointment

Title of Project: Promotion of green hospitals by improving efficiency / environment in national hospitals in Vietnam (Project #VN002)
Verification for the first monitoring period: 06/08/2015 – 31/10/2016

We hereby certify that the following personnel have engaged in the verification process that has fully satisfied the competence requirements of the verification of the JCM project.

| Name of Person | Assigned Roles |
|---|---|
| Michiaki Chiba | Team Leader |
| Nguyen Tri Thang | Expert |
| Xianxin Yan | Technical Reviewer |

Signed by

Michiaki Chiba
Climate Change Manager – Asia & Pacific
06/09/2016