



VERIFICATION / CERTIFICATION REPORT

“11.3 MW RENEWABLE ENERGY PROJECT FOR A GRID SYSTEM BY K.M. POWER (P) LIMITED” IN INDIA

(CDM REGISTRATION REFERENCE NO. 0750)

VERIFICATION PERIOD:
25 March 2008 to 23 March 2009

REPORT No. 2009-0256

REVISION No. 01

DET NORSKE VERITAS



VERIFICATION / CERTIFICATION REPORT

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Approved by: Michael Lehmann	Organisational unit: Climate Change Services
Client: K.M. Power Private Limited	Client ref.: G. Ramnarayan Reddy Managing Director

DET NORSKE VERITAS
CERTIFICATION AS

Veritasveien 1,
1322 HØVIK, Norway
Tel: +47 67 57 99 00
Fax: +47 67 57 99 11
http://www.dnv.com
Org. No: NO 945 748 931 MVA

Summary:

Det Norske Veritas Certification AS. (DNV) has performed the fourth verification of the emission reductions reported for the “11.3 MW Renewable Energy project for a grid system by K.M. Power (P) Limited” (Registration Ref. No. 0750) managed by K.M. Power Private Limited, for the period 25 March 2008 to 23 March 2009.

In our opinion, the GHG emissions reductions reported for the project in the monitoring report version 01 dated 19 June 2009 / 1/ are fairly stated.

The GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology, AMS-I.D, version 9 / 5/ and the monitoring plan and formulae provided in the validated PDD of 12 October 2006 / 2/.

Hence, DNV is able to certify that the emission reductions from the “11.3 MW Renewable Energy project for a grid system by K.M. Power (P) Limited”, managed by K.M. Power Private Limited for the period 25 March 2008 to 23 March 2009 amount to 20 257 tCO₂ equivalent.

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Report title: “11.3 MW Renewable Energy project for a grid system by K.M. Power (P) Limited” in India			
Work carried out by: Astakala Vidyacharan			
Work verified by: Kakaraparathi Venkata Raman			
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<i>Table of Content</i>	<i>Page</i>
1 INTRODUCTION	1
1.1 Objective	1
1.2 Scope	1
1.3 Description of the Project Activity	1
2 METHODOLOGY.....	2
2.1 Review of Documentation	3
2.2 Site Visits	3
2.3 Assessment	3
2.4 Reporting of Findings	4
3 VERIFICATION FINDINGS.....	5
3.1 Remaining Issues, CARs, FARs from Previous Validation or Verification	5
3.2 Project Implementation	5
3.3 Baseline determination (ex-post emission factor)	5
3.4 Completeness of Monitoring	5
3.5 Accuracy of Emission Reduction Calculations	6
3.6 Quality of Evidence to Determine Emission Reductions	7
3.7 Management System and Quality Assurance	7
4 CERTIFICATION STATEMENT.....	8
5 REFERENCES.....	10

Appendix A Details of audited Sites & Equipments

Appendix B Clarification ,Corrective action requests and forward action requests

Appendix C Monitoring, Reporting & Calibration Checklist

***Abbreviations***

APTRANSCO	Transmission Corporation of Andhra Pradesh Limited
AP	Andhra Pradesh
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction(s)
CH ₄	Methane
CO ₂	Carbon dioxide
CO _{2e}	Carbon dioxide equivalent
DNV	Det Norske Veritas
DNA	Designated National Authority
ERU	Emission Reduction Units(s)
FAR	Forward Action Request
GHG	Greenhouse gas(es)
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
MR	Monitoring Report
MVP	Monitoring and Verification Plan
N ₂ O	Nitrous oxide
NGO	Non-governmental Organisation
ODA	Official Development Assistance
PDD	Project Design Document
UNFCCC	United Nations Framework Convention for Climate Change
VVM	Validation Verification Manual
GWP	Global Warming Potential



1 INTRODUCTION

K.M. Power Private Limited has commissioned Det Norske Veritas Certification AS (DNV) to carry out the fourth verification of emission reductions reported for the “11.3 MW Renewable Energy project for a grid system by K.M. Power (P) Limited” in Velugonda mandal, Kurnool district, Andhra Pradesh state, India, for the period 25 March 2008 to 23 March 2009. This report contains the findings from the verification and a certification statement for the certified emission reductions.

1.1 Objective

Verification is the periodic independent review and ex-post determination by the Designated Operational Entity (DOE) of the monitored reductions in GHG emissions that have occurred as a result of the registered CDM project activity during a defined verification period.

Certification is the written assurance by the DOE that, during a specific period in time, a project activity achieved the emission reductions as verified.

1.2 Scope

The verification scope is:

- To verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan for the project activity,
- To evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement,
- To verify that the reported GHG emission data is sufficiently supported by evidence

The verification shall ensure that the reported emission reductions are complete and accurate in order to be certified.

1.3 Description of the Project Activity

Project Parties	India, Japan, United Kingdom of Great Britain and Northern Ireland.
Title of the project activity	11.3 MW Renewable Energy project for a grid system by K.M. Power (P) Limited
Registration Reference No	0750
Project Participants	K.M. Power Private Limited from India, Noble Carbon Credits Limited from UK and Mitsubishi Corporation from Japan.
Location of the project activity	Velugonda mandal, Kurnool district, Andhra Pradesh state, India
Project's crediting period start date	6 February 2002 (Fixed crediting period of 10 years)



Verification period

25 March 2008 to 23 March 2009

The project activity is a bundle of three small hydro power projects with an aggregated installed capacity of 11.3 MW, connected to the Andhra Pradesh state electricity grid. The first project, Guntakandala mini hydel scheme (4.0 MW capacity) was commissioned in February 2002. The second project, Velpanuru mini hydel scheme (3.3 MW) was commissioned in November 2002 and the third project, Madhavaram mini hydel scheme (4.0 MW) was commissioned in October 2003. The project utilises the head available in the Nippulavagu natural stream (used as a carrier canal for Kurnool-Cuddapa canal) located in Andhra Pradesh region, for generation of electricity. The projects have a diversion structure for the stream, intake chamber, de-silting chamber, fore bay, and tail race for creating the additional head to run the turbines. The technology used in this project is indigenous.

The project's emission reductions are determined as the product of the net electricity exported to the grid in a year and the ex-post monitored grid emission factor (southern regional grid) as the weighted average of current generation mix. According to the validated project design, there are no project emissions and leakage effects associated with the project. The project has already had CERs issuance three times.

2 METHODOLOGY

The verification of the emission reductions has assessed all factors and issues that constitute the basis for emission reductions from the project. These include:

- Electricity generation - net export to grid and auxiliary consumptions, on a monthly basis
- import of electricity from grid during plant shut downs
- Grid emission factor as weighted average of current generation mix – per data made available by the CEA.

Verification team

<i>Role/Qualification</i>	<i>Last Name</i>	<i>First Name</i>	<i>Country</i>	<i>Type of involvement</i>					
				Desk review	Site visit / Interviews	Reporting	Supervision of work	Technical review	Expert input
CDM verifier / technical team leader	Astakala	Vidyacharan	India	✓	✓	✓			
Technical Reviewer	Kakaraparthi	Venkata Raman	India					✓	

***Duration of verification***

Preparations: 28 June 2009 to 04 July 2009
 On-site verification: 10 July 2009
 Completion of Reporting and QA: 17 July 2009 to 30 July 2009

2.1 Review of Documentation

The monitoring reports / 1/ and the emission reduction calculations, provided in the form of spreadsheets submitted by K.M. Power Private Limited, were assessed as a part of the verification. In addition the Project Design Document / 2/, the monitoring plan contained in the PDD as well as the validation report / 3/ were also assessed. Other operational documents were also assessed as evidence.

2.2 Site Visits

On 10 July 2009, DNV carried out site visit at K.M. Power Private Limited. During the site visit, DNV verified the actual operation of the project as described in the PDD. The instruments used for monitoring electricity in all the three project locations were evidenced, including the calibration records for these instruments and these were found to be in order. Evidence for the reported net generation of electricity was verified i.e., the electricity supplied to the grid minus the electricity consumption of the project (electricity imported from the grid).

Interviewed organisation	Interview topics
K.M. Power	<ul style="list-style-type: none"> ➤ Whether the project has been implemented as planned ➤ Calculation of ex-post baseline emission factor ➤ Adherence to monitoring plan established in registered Project Design Document. ➤ Management procedures like internal audits and reviews to minimise uncertainties in data monitoring and data management ➤ Project performance ➤ Calibration of metering equipments

2.3 Assessment

The data presented in the monitoring report were assessed in detail through a review of the detailed project documentation and production records, interviews with personnel at K.M. Power Private Limited, collection of measurements, observation of established monitoring and reporting practices and assessment of the reliability of monitoring equipment. This has enabled the verification team to assess the accuracy and completeness of reported monitoring results and verify the correct application of the approved monitoring methodology. Data from other sources include the grid emission factor, which is based on CEA data, has been verified and assessed and the most conservative value chosen for the emission reduction calculations, as explained in section 3.3..



2.4 Reporting of Findings

Findings established during the verification may be as follows:

A corrective action request (CAR) is issued, where:

- i. Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;
- ii. Mistakes have been made in applying assumptions, data or calculations of emission reductions which will impair the estimate of emission reductions;
- iii. Issues identified in a FAR during validation to be verified during verification have not been resolved by the project participants.

A clarification request (CL) shall be raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

A forward action request (FAR) is issued for actions if the monitoring and reporting require attention and/or adjustment for the next verification period.

Neither corrective action request (CAR) nor forward action request (FAR) was identified.



3 VERIFICATION FINDINGS

3.1 Remaining Issues, CARs, FARs from Previous Validation or Verification

According to previous verification / 4/, no FARs were required to be followed-up during this verification.

3.2 Project Implementation

The project has been implemented as planned. The actual project construction activity started on 7 May 2001 with the installation of diversion structure, power canal, penstocks, powerhouse, and power evacuation system and tailrace canal. The first sub-project at Guntakandala site was commissioned on 6 February 2002. Hence the crediting period is chosen as starting from 6 February 2002. The second sub-project at Velpanuru was commissioned in November 2002 and the third at Madhavaram site was commissioned on October 2003. Electricity generation and supply to APTRANSCO grid is enabled through independent transmission lines for each part of the project. Synchronization reports for the three sub-projects have been verified by DNV.

After implementation and commissioning of the project, no changes have been carried out. The project has got CER issuances three times before this verification for the periods of i) 06 February 2002 to 24 March 2006 and ii) 25 March 2006 to 23 March 2007 iii) 24 March 2007 to 24 March 2008.

3.3 Baseline determination (ex-post emission factor)

The approved baseline methodology AMS-I.D (version 09) has been applied for the project activity. In accordance with AMS-I.D, the baseline for the project activity has been calculated ex-post by determining the CO₂ emissions from the electricity generation from the southern regional grid using the weighted average of current generation mix approach.

The registered PDD considers an emission factor as 739.14 t CO₂/GWh, while estimating ex-ante emission reductions for the period of 2008-2009. In line with the monitoring plan in the registered PDD, the project considered the ex-post monitored grid emission factor (as per CO₂ database from official CEA website / 13/ which is the authentic and reliable source) that was available at the time of receipt and webhosting of the initial monitoring report. Since the emission factor for the year 2008-09 was not available, the emission factor for the most recent year (2007-08) at 722.28 t CO₂/GWh has been considered for computing the baseline emissions. This is considered acceptable and conservative.

3.4 Completeness of Monitoring

As required by the monitoring methodology AMS I.D, version 09 monitoring of parameters essentially comprises:

- Electricity generation - net export to grid, import from grid during off season and auxiliary consumptions.
- Leakages due to project activity, if any.



While daily gross generation is recorded in the production log sheets for each location, the export and import of power to/from the grid is monitored continuously using energy meters which are under the purview of the state electricity board and maintained and calibrated by them. The joint meter reading is taken at each individual location and recorded by both representatives of KM Power and the electricity board officials. The Joint meter reading certificates form the basis for verification of the claimed emission reductions.

It has been observed that the emission reductions verified for the chosen verification period are lower than the ex-ante estimated CERs as per the registered PDD. The lower emission reductions reported are mainly attributed to the less availability of water for more number of days than envisaged. Also the lower value of emission factor than assumed in registered PDD. This is further explained in a table form below.

25 March 2008 to 23 March 2009	Baseline Emissions (tCO _{2e})	Project Emissions	Net Reductions (tCO _{2e})
As per PDD	25 511	0	25 511
As per MR	20 257	0	20 257
%age variation	-20.59%	0	-20.59%

The parameters reported, including source, frequency and review criteria as indicated in the monitoring plan were verified to be correct and in line with the validated monitoring plan of the PDD. Necessary management system procedures including responsibility and authority of monitoring activities have been verified to be consistent with the PDD. Knowledge of personnel associated with the project activity was also found to be satisfactory.

Based on the validated emission factors and actual electricity generation and net power export to grid, the emission reductions have been verified to be 20 257 t CO₂ equivalent for the period 25 March 2008 to 23 March 2009.

3.5 Accuracy of Emission Reduction Calculations

No significant reporting risks have been identified for the data reported. All the data required for emission reduction calculations are manually recorded in log sheets once in each shift i.e., after every 8 hours for each project individually. These are then transferred to spreadsheets for emission reduction calculations.

All other data are culled out either from the log books or daily power generation reports. Log books are having provisions to indicate forced and planned shutdowns of projects.

It has been noticed that for one of the turbines at Guntakandala site for the month covering period from 23 September 2008 to 23 October 2008 in the verification period, the gross electricity generated has crossed the rated capacity by 3.62%. However as overall unit capacity of 4 MW (2x2MW) it is within the capacity limits. It has been considered acceptable as the turbine is designed technically for an overload of up to 18%. The technical specifications from the turbine supplier / 14/ confirming the overload factor has been evidenced by DNV.



The calibration of monitoring equipments is being maintained and same has been verified by DNV through calibration certificates issued by STQC, Govt. of India, Electronic Test and Development Centre Hyderabad/ 8// 9// 10/. Daily power generation data (including total power and auxiliary power) is monitored and recorded from duly calibrated energy meters, and APTRANSCO officials monitor the export/import power meters (0.2 class accuracy) on monthly basis. All the power generation, export data are maintained daily in electronic as well as hard print form, and have been assessed for correctness.

3.6 Quality of Evidence to Determine Emission Reductions

The emission reductions reported per month in the period 25 March 2008 to 23 March 2009 was verified to be 20 257 t CO₂e.

Sufficient evidence was presented for the reported net emission reductions.

3.7 Management System and Quality Assurance

K.M. Power Private Limited has established management procedures and implemented effectively to ensure that the process is consistent. The procedures cover management responsibilities, data monitoring procedures, training procedures, periodical internal audits, management reviews and corrective actions in case of any deviations effectively. Calibration process is followed as per defined procedures and carried out annually and the calibration certificates of the instruments used for data monitoring and recording were also verified during the site visit.



4 CERTIFICATION STATEMENT

Det Norske Veritas Certification AS (DNV) has been commissioned by K.M. Power Private Limited to examine the greenhouse gas (GHG) emission reductions reported for the “11.3 MW Renewable Energy project for a grid system by K.M. Power (P) Limited” (CDM registration reference no. 0750) for the period, 25 March 2008 to 23 March 2009, equating to 20 257 tonnes of CO₂ equivalents.

The project has applied the approved baseline and monitoring methodologies AMS-I.D, version 09, and emissions reductions are reported in the monitoring report dated 19 June 2009.

The project participants are responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within monitoring plan contained in the registered PDD. The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of GHG emission reductions from the project is the responsibility of the project participants.

It is DNV's responsibility to express an independent verification statement on the reported GHG emission reductions from the project for the period 25 March 2008 to 23 March 2009

Our approach is risk-based, drawing on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these. Our examination includes assessment, on a test basis, of evidence relevant to the amounts and disclosures in relation to the project's GHG emissions for the period from 25 March 2008 to 23 March 2009

We planned and performed our work to obtain the information and explanations that we considered necessary to provide sufficient evidence for us to give reasonable assurance that the amount of GHG emission reductions for the period 25 March 2008 to 23 March 2009 are fairly stated.

We conducted our verification on the basis of the monitoring methodology AMS-I.D, version 09, and the monitoring plan included in the PDD of the project. The verification included:

- collection and assessment of evidence supporting the reported data,*
- checking whether the provisions of the monitoring methodology AMS-I.D, version 09, and the monitoring plan in the PDD were consistently and appropriately applied.*

We have verified whether the information included in the monitoring report version 01 of 19 June 2009 is correct and that the emissions reductions achieved have been determined correctly.

In our opinion, GHG emissions reported for the project in monitoring report version 01 of 19 June 2009 / 1/are fairly stated.

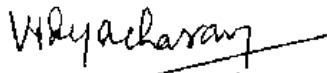
The GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology AMS-I.D Version 09 and the monitoring plan and formulae provided in the validated PDD of 12 October 2006.



Det Norske Veritas Certification AS is able to certify that the emission reductions from the "11.3 MW Renewable Energy project for a grid system by K.M. Power (P) Limited" for the period 25 March 2008 to 23 March 2009 amount to 20 257 ton CO₂ equivalent.

Bangalore, 30 July 2009

Oslo, 6 August 2009



Astakala Vityacharan

Project Manager/CDM Verifier



Michael Lehmann

Technical Director

Climate Change Services

Det Norske Veritas Certification AS



5 REFERENCES

Documents provided by the Project Participants that relate directly to the GHG components of the project.

- / 1/ K.M. Power Private Limited: “11.3 MW Renewable Energy project for a grid system by K.M. Power (P) Limited” Monitoring report version 01 of 19 June 2009.
- / 2/ K.M. Power Private Limited: CDM PDD for “11.3 MW Renewable Energy project for a grid system by K.M. Power (P) Limited” version 02 dated 12 October 2006.
- / 3/ DNV Validation report for “11.3 MW Renewable Energy project for a grid system by K.M. Power (P) Limited”. Report No. 2006-9064 dated 28 October 2006.
- / 4/ Verification/Certification report for “11.3 MW Renewable Energy project for a grid system by K.M. Power (P) Limited”. Report No. 2008-2069 dated 24 April 2009.
- / 5/ Appendix B of the simplified modalities and procedures for small-scale CDM project activities: *Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories* - AMS-I.D, version 9
- / 6/ CDM Validation Verification Manual Version 01.
- / 7/ Copies of APTRANSCO generation Certificates for all months
- / 8/ Test certificates for Energy meters for Guntakandala unit (Main meters and check meters) from STQC, Govt. Of India, Electronic Test and Development Centre Hyderabad i) dated 19 September 2007 ii) 20 October 2008
- / 9/ Test certificates for Energy meters for Velpanur unit (Main meters and check meters) from STQC, Govt. Of India, Electronic Test and Development Centre Hyderabad dated i) 08 October 2007 ii) 18 November 2008
- / 10/ Test certificates for Energy meters for Madhavaram unit (Main meters and check meters) from STQC, Govt. Of India, Electronic Test and Development Centre Hyderabad dated 20 April 2007 ii) 15 April 2008
- / 11/ Daily generation reports including down times.
- / 12/ Production log records, Maintenance records, Internal calibration records, Internal audit reports.
- / 13/ <http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm>
- / 14/ Turbine specifications from the supplies M/s. Boving Fouress Limited

Persons interviewed during the periodic verification, or persons who contributed with other information that are not included in the documents listed above.

- | | |
|------------------------|---|
| / 15/ Mr. Hari | Director, K.M. Power Private Limited |
| Mr. Madan Mohan | Plant In-charge, K.M. Power Private Limited |
| Mr. Venu Bahadur Reddy | Manager-CDM, Zenith Energy |

APPENDIX-A

DETAILS OF AUDITED SITES &EQUIPMENTS

S. No.	Location of plant	Equipment details
1	4.0 MW Guntakandala (V), Velugonda mandal Kurnool District, Andhra Pradesh, India	2x2000 KW Vertical Kaplan Turbine, Adjustable runner & indicating and recording instruments guide vanes, etc Synchronous generator of 3 Phase, 6.6 kV, k 15%, 50 c/s, 750 RPM, 0.8 PF and rated output 2000 KW Supplier: M/s Boving Fouress Ltd, Bangalore
2	3.3 MW Velpanur (V) Velugonda mandal Kurnool District, Andhra Pradesh, India	2x1650 KW Vertical Kaplan Turbine, Adjustable runner & indicating and recording instruments guide vanes, etc Synchronous generator of 3 Phase, 6.6 kV, k 15%, 50 c/s, 750 RPM, 0.8 PF and rated output 2000 KW Supplier: M/s Boving Fouress Ltd, Bangalore
3	4.0 MW Madhavaram (V) Velugonda mandal Kurnool District, Andhra Pradesh, India	2x2000 KW Vertical Kaplan Turbine, Adjustable runner & indicating and recording instruments guide vanes, etc Synchronous generator of 3 Phase, 6.6 kV, k 15%, 50 c/s, 750 RPM, 0.8 PF and rated output 2000 KW Supplier: M/s Boving Fouress Ltd, Bangalore

APPENDIX B

CLARIFICATION, CORRECTIVE ACTION REQUESTS AND FORWARD ACTION REQUESTS

Clarification requests

ID	Clarification request	Response by Project Participants	DNV's assessment of response by Project Participants
CL 1	It was observed during the site visit that for the export meters, there were two different meters used for the two generation seasons at each of the location. While both the meters were seen to be calibrated and does not have any effect on the accuracy of the electricity exported, it needs to be clarified on the reason for the changing of the meters.	The export meters (both check and main meters) are under control of the TRANSCO and are monitored and these meters are being calibrated periodically by their agency [Electronics Test & Development Centre, Govt. of India, Hyderabad (ETDC)]. The project being in a remote location, TRANSCO authorities established a practice to replace these meters with calibrated meters periodically, preferably annually, to ensure the error free monitoring and also the accuracy of measured values. This is only a precautionary measure and not due to any malfunction of meters. It is also evident from subsequent calibrations carried out on those meters, which will again be installed during next season while the existing meters are taken for calibration. Hence we confirm that the monitoring and calibration requirements are in line with defined guidelines for small scale activities <i>Indicative Simplified Baseline and Monitoring Methodologies for Selected Small-Scale CDM Project Activity Categories</i> ", EB 41, Ver. 12.	The clarification has been acceptable to DNV, as the each calibration report submitted for meters of all three locations does not report any error and found to be accurate. CL closed.

Corrective action requests

FAR ID	Forward action request	Response by Project Participants	DNV's assessment of response by Project Participants
CAR 1	No CAR was raised		

Forward action requests

FAR ID	Forward action request	Response by Project Participants	DNV's assessment of response by Project Participants
	<i>No FAR was issued</i>		

APPENDIX C

MONITORING, REPORTING AND CALIBRATION CHECKLIST

	Assessment/ Observation (at Guntakandala Unit)		
Data / Parameter: (as in monitoring plan of PDD):	Gross Electricity Generation	Electricity export/Import	Auxiliary Power
Measuring frequency:	Continuously (Online)	Continuously (Online)	Continuously (Online)
Reporting frequency:	Daily	Monthly	Daily
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes	Yes	Yes
Type of monitoring equipment:	Energy Meter	Energy Meter	Energy Meter
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	Not specified in PDD. 0.5 Class accuracy meter for the gross generation, which is not used in the emission reduction calculation or for invoicing purpose. Now the project has shifted to 0.2 class meters to represents good monitoring practice.	Not specified in PDD. 0.2 class. This represents good monitoring practice.	Not specified in PDD. The use of a 0.5 Class accuracy meter, which is not used in the emission reduction calculation or for invoicing purpose represents good monitoring practice.
Calibration frequency /interval:	Not defined but calibrated every year.	Not defined in PDD, but it is as per requirements of APTRANSCO. APTRANSCO replaces the meter every year as a policy to ensure error free measurements	Not defined but calibrated every year.
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	Yes, PDD does not define but followed practice is a good monitoring practice	Yes. PDD does not define the frequency but, the APTRANSCO replaces meters every year with calibrated meters to ensure error free measurements	Yes, PDD does not define but followed practice is a good monitoring practice
Company performing the calibration:	Authorised Third Party M/s Sri Sairam engineering works, Kurnool	Govt of India, STQC, Electronic Test and Development Centre Hyderabad. Dated i) 19.9.2007 ii) 20.10.2008	Authorised Third Party M/s Sri Sairam engineering works, Kurnool
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes	Yes	Yes
Is (are) calibration(s) valid for the whole reporting period?	Yes	Yes	Yes
How were the values in the monitoring report verified?	Daily generation log sheets	Joint Reading Certificates	Based on Log books and also as difference of gross and export electricity.
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in	Yes	Yes	yes

place?			
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	Not Applicable	Not Applicable	Not Applicable

	Assessment/ Observation (at Velpanur Unit)		
Data / Parameter: (as in monitoring plan of PDD):	Gross Electricity Generation	Electricity export/Import	Auxiliary Power
Measuring frequency:	Continuously (Online)	Continuously (Online)	Continuously (Online)
Reporting frequency:	Daily	Monthly	Daily
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes	Yes	Yes
Type of monitoring equipment:	Energy Meter	Energy Meter	Energy Meter
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	Not specified in PDD. 0.5 Class accuracy meter for the gross generation, which is not used in the emission reduction calculation or for invoicing purpose. Now the project has shifted to 0.2 class meters to represents good monitoring practice.	Not specified in PDD. 0.2 class. This represents good monitoring practice.	Not specified in PDD. The use of a 0.5 Class accuracy meter, which is not used in the emission reduction calculation or for invoicing purpose represents good monitoring practice.
Calibration frequency /interval:	Not defined but calibrated every year.	Not defined in PDD, but it is as per requirements of APTRANSCO. APTRANSCO replaces the meter every year as a policy to ensure error free measurements	Not defined but calibrated every year.
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	Yes, PDD does not define but followed practice is a good monitoring practice	Yes. PDD does not define the frequency but, the APTRANSCO replaces meters every year with calibrated meters to ensure error free measurements	Yes, PDD does not define but followed practice is a good monitoring practice
Company performing the calibration:	Authorised Third Party M/s Sri Sairam engineering works, Kurnool	Govt of India, STQC, Electronic Test and Development Centre Hyderabad. Dated i) 08.10.2007 ii) 18.11.2008	Authorised Third Party M/s Sri Sairam engineering works, Kurnool

Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes	Yes	Yes
Is (are) calibration(s) valid for the whole reporting period?	Yes	Yes	Yes
How were the values in the monitoring report verified?	Daily generation log sheets	Joint Reading Certificates	Based on Log books and also as difference of gross and export electricity.
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes	Yes	yes
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	Not Applicable	Not Applicable	Not Applicable

	Assessment/ Observation (at Madhavaram Unit)		
Data / Parameter: (as in monitoring plan of PDD):	Gross Electricity Generation	Electricity export/Import	Auxiliary Power
Measuring frequency:	Continuously (Online)	Continuously (Online)	Continuously (Online)
Reporting frequency:	Daily	Monthly	Daily
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes	Yes	Yes
Type of monitoring equipment:	Energy Meter	Energy Meter	Energy Meter
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	Not specified in PDD. 0.5 Class accuracy meter for the gross generation, which is not used in the emission reduction calculation or for invoicing purpose. Now the project has shifted to 0.2 class meters to represents good monitoring practice.	Not specified in PDD. 0.2 class. This represents good monitoring practice.	Not specified in PDD. The use of a 0.5 Class accuracy meter, which is not used in the emission reduction calculation or for invoicing purpose represents good monitoring practice.
Calibration frequency /interval:	Not defined but calibrated every year.	Not defined in PDD, but it is as per requirements of APTRANSCO. APTRANSCO replaces the	Not defined but calibrated every year.

		meter every year as a policy to ensure error free measurements	
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	Yes, PDD does not define but followed practice is a good monitoring practice.	Yes. PDD does not define the frequency but, the APTRANSCO replaces meters every year with calibrated meters to ensure error free measurements.	Yes, PDD does not define but followed practice is a good monitoring practice.
Company performing the calibration:	Authorised Third Party M/s Sri Sairam engineering works, Kurnool.	Govt of India, STQC, Electronic Test and Development Centre Hyderabad. Dated i)20.4.2007 ii)15.4.2008	Authorised Third Party M/s Sri Sairam engineering works, Kurnool
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes	Yes	Yes
Is (are) calibration(s) valid for the whole reporting period?	Yes	Yes	Yes
How were the values in the monitoring report verified?	Daily generation log sheets	Joint Reading Certificates	Based on Log books and also as difference of gross and export electricity.
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes	Yes	yes
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	Not Applicable	Not Applicable	Not Applicable