GRID CONNECTED ELECTRICITY GENERATION USING NATURAL GAS BY LANCO KONDAPALLI POWER PRIVATE LIMITED

Document Prepared By

LGAI Technological Center S.A. (Applus+ Certification)

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Summary:

LGAI Technological Center S.A. (Applus+ Certification) (Hereafter referred as Applus+ Certification) has been appointed by "Lanco Kondapalli Power Pvt Ltd" to perform 2nd periodic VCS verification of the project "Grid Connected Electricity Generation Using Natural Gas By Lanco Kondapalli Power Private Limited" for the period from 01-August-2012 to 31-December-2012 (inclusive both days). The main purpose of this verification activity is to have an independent third party for the assessment of the project design, monitoring report to ensure a thorough assessment of the proposed project activity against the applicable CDM and VCS requirements.

Project activity involved the Combined Cycle Power Project (CCPP) with installed capacity of about 366 MW comprises of one Gas Turbine (GT) Generating units of 234 MW and one Steam Turbine Generator of 132 MW. The CCPP project operates on Brayton Cycle (Compressor & Gas Turbine) at top and Rankine Cycle (Heat Recovery Steam Generator & Steam Turbine) at bottom. The Power generated is evacuated through plant switchyard which is further connected to the grid by a double circuit 400 kV transmission line which is commissioned to export power to 400 kV receiving end substation of the Power Grid Corporation of India Limited (PGCIL) located at Nunna. Start date of the project activity is 01-August-2010 which is also commissioning date of project. The commissioning report for the project activity is checked by the assessment team and found correct.

The scope of the verification is the independent and objective review of the monitoring report (MR). The MR is reviewed against the relevant criteria (see above) and decisions by the CDM Executive Board and VCS executive board, including the approved baseline and monitoring methodology. The verification was based on the guidance given in the CDM Validation and

Verification Standard for project activities, version 03.0, review against registered PD and Final Validation report, CDM Project Standard for project activities, version 03.0; and VCS program guideline v4.1 and standard version v4.2.

Monitoring report covers period from 01-August-2012 to 31-December-2012 (both days included). The total emission reductions achieved for the project activity during the monitoring period has been 114,254 tCO_2e. The crediting period for VCS began on 01-August-2010 and ended on 31-July-2020. An undertaking from the project participant confirms that project will not claim any other scheme benefits for the concerned monitoring period (Refer Section 3.1 of this FVR for further details).

A risk-based approach has been followed to perform this verification activity. In the course of verification, 06 Corrective Action requests (CAR), 00 Clarification Requests (CLs) and 00 Forward Action Requests (FARs) were raised and successfully closed. The review of the monitoring report and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and PP have provided VVB with sufficient evidence to verify the fulfilment of the stated criteria of VCS.

The assessment team has employed a risk-based approach to assess the completeness and accuracy of the claims and conservativeness of the assumptions in the MR. The main focus of the assessment team is to identify the significant risks for the project implementation and the generation of VERs. The verification is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the monitoring report combined.

The only purpose of the verification is its usage during the issuance process as part of the VCS project cycle. Therefore, LGAI Technological Center S.A. (Applus+ Certification) can't be held liable by any party for decisions made or not made based on the verification opinion, which will go beyond that purpose.

The verification has been planned and organized to achieve a Reasonable Level of assurance as per the requirement of VCS. No sampling procedure applied for site visit or document verifications. The entire documents checked/power plant verification conducted to arrive at positive verification conclusions.

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1 INTRODUCTION

1.1 Objective

LGAI Technological Center S.A. (Applus+ Certification) (Hereafter referred as Applus+ Certification) has been appointed by "Lanco Kondapalli Power Pvt Ltd" to perform the 2nd periodic verification of the "Grid Connected Electricity Generation Using Natural Gas By Lanco Kondapalli Power Private Limited" under VCS standard v4.2 and guideline v4.1. The objective of this verification activity is to have an independent third party for the assessment of the project design, monitoring report and final validation report and to ensure a thorough assessment of the proposed project activity against the applicable CDM and VCS requirements. In particular;

- the project's baseline is assessed against "AM0029: Baseline Methodology for Grid Connected Electricity Generation Plants using Natural Gas, Version 3.0"
- the project's monitoring plan is assessed against "AM0029: Baseline Methodology for Grid Connected Electricity Generation Plants using Natural Gas, Version 3.0"
- the projects compliance with, the requirements of Article 12 of the Kyoto Protocol, the CDM Modalities and Procedures as agreed in the Marrakech Accords under decision 3/CMP.1, the annexes to this decision, subsequent decisions and guidance made by COP/MOP & CDM Executive Board and other relevant rules, including the Host Country legislation and sustainability criteria along with VCS guidelines and standard version v4.2.
- CDM Validation and Verification Standard for project activities, version 03.0
- CDM Project Standard for project activities, version 03.0
- CDM Project Cycle Procedure for project activities, version 03.0
- VCS standard v4.2
- VCS program guideline v4.1

Verification is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of verified emission reductions (VERs).

1.2 Scope and Criteria

The scope is defined as an independent and objective review of the Monitoring report (MR) prepared as per the registered PD and registered approved methodology "AM0029: Baseline Methodology for Grid Connected Electricity Generation Plants using Natural Gas, Version 3.0". The MR is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM

modalities and procedures as agreed in the Marrakech Accords and the relevant decisions by the CDM Executive Board and VCS standard v4.2 and guideline version 4.1, including the approved baseline and monitoring methodology " AM0029: Baseline Methodology for Grid Connected Electricity Generation Plants using Natural Gas, Version 3.0". The verification was based on the requirements in the CDM Validation and Verification Standard for project activities, version 03.0; CDM project standard for project activities, version 03.0; CDM project cycle procedure for project activities, version 03.0 and VCS program guideline and standard version v4.2.

The verification is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the Monitoring report. In line with Guidelines for Application of materiality in verifications, the verification team has conducted a complete verification of all the information presented in the monitoring report and data monitored as presented in the emission reduction calculation spread sheet. Its invoices follow the paper trail back to the raw data such as meter reading records and logbook data sheet. There are no material errors, overestimation of ER, omission or misstatement. No sampling is used as the verification team has reviewed all the documents like commissioning certificates, Logbook data sheet etc.

1.3 Level of Assurance

The verification has been planned and organized to achieve a Reasonable Level of assurance as per the requirement of VCS. No sampling procedure applied for document verifications. The entire documents checked to arrive at positive verification conclusions.

1.4 Summary Description of the Project

Project activity involved the Combined Cycle Power Project (CCPP) with installed capacity of about 366 MW comprises of one Gas Turbine (GT) Generating units of 234 MW and one Steam Turbine Generator of 132 MW. The CCPP project operates on Brayton Cycle (Compressor & Gas Turbine) at top and Rankine Cycle (Heat Recovery Steam Generator & Steam Turbine) at bottom. The Power generated is evacuated through plant switchyard which is further connected to the grid by a double circuit 400 kV transmission line which is commissioned to export power to 400 kV receiving end substation of the Power Grid Corporation of India Limited (PGCIL) located at Nunna. Start date of the project activity is 01-August-2010 which is also commissioning date of project. The project is implemented as per the description in the registered VCS PD/CDM PDD. No event observed during the current monitoring period which can alter or deviate from the methodology requirement.

2 VERIFICATION PROCESS

2.1 Method and Criteria

Verification Process: The project assessment is based on the CDM Validation and Verification Standard for project activities, version 03.0 and "VCS standard v4.2 and program guideline version 4.1" and is conducted using standard auditing techniques to assess the correctness of the information provided by the project participants. Before the assessment begins, members of the team covering the technical scope(s), sectoral scope(s), and relevant host country experience for evaluating the VCS project activity are appointed.

Once the project is received by the assessment team, the members of the assessment team carried out:

1. A desk review of the Monitoring report against the registered PD and final validation report;
2. Follow-up interviews with project participant;
3. The resolution of outstanding issues and the issuance of the final verification report and opinion.

The prepared verification report and other supporting documents then undergo an internal quality control at the HQ (Accredited office) before being submitted to the VCS executive board.

In order to ensure transparency, assumptions must be clear and stated explicitly and background material must also be referenced. Applus+ Certification has developed a specific checklist customized for the project. The checklist demonstrates, in a transparent manner, the project criteria (requirements), discussion on each criterion by the assessment team, and the results from validating the identified criteria.

Appointment of the assessment team

According to the sectoral scope / technical area and experience in the sectoral or national busi ness environment, Applus+Certificationhas composed a project assessment team in accordanc e with the appointment rules in the internal Quality Management System of Applus+ Certification.

The composition of audit team shall be approved by the Applus+ Certification ensuring that the required skills are covered by the team.

The four qualification levels for team members that are assigned by formal appointment rules are as presented below:

- Lead Auditor (LA).

- Auditor (A) / Auditor in Training (AiT).
- Technical Expert (TE).
- Technical Reviewer (TR).

The sectoral scope / technical area knowledge linked to the applied methodology/ies shall be c overed by the assessment team.

Name	Role	SS Coverage	TA Coverage	Financial aspect	Host country experience
Dr. Atul Takarkhede	LA/TE	YES	YES	NA	YES
Mr. Denny Xue	TR	YES	YES	NA	NA

The detail regarding the assessment team is provided below in this report as Appendix 3

Document review

The Monitoring report version 01 submitted by the PP was reviewed against the approved methodology, registered PD/PDD, final validation report and other relevant criteria to verify the correctness, credibility, and interpretation of the presented information. Furthermore, a cross-check between information provided and information from other sources has been done. A complete list of all documents and evidence material reviewed is included in this report below in Appendix 1.

Follow-up interviews

A site visit is conducted by Applus+ Certification. Audit team performed interviews, telephone conferences, and physical site inspection with project stakeholders to confirm selected information and to resolve issues identified in the document review. The detail is provided in this report.

Resolution of Clarification and Corrective Action Request

The objective of this phase of the Verification was to resolve the requests for corrective actions and clarification and any other outstanding issues which need to be clarified for Applus+ Certification positive conclusion on the Monitoring report. The Corrective Action Requests and Clarification Requests raised by Applus+ Certification were resolved during communications between the Client and Applus+ Certification to guarantee the transparency of the verification process, the concerns raised and responses given are summarized below in the Appendix 2.

The final version of MR submitted by PP serves as the basis for the final assessment presented. Additional changes to the project during the verification process are not considered to be significant with respect to the main CDM/VCS objectives. The two CDM/VCS main objectives are the reduction of anthropogenic GHG emissions and the contribution of sustainable development to the host country.

Internal quality control

As final step of a verification of the final documentation including the verification report and the checklist have to undergo an internal quality control by the technical review committee, i.e. each report has to be finally approved either by the head of the technical review committee or the deputy. In case one of these two persons is part of the assessment team approval can only be given by the other one to avoid any conflict of Interest.

After confirmation of the PP the positive verification opinion and relevant documents are submitted to the VCS board through the VCS web-platform.

2.2 Document Review

The details of the document observed during the verification process are listed below in Appendix 1 of this report

2.3 Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Rao	Mr. P Shankara	Asst. Manager, Electrical	23-December-2021 & 24-December-2021	Implementation of the project and monitoring. Baseline emission calculation, achieved emission reduction for the monitoring period, monitoring process followed onsite	Dr. Atul Takarkhede
2.	Mitra	Souvik	Consultant EKI Energy Services		Baseline emission calculation, achieved emission reduction for the monitoring period	

2.4 Site Inspections

Duration of on-site inspection: 23-December-2021 & 24-December-2021				
S.No.	**Activity performed on-site**	**Site location**	**Date**	**Team member**
1.	Assessment team checked the implementation of the project, Baseline emission, Emission reduction calculation, technical description of the project and Monitoring. Assessment team also checked that whether the monitoring plan as described in the VCS PD is	Village Kondapalli, Krishna District Andhra Pradesh, India	23-December-2021 & 24-December-2021	Dr. Atul Takarkhede

Duration of on-site inspection: 23-December-2021 & 24-December-2021				
S.No.	**Activity performed on-site**	**Site location**	**Date**	**Team member**
	actually practised onsite. Also assessment team checked any change in host country criteria which may affect the baseline of the project activity. Assessment team also had a discussion with Technical staff, monitoring team and checked grievance register placed onsite as per the continuous improvement measure of PP for the Local villagers.			

2.5 Resolution of Findings

The objective of this phase of the Verification was to resolve the requests for corrective actions and clarification and any other outstanding issues from validation which need to be clarified for Applus+ Certification's positive conclusion on the Monitoring report. The Corrective Action Requests and Clarification Requests raised by Applus+ Certification were resolved during communications between the Client and Applus+ Certification to guarantee the transparency of the verification process, the concerns raised and responses given are summarized below in the appendix 2.

The final version of MR submitted by PP serves as the basis for the final assessment presented. Additional changes to the project during the verification process are not considered to be significant with respect to the main CDM/VCS objectives. The two CDM/VCS main objectives are the reduction of anthropogenic GHG emissions and the contribution of sustainable development to the host country.

Areas of validation and verification findings	No. of CL	No. of CAR	No. of FAR
Project design document and Monitoring report	00	01	00
Description of project activity	00	01	00
Application of selected baseline and monitoring methodology and selected standardized baseline	00	00	00
Applicability of methodology and standardized baseline	00	00	00
Deviation from methodology	00	00	00
Clarification on applicability of methodology, tool and/or standardized baseline	00	00	00
Project boundary	00	00	00
Establishment and description of baseline scenario	00	00	00
Demonstration of additionality	00	00	00
Emission reductions	00	01	00
Calibration details	00	01	
Monitoring plan	00	01	00

No Net harm assessment	00	00	00
Local stakeholder consultation	00	01	00
Others (please specify	00	00	00
Total	**00**	**06**	**00**

The list of findings and their resolution is presented in Appendix 2 of this report.

2.5.1 Forward Action Requests

This is 2nd periodic verification of the project activity and no FAR was raised from validation and previous verification

2.6 Eligibility for Validation Activities

This section is not applicable for present verification, as Applus+ Certifications holds the accreditation for Validation of projects for this Sectoral Scope.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

The project activity has not participated in any other GHG programs except CDM. Monitoring Report for the CDM monitoring period, 05-September-2012 to 31-December-2012 is already webhosted in UNFCCC CDM webpage[1]. PP has given declaration that the project activity will not claim emission reductions for the monitoring period claimed in VCS and avoid double counting of the emission reductions.

Verification team has also checked REC India registry and confirms that project activity is not availing any REC benefits[2].

3.2 Methodology Deviations

There is no methodology deviation in present verification.

[1] https://cdm.unfccc.int/Projects/DB/RWTUV1323884893.28/view

[2] https://www.recregistryindia.nic.in/index.php/general/publics/registered_regens

3.3 Project Description Deviations

There is no project description deviation in present verification nor approved during earlier verifications.

3.4 Grouped Project

This is not a grouped project.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

During the verification site visit it was concluded that the project is implemented as per the requirement of the registered VCD PD/CDM PDD. During the current monitoring period, it was observed that no unforeseen incident/event evolved which can impact the operation of the project activity. The project undergone continuous operation and only scheduled maintenance is observed as per the manufactures specification which is acceptable to the assessment team.

Project location is confirmed by the assessment team during the site visit. Assessment team also checked with the GPS meter regarding the latitude and longitude of the project site and confirm that the details as mentioned in the registered PD are correct. The detail is as below:

Location	State	Latitude	Longitude
Village Kondapalli, District Krishna	Andra Pradesh	16°38'30.10" N	80°33'05.33" E

Assessment team also checked the technical details of the power plant installed onsite. The power plant is an Combined Cycle Power Project (CCPP) with installed capacity of about 366 MW comprises of one Gas Turbine (GT) Generating units of 234 MW and one Steam Turbine Generator of 132 MW. The CCPP project operates on Brayton Cycle (Compressor & Gas Turbine) at top and Rankine Cycle (Heat Recovery Steam Generator & Steam Turbine) at bottom. The Power generated is evacuated through plant switchyard which is further connected to the grid by a double circuit 400 kV transmission line which is commissioned to export power to 400 kV receiving end substation of the Power Grid Corporation of India Limited (PGCIL) located at Nunna..

The electricity generated by project activity is being used to sell to grid.

Assessment team checked the commissioning document and confirmed that project activity was commissioned on 01-August-2010 is correct.

The assessment team confirmed that there is no proposed or actual change to the project design during this monitoring period. The project design as mentioned in the registered PD is implemented and thus the same is acceptable to the assessment team. All required monitoring equipment's and procedures as mentioned in the registered VCS PD are available and implemented in an appropriate manner.

The organisational role and responsibility as mentioned in the registered VCD PD is followed onsite. All the monitoring equipment was calibrated as per the specified interval in the registered VCS PD. All the emergency preparedness as mentioned in the registered PD is followed onsite and no discrepancies were found regarding the same.

CAR 01 and CAR 02 were raised during the verification process and closed successfully. Please refer Appendix 2 for the detail closure of the CAR.
Assessment team confirms following during the verification site visit:

1. Start date of the project is 01-August-2010 which is the date of commissioning of the Project.
2. Assessment team confirms that project has not received or sought any other form of environmental credit". An undertaking letter dated: 13-January-2022 has been submitted by PP for double counting with any other GHG program. PP also has given a written declaration that project has not claimed other form of GHG credit for the concerned monitoring. Further, assessment team confirms that project activity provided contribution in sustainable development to the host country
3. Assessment team confirms that this is the 2nd monitoring under VCS and covers the activity from 01-August-2012 to 31-December-2012 (inclusive of both dates). Thus, VCS crediting period should be maximum of 10 years. The start date was crediting period was 01-August-2010 and end date was 31-July-2020.
   The GHG credits from 01-August-2012 to 31-December-2012 to will be claimed under VCS only. At any point of time during the crediting period, the project proponent will abide by the "Double Counting".
4. Assessment team checked and found that the Project proponent of the project activity is same as per the registered PD. There is no change in details of the PP and the same is mentioned below:

Organization name	Lanco Kondapalli Power Pvt Ltd
Contact person	Mr. Panduranga Rao
Title	Director & CEO (Project Representative)
Address	LANCO House | Plot # 4 |Software Units Layout | Hitec City | Madhapur | Hyderabad 500 081
Telephone	+91-40 4009 0400

Email	lkpl@lancogroup.com

5. Assessment team also checked the details of other entity and found that the detail as mentioned in the MR is correct.

Organization name	EKI Energy Services Limited
Role in the project	Project Consultant
Contact person	Mr. Souvik Mitra
Title	Project Manager
Address	Office No 201, Plot No 48, Scheme 78, Part 2, Vijay Nagar, Indore- 452010, Madhya Pradesh, India
Telephone	+91 9109120945
Email	souvik@enkingint.org

6. The quantified emission reduction calculation for the monitoring period is correct and conservative. Assessment team also compared actual VER with the estimated VER and found that the actual VER (114,254 tCO_2e) is 67.17% lower than the estimated emission reduction 347,974 tCO_2e (830133 tCO_2e Annual) for 153 days which is due to low PLF attained by the power plant which is dependent on gas availability and also change in the ex-post emission factors viz. $EF_{BL,upstream,CH4}$ & $COEF_{f,y}$.

4.2 Safeguards

4.2.1 No Net Harm

No potential environment or socio-economic matter was found during the site visit. The project is fuel switch from high carbon intensive fuel to low carbon intensive and thus no negative impact observed onsite.

Project activity has obtained consent to operate from the State Pollution Control Board & complying pollution norms.

Thus, there are no any significant impacts due to implementation of project activity on air, water, soil quality and ambience are envisaged due to the project activity.

4.2.2 Local Stakeholder Consultation

The local stake holder consultation was done during the registration of the project activity. There was no change in technical project description form the registered VCS PD. Assessment team confirmed the same during the verification site visit. Also, as best practice method PP also placed a grievance register onsite to record any grievance from the stakeholders as a part of continuous feedback from stakeholders. Assessment team checked the grievance register

maintained onsite and no comments were observed for the project activity. Local people are happy as the project generated employment opportunities and thus the living standards in and around the vicinity of the project is increased and thus assessment team confirms that local stakeholders have no issue with this project activity after implementation and continuous operation. CAR 03 was raised and closed successfully.

4.3 AFOLU-Specific Safeguards

This section is not applicable as this project activity is a non-AFOLU project activity.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

<table>
<tr><td>Means of verification</td><td>The verification team assessed whether the data and calculations of GHG emission reductions achieved resulting from the VCS PD. The verification team has checked whether calculations of baseline GHG emissions, project GHG emissions and leakage GHG emissions have been carried out in accordance with the formulae and methods described in the monitoring plan of the VCS PD.</td></tr>
<tr><td>Findings</td><td>CAR 04 & CAR 05 were raised during the verification process and closed successfully. Please refer Appendix 2 of this report for the detail closure of the CAR.</td></tr>
<tr><td>Conclusion</td><td>The baseline Emissions for a given year is calculated in accordance with the approved methodology “AM0029: Baseline Methodology for Grid Connected Electricity Generation Plants using Natural Gas, Version 3.0” as the project activity claims emission reductions from electricity generation only.
Formula used:

Baseline emission:

$BE_y = EG_{PJ,y} * EF_{BL,CO2,y}$
Where
$EG_{PJ,y}$ is the Net electricity generation in the project plant during the year y (MWh)
$EF_{BL,CO2,y}$ is the baseline CO_2 emission factor (tCO_2e/MWh)

Ex-ante Parameter:
1. $EF_{BM,y}$ = Build Margin Emission Factor of Southern Regional Electricity Grid
As per the registered PD the parameter is fixed ex-ante & value is 0.818 tCO_2e/MWh and found correct in the MR submitted.

2. $EF_{OM,y}$ = Operating Margin Emission Factor of Southern Regional Electricity
As per the registered PD the parameter is fixed ex-ante & value is as below and found correct in the MR submitted.
<table><tr><th>Year</th><th>Operating margin</th></tr><tr><td>2006-07</td><td>0.999 tCO_2e/MWh</td></tr><tr><td>2007-08</td><td>0.991 tCO_2e/MWh</td></tr><tr><td>2008-09</td><td>0.973 tCO_2e/MWh</td></tr></table>
3. Carbon Emission Factor of Natural Gas ($EF_{CO2,f,y}$) = The CO_2 emission factor per unit of energy of natural gas in year ‘y’
The parameter is fixed ex-ante and the value is 56.1 tCO2/TJ (= 0.0561 tCO2/GJ) fixed for the crediting period.

4. Oxidation Factor of Natural Gas ($EF_{CO2,f,y}$) = Oxidation factor of natural gas
As per the registered PD the parameter is fixed ex-ante & value is 1.0 and found correct in the MR submitted.</td></tr>
</table>

5. **Station Heat Rate of the Project activity** = Station Heat Rate has been used to calculate the quantity of Natural Gas consumption associated with the expected electricity generation from the project activity. This data is used as an input for calculating Project Emissions
   The parameter is fixed ex-ante and the value 1850 kCal/kWh and found correct in the MR submitted.

6. **Carbon Emission Factor of Coal, Lignite, Diesel, Oil, Natural Gas** = This data is used as an input for calculating the fugitive CH_4 emissions occurring in the absence of the project activity

   As per the registered PD the parameter is fixed ex-ante & values are provided in the ER sheet and found correct in the ER sheet submitted.

7. **Oxidation Factor of Coal, Lignite, Diesel, Oil, Natural Gas** = Oxidation factor of coal which has been identified as the baseline scenario fuel.
   As per the registered PD the parameter is fixed ex-ante & values are provided in the ER sheet and found correct in the ER sheet submitted.

8. **Calorific values of Coal, Lignite, Diesel, Oil and Natural Gas Naphtha** = This data is used as an input for calculating the Energy efficiency of coal fired power plants and the fugitive CH_4 emissions occurring in the absence of the project activity
   As per the registered PD the parameter is fixed ex-ante & values are provided in the ER sheet and found correct in the ER sheet submitted.
9. **η_{BL} – Efficiency of coal fired power generating stations using sub-critical technology =** Energy efficiency of coal fired power plant using sub-critical technology which has been identified as the baseline scenario
   The parameter is fixed ex-ante and the value 34.60% and found correct in the MR submitted.
10. **Fuel consumption in coal fired power generating stations using sub-critical technology in the Southern Region =** The data is used as an input for calculating the Energy efficiency of coal fired power plants

    As per the registered PD the parameter is fixed ex-ante & value is as below and found correct in the MR submitted.

Coal Based Power Station using sub-critical technology	Fuel Consumption
RAYAL SEEMA	1045.8 Million Tonnes
RAYAL SEEMA	1012.6 Million Tonnes
R_GUNDEM STPS	2574.4 Million Tonnes
SIMHADRI	2544.5 Million Tonnes
SIMHADRI	2774.7 Million Tonnes
RAICHUR	1115.0 Million Tonnes
BELLAEY TPS	1016.3 Million Tonnes

11. **Electricity Generation from coal fired power plants using sub-critical technology in Southern region =** This data is used as an input for calculating the Energy efficiency of coal fired power plants

    As per the registered PD the parameter is fixed ex-ante & value is as below and found correct in the MR submitted.

Coal Based Power Station using sub-critical technology	Generation GWh
RAYAL SEEMA	1,577
RAYAL SEEMA	1,527
R_GUNDEM STPS	3,919

SIMHADRI	3,865
SIMHADRI	4,215
RAICHUR	1,540
BELLAEY TPS	1,106

12. **CO_2 emissions from Build Margin Power plants in the in Southern region =** This data is used as an input for calculating the fugitive CH4 emissions occurring in the absence of the project activity
As per the registered CDM PDD & VCS PD parameter is fixed ex-ante and the values provided in ER sheet found correct.

Ex-post parameters:

As per the registered VCS PD and requirement of the applied methodology following parameters have been monitored by PP:

1. Total volume of natural gas combusted in the project plant in year y **($FC_{f,y}$)**-
Reliance Gas Transportation Infrastructure Limited (**RGTIL**) supplies the natural gas to the Power Plant by a dedicated pipe line. RGTIL has gas metering station at the gas supply terminal in the Power Plant to ensure proper monitoring and quantification of gas intake to the Plant. Quantity of gas consumption is measured with the help of Gas Flow meter continuously and daily readings are being recorded. The gas flow meter is calibrated at regular intervals as per RGTIL standards. During this verification period plant has consumed 57,844,458.00 SCM (57,977,500.25 SCM with application of error factor) of the natural gas. Values have been checked with the plant records by the Verification team and found consistent.
Details of gas flow meter and calibration details are provided in Appendix 5 below.

2. Net electricity generation in the project plant during the monitoring period **($EG_{PJ,y}$)**- The parameter is monitored through the energy meters installed at 400 kV PGCIL Nunna sub-station. The readings are noted from the meters installed at the sub-station in the presence of the state utility officials monthly. The values are checked from the monthly JMR and values in the ER sheet found correct. During this monitoring period project activity have supplied 244,040 MWh electricity to the grid. Same as also crosschecked with the invoices raised by PP towards state utility and found correct.
Details of gas flow meter and calibration details are provided in Appendix 5 below.

3. The net calorific value (energy content) per volume unit of natural gas in year 'y' **($NCV_{f,y}$)–** The NCV of the natural gas is monitored by the gas supplier on monthly basis and values provided in the ER sheet have been found correct.

4. CO_2 Emission Factor of Natural Gas **($EF_{co2,f,y}$)**: IPCC default value at the upper limit of the uncertainty at a 95% confidence interval as provided in Table 1.3 of Chapter 1 of Vol.2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories. Value of 0.0561 tCO_2e/GJ have been taken from the IPCC guidelines and found correct.

5. Oxidation Factor of Natural Gas **($OXID_f$) :** IPCC default value as provided in Table 1.4 of Chapter 1 of Vol.2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories. Value of 1.0 have been taken from the IPCC guidelines and found correct.

6. Build Margin Emission factor for Southern grid (**$EF_{BM,y}$**): Values of the Grid emission

factors have been taken form the CEA database version available for the respective year i.e. Version 8.0 dated January 2013. Values are found correct with CEA database as mentioned in the revised MR. Values of the parameter found consistent in the MR and ER sheet.

7. Emission factor for upstream fugitive methane emissions occurring in the absence of the project activity electricity generation (**$EF_{BL,upstream,CH4}$**): $EF_{BL,upstream,CH4}$ is calculated for power plants included in the Build Margin of the grid, inline with the baseline emission factor selection. Values are found correct with CEA database as mentioned in the revised MR. Values of the parameter i.e. 0.0561 tCO_2e/GWh found consistent in the MR and ER sheet.

8. CO_2 emission factor of Natural Gas - Quantity (**$COEF_{f,y}$**): **$COEF_{f,y}$** is calculated using calorific value of natural gas & CO_2 Emission coefficient for natural gas in energy units. Value of 0.002051 tCO_2/cum provided in the ER sheet have been found correct.

9. Project emission due to combustion of fuel (PEy): PEy due to combustion of fuel is calculated using (i) total volume of natural gas combusted in the project plant and (ii) CO2 emission coefficient of natural gas. Values of the parameter i.e. 111,660.00 tCO_2e found consistent in the MR and ER sheet.

Baseline Emissions Calculation

$BE_y = EG_{PJ,y} \times EF_{BL,CO2,y}$
Where
$EG_{PJ,y}$ is the Net electricity generation in the project plant during the year y (MWh)

$EF_{BL,CO2,y}$ is the baseline CO_2 emission factor (tCO_2e/MWh)

Thus,
= 244,040 x 0.9717= 237,133 tCO_2

Project Emission:
The project emissions are calculated as below:
$PE_y = FC_{f,y} \times COEF_{f,y}$
and
$COEF_{f,y} = NCV_{f,y} \times EF_{CO2,f,y} \times OXID_f$

$FC_{f,y}$ is the total volume of natural gas or other fuel 'f' combusted in the project plant or other startup fuel (m^3 or similar) in year(s) y

$COEF_{f,y}$ is the CO_2 emission coefficient (tCO_2/m^3 or similar) in year(s) for each fuel

$NCV_{f,y}$ is the net calorific value (energy content) per volume unit of natural gas in year y (GJ/m^3) as determined from the fuel supplier, wherever possible, otherwise from local or national data

$EF_{CO2,f,y}$ is the CO2 emission factor per unit of energy of natural gas in year y (tCO_2/GJ) as determined from the fuel supplier, wherever possible, otherwise from local or national data

$OXID_f$ is the oxidation factor of natural gas

$NCV_{f,y}$ = 8199.165 kCal/sm^3 or 0.034330 GJ/sm^3
$EF_{CO2,f,y}$ = 0.0561 tCO_2/GJ

	$OXID_f = 1$ Hence, $COEF_{f,y} = NCV_{f,y} \times EF_{CO2,f,y} \times OXID_f = 0.034330 \times 0.0561 \times 1 = 0.001925908\ tCO_2/sm^3$ In this monitoring period, $FC_{f,y} = 57, sm^3$ $PE_y = FC_{f,y} \times COEF_{f,y}$ $= 57,977,500.25\ sm^3 \times 0.001925908\ tCO_2/sm^3$ $= 111,660\ tCO_2$ (round-up value) **Leakage Emission**: The leakage for the current monitoring period is calculated as below: Inline with the applied methodology AM0029, version 3.0, leakage emissions are considered for Leakage emissions due to fugitive upstream CH_4 emissions ($LE_{CH4,y}$) and Leakage emissions due to fossil fuel combustion/electricity consumption associated with the liquefaction, transportation, re -gasification and compression of LNG into a natural gas transmission or distribution system ($LE_{LNG,CO2,y}$) Thus, $LE_y = LE_{CH4,y} + LE_{LNG,CO2,y}$ Where, $LE_{CH4,y}$ is Leakage emissions due to fugitive upstream CH4 emissions in the year y in $t\ CO_2e$ $LE_{LNG,CO2,y}$ is Leakage emissions due to fossil fuel combustion/electricity consumption associated with the liquefaction, transportation, re-gasification and compression of LNG into a natural gas transmission or distribution system during the year y in $t\ CO_2e$ Leakage emissions due to fugitive upstream CH_4 emissions are calculated as – $LE_{CH4,y} = [FC_{f,y} \times NCV_{f,y} \times EF_{NG,upstream,CH4} - EG_{PJ,y} \times EF_{BL,upstream,CH4}] \times GWP_{CH4}$ $= [57,977,500.25\ sm^3 \times 0.034330\ GJ/m^3 \times 0.000296\ tCH_4/GJ - 244,040\ MWh \times 0.0005698\ tCH_4/MWh] \times 25$[3] $= 11,219 tCO_2$ Leakage emissions due to fossil fuel combustion / electricity consumption associated with the liquefaction, transportation, re -gasification and compression of LNG into a natural gas transmission or distribution system ($LE_{LNG,CO2,y}$) is calculated as below: $LE_{LNG,CO2,y} = FC_{LNG\ y} \times EF_{CO2,upstream,LNG}$ $= 0.00\ TJ \times 6\ t\ CO_2/TJ = 0\ tCO_2$ $LE_y = LE_{CH4,y} + LE_{LNG,CO2,y}$ $=11,219\ tCO_2 + 0\ tCO_2$ $=11,219\ tCO_2$ (round-up value) Therefore, emission reductions by the project activity is, $ER_y = BE_y - PE_y - LE_y$ $= 5237,133 - 111,660 - 11,219$ $= 114,254\ tCO_2e$ Total emission reductions by the project activity during the monitoring period are $114,254\ tCO_2e$. VVB confirms that GHG emission reductions and removals have been quantified correctly in accordance with the project description and applied methodology.

[3] For the current monitoring period value applicable is 21, however PP have chosen higher value i.e. 25 as per latest IPCC guidelines being conservative for Leakage calculations. Thus, accepted by assessment team.

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

Means of verification	The verification team checked the Calibration details of the monitoring meters with the calibration certificates.
Findings	CAR 06 was raised during the verification process. The description of the CAR and its closure is described below in Appendix 2 of this report
Conclusion	The metering facilities are installed within the plant premises for the monitoring of electricity exported & NG consumption. Verification team checked the calibration certificates of the monitoring equipments and found that energy meters are under calibration compliance however, NG consumption meters are not calibrated as per calibration frequency mentioned in the VCS PD. Thus, delayed calibration observed for the 01-August-2012 to 31-December-2012 for the NG flow meter. PP has applied maximum permissible error of 0.23% added for the natural gas project emission calculations as observed error found within permissible limit, which is the line of requirement of paragraph 366 of CDM Validation and Verification Standard for project activities, version 03.0. Thus, accepted by the assessment team. Assessment team has checked the calibration certificates of all meters and confirms that meters are calibrated by NABL accredited laboratories. Details of calibration of meters are provided in Appendix 5 below. Verification team confirms the sufficiency of quantity and appropriate quality of the evidences used to determine the GHG reductions and removals."

4.6 Non-Permanence Risk Analysis

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
NA	NA	NA	NA	NA

5 VERIFICATION CONCLUSION

Applus+ Certification has been engaged by Lanco Kondapalli Power Pvt Ltd to perform the 2nd periodical verification of the "Grid Connected Electricity Generation Using Natural Gas By Lanco Kondapalli Power Private Limited".

The management of Lanco Kondapalli Power Pvt Ltd is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project's Monitoring Plan in the registered VCS PD and the applied methodology Against "AM0029: Baseline Methodology for Grid Connected Electricity Generation Plants using Natural Gas, Version 3.0".

Our verification approach was based on the requirements as defined under the Kyoto Protocol, Marrakesh accord, as well as those defined by the CDM Executive Board. 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. Further, the verification has been planned and organized to achieve a Reasonable Level of assurance as per the requirement of VCS. No sampling procedure applied for site visit or document verifications. The entire documents checked/Power plant verification conducted to arrive at positive verification conclusions. The verification team can confirm that:

- the project is operated as planned and described in the project document;
- the monitoring plan is as per the applied methodology;
- the monitoring process in Monitoring Report is as per the PD
- the development and maintenance of records and reporting procedures are in accordance with the monitoring plan;
- the installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately;
- the monitoring system is in place and generates GHG emission reductions data;
- the GHG emission reductions are calculated without material misstatements.
- A Reasonable Level of assurance was achieved as planned during verification process.

Verification period: 01-August-2012 to 31-December-2012 (inclusive of both days)

Verified GHG emission reductions and removals in the above verification period:

Year	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or removals (tCO_2e)
01-August-2012 to 31-December-2012	237,133	111,660	11,219	**114,254**
Total	237,133	111,660	11,219	**114,254**

APPENDIX 1: DOCUMENTS REVIEWED OR REFERENCED (VERIFICATION)

No.	Author	Title	References to the document	Provider
1.	NA	Auditors Report dated 30-April-2011 for Commissioning of the project activity & commercial operation	Commissioning document	Project participant
2.	NA	Contract of the project participant with the VVB	Contract document signed between PP and VVB	Project participant
3.	NA	Calibration Certificates for energy meters and gas flow meters	Calibration Certificates	Project participant
4.	NA	Registered CDM documents (CDM 5554) https://cdm.unfccc.int/Projects/DB/RWTUV1323884893.28/view	-	UNFCCC
5.	NA	Registered PD https://registry.verra.org/app/projectDetail/VCS/1261	NA	VERRA
6.	NA	GAP Validation documents https://registry.verra.org/app/projectDetail/VCS/1261	ESSPL/VCS/2013/01 DATE: 21-January-2014	VERRA
7.	NA	MR version 01 MR version 02	Dated 23-November-2021 Dated 11-Febraury-2022	PP
8.	NA	Emission reduction sheet version 01 Emission reduction sheet version 02	Dated 23-November-2021 Dated 11-Febraury-2022	Project participant
9.	NA	No Double Counting declaration	13-January-2022	Project participant
10.	NA	NG consumption records	-	Project participant
11.	NA	Monthly JMR reports for electricity export & import	-	Project participant
12.	NA	Tools/ guidelines used in the project activity • Tool to determine the remaining lifetime of the project activity in line with Annex 15 EB 50 • Glossary of CDM terms version 07 • VCS verification report template version 4.0	UNFCCC CDM/VCS web site	UNFCCC
13.	NA	Plant logbook data	NA	PP
14.	NA	Break down details of the complete monitoring period	Log sheet	PP
15.	NA	Technical Specification of Turbines	NA	PP
16.	NA	NG Purchase Records	-	PP

APPENDIX 2: CORRECTIVE ACTION REQUESTS, CLARIFICATION REQUESTS AND FORWARD ACTION REQUESTS (CAR/CL/FAR)

Project Implementation Status

CAR ID	01	Section no.	4.1	Date: 03-January-2022
Description of CAR				
During review of monitoring report following inconsistencies observed: 1. Date format throughout the MR is not inline with guidelines to complete VCS MR template v.04. Thus, corrective action sought. 2. PP is requested to submit copies of Commissioning certificates & PPA of the project activity to the assessment team. 3. Section 3.1 of MR is found incomplete with respect to registered CDM PDD & VCS PD. Further, PP is requested to submit the technical specifications of the project activity. Corrective action sought.				
Project participant response				**Date:** 12- February -2022
1. Date format has been revised in line with VCS MR guidelines of VCS MR template v 4.0 throughout the MR 2. Commissioning certificate and PPA have been provided 3. Section 3.1 of MR has been revised. Evidence of technical specifications has been provided				
Documentation provided by project participant				
1. MR v02 2. Commissioning certificate 3. PPA				
DOE assessment				**Date:** 22- February -2022
1. Date format now corrected inline with guidelines to complete MR & found correct. CAR thus closed. 2. PP has submitted Auditors Report dated 30-April-2011 for Commissioning of the project activity & commercial operation & PPA of the project activity to the assessment team. Information in the MR found correct & CAR thus closed. 3. PP have revised Section 3.1 of MR & submitted the technical specifications of the project activity and found correct. CAR thus closed.				

CAR ID	02	Section no.	4.1	Date: 03-January-2022
Description of CAR				
PP is requested to submit an undertaking for no any double accounting for current monitoring period and for project activity is participated in other GHG program other than VCS. Further clarity missing in the VCS MR for CDM Monitoring report made available on the UNFCCC webpage for the period 05-Sepember-2012 to 31-December-2012 (Issuance request state: Awaiting issuance request) which is overlapping with the current VCS monitoring period 01-August-2012 to 31-December-2012. Corrective action sought.				
Project participant response				**Date:** 12- February -2022

Undertaking no any double accounting for current monitoring period and for project activity is participated in other GHG program other than VCS has been provided by PP Though there is a MR webhosted in CDM UNFCCC webpage (UNFCCC ref 5554) and the monitoring period overlaps with the monitoring period considered in this monitoring report, PP has provided undertaking that it will not claim any GHG credits in any GHG programme other than that under VERRA for the current monitoring period
Documentation provided by project participant
Undertaking by PP to avoid double accounting
DOE assessment **Date:** 22- February -2022
PP have submitted undertaking for avoidance of emission reductions under both CDM & VCS as well as other GHG programmes if any including overlapping period between CDM & VCS. Currently project activity is registered under only VCS & CDM and declaration found correct and PP assured that they will avoid double counting at any point including CDM monitoring period. CAR thus closed.

CAR ID	03	**Section no.**	4.2.2	**Date:** 03-January-2022
Description of CAR				
In Section 2.2 of the VCS MR, found not inline with the guideline to complete MR. further, PP is requested to submit records of ongoing local stakeholder consultation including grievance register etc. Kindly submit.				
Project participant response				**Date:** 12- February -2022
Section 2.2 of MR has been revised. Grievance register for the current monitoring period has been provided to VVB as evidence of ongoing local stakeholder consultation				
Documentation provided by project participant				
MR v02 Grievance register				
DOE assessment				**Date:** 22- February -2022
Section 2.2 of the MR have been revised now and grievance records submitted. Information in the MR is found consistent inline with records submitted. CAR thus closed.				

Accuracy of GHG Emission Reduction and Removal Calculations

CAR ID	04	**Section no.**	4.4	**Date:** 03-January-2022
Description of CAR				
In section 4.1 and 4.2 of MR, PP has mentioned ex-ante and ex-post parameter related to the project activity. However, as per the registered PDD, all parameters are not available in the MR. thus, corrective action sought. Moreover, Evidence documents for all monitored value also requested to submit to assessment team.				
Project participant response				**Date:** 12- February -2022
Section 4.2 and 4.2 of MR have been revised – all parameters have been included in section 4.1 and 4.2 in accordance with registered VCS PD Monthly electricity generation data and monthly natural gas consumption data provided to VVB				
Documentation provided by project participant				
MR v02 Monthly electricity generation reports Monthly natural gas consumption records				
DOE assessment				**Date:** 22- February -2022

PP has revised monitoring report & ER and sheet and submitted the supporting documents for the all monitoring parameters and the values in the ER sheet found correct. PP have also provided ER comparison in the revised MR/ER sheet and found correct. CAR thus closed.

CAR ID	05	**Section no.**	4.4	**Date:** 03-January-2022
Description of CAR				
PP have submitted ER sheet with irrelevant comments. Corrective actions sought.				
Project participant response				**Date:** 12- February -2022
ER calculation sheet has revised				
Documentation provided by project participant				
ER calculation sheet v02				
DOE assessment				**Date:** 22- February -2022
PP have submitted revised ER sheet and found correct. CAR thus closed.				

Quality of Evidence to Determine GHG Emission Reductions and Removals

CAR ID	06	**Section no.**	4.5	**Date:** 03-January-2022
Description of CAR				
PP has mentioned detailed information related to metering equipment in section 4.3 of MR. However, supporting documents for the same is missing. Thus, kindly submit supporting documents i.e., copies of calibration certificate relevant to the current monitoring period.				
Project participant response				**Date:** 12- February -2022
Meter calibration certificates provided to VVB				
Documentation provided by project participant				
Meter calibration certificates				
DOE assessment				**Date:** 22- February -2022
PP have revised MR for the monitoring details and found correct with the supporting documents/calibration certificates provided. CAR thus closed.				

APPENDIX 3: COMPETENCE OF TEAM MEMBERS AND TECHNICAL REVIEWERS

Verification team member

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of VVB or outsourced entity)	Involvement in			
						Desk review	On-site inspection	Interview(s)	Verification findings
1.	Lead Auditor/Technical Expert	OR	Takarkhede	Dr. Atul	TQC-Outsourced entity	Yes	Yes	Yes	Yes

Technical reviewer and approver of the verification and certification report

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of VVB or outsourced entity)
1.	Technical reviewer (TR)	EI	Xue	Denny	Applus+ Certification
2.	Approver	IR	Calle de Miguel	Agustín	Applus+ Certification

Short CVs of the Team:

1. **Dr. Atul Takarkhede** is Ph.D. (Environmental Sciences) from Institute of Science, RTM Nagpur University, Nagpur, and he has already published different technical papers related to environmental sciences. He counts with more than 11 years of experience in field of Environmental Auditing, consulting and accreditation. He is an expert in ISO 9001-14001, CO_2/GHG Reporting, Carbon Foot Print, Energy, Water and Waste Management reporting for organizations' environmental performance. His professional portfolio is mainly related with carrying out EIA, conducting QA/QC of EIA Reports; conducting environmental/water audits; NABET requirements appliance, functional area expert in Water Pollution & Solid & Hazardous Waste management among others. Furthermore, he counts with solid experience on CDM-VCS-GS consultancy and auditing. Currently he is associated with True Quality Certifications Private

Limited and empanelled with Applus+ Certification to carry out GHG audits in the aforementioned schemes.

2. **Mr. Denny Xue** (Master's Degree in Environmental Engineering, Bachelor's Degree in Thermal Engineering) is an Auditor appointed by Applus+ LGAI for the GHG project assessment, auditing and technical review. He has more than 6 years of work experience in CDM/GS4GG/VCS project assessment and technical review with Applus+. Before he joined Applus+ LGAI, he has been working for Shanghai Chuanji Investment and Management which is a CDM consultancy company as a project manager for CDM project development. Mr. Denny Xue is based in Shanghai, China. Mr. Denny Xue may participate in the project's technical review team .

APPENDIX 4: ABBREVIATIONS

Abbreviations	Full texts
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction(s)
CEA	Central Electricity Authority
CL	Clarification request
CM	Combined Margin
CMS	Central Monitoring system
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
EF	Emission Factor
EIA	Environmental Impact Assessment
ER	Emission Reductions
FAR	Forward Action Request
GHG	Greenhouse gas(es)
GWP	Global Warming potential
PP	Project Participant
VVB	Validation/Verification Body approved by VERRA

APPENDIX 5: CALIBRATION DETAILS

Calibration details for Electricity Generation:

Lanco Line 1

Details	Main Meter	Check Meter
Serial No.	NP-5533 A	NP 5627 A
Make	L & T	L & T
Accuracy class	0.2s	0.2s
Calibration frequency	Once in 5 years	Once in 5 years
Last Calibration date	08-May-2012	09-May-2012
Calibration due date	07-May-2017	08-May-2017
Calibration Compliance	Yes. No delay as per once in five years frequency	

Lanco Line 2

Details	Main Meter	Check Meter

Details	Main Meter	Check Meter
Serial No.	NP-5543 A	NP 5489 A
Make	L & T	L & T
Accuracy class	0.2s	0.2s
Calibration frequency	Once in 5 years	Once in 5 years
Last Calibration date	09-May-2012	08-May-2012
Calibration due date	08-May-2017	07-May-2017
Calibration Compliance	Yes. No delay as per once in five years frequency	

Gas flow Meter Calibration details:

Location/Type	Meter Serial No.	Make	Accuracy Class	Last Calibration date	Valid till	Calibration Compliance
Reliance Gas Flow Meter Stream 1	08-040024	Emerson Process	±0.23%	20-February-2008	19-February-2009	Non compliance observed thus, Error factor applied for 01-August-2012 to 31-December-2012
				30-September-2015	29-September-2016	
Reliance Gas Flow Meter Stream 2	08-040025	Emerson Process	±0.23%	20-February-2008	19-February-2009	
				30-September-2015	29-September-2016	
PP side Check Meter	9090448	Daniel Measurement	±0.3%	20-February-2008	19-February-2009	
				30-September-2015	29-September-2016	

Pressure transmitter and temperature transmitter calibration details:

Location/Type	Meter Serial No.	Make	Accuracy Class	Last Calibration date	Valid till	Calibration Compliance
Pressure Transmitter for Reliance Gas Flow Meter Stream 1	1793074	Rosemount	+/-0.075%	20-February-2008	19-March-2008	Non compliance observed thus, Error factor applied for 01-August-2012 to 31-December-2012
				30-September-2015	29-October-2015	
Pressure Transmitter for Reliance Gas Flow Meter Stream 2	1793066	Rosemount	+/-0.075%	20-February-2008	19-March-2008	
				30-September-2015	29-October-2015	
Temperature Transmitter	1793065	Rosemount	± 0.1 °C	20-February-2008	19-March-2008	

Location/Type	Meter Serial No.	Make	Accuracy Class	Last Calibration date	Valid till	Calibration Compliance
Reliance Gas Flow Meter Stream 1				30-September-2015	29-October-2015	
Temperature Transmitter Reliance Gas Flow Meter Stream 2	1793985	Rosemount	± 0.1 °C	20-February-2008	19-March-2008	
				30-September-2015	29-October-2015	

Gas Chromatograph calibration:

Location/Type	Meter Serial No.	Calibration date	Valid till	Calibration Compliance
Gas Chromatograph	21482-1	20-February-2008	19-March-2008	Non compliance observed thus, Error factor applied for 01-August-2012 to 31-December-2012
		30-September-2015	29-October-2015	