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Verification Report for

UCR ID No. 427

DESCRIPTION	DATA
Project Owner Name :	**M/s EDCL Power Projects Limited**
Project Location :	Chittar Taluk: Rani, District Pathanamthitta,
	state - Kerala – India - 689663
	9°20'14.6"N 76°56'49.9"E
Project Aggregator:	Energy Advisory Services Pvt Limited - Bangalore - Karnataka.
Scale of the project activity	Small Scale
Date	27th May -2024

DESCRIPTION	DATA
Verification Firm:	**Limbaja Energy**
	2 Shrijinagar, Arihantnagar Road,
	Nr. Aashapura cottages,
	Bhuj-Kachchh-370001
	M : 9714253756
	limbajaenergy@gmail.com
Team Details:	Mr. Jayprakash Jethi
	Mr. Tamizahmed Rayma

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COVER PAGE Project Verification Report Form (VR)	
BASIC INFORMATION	
Name of approved UCR Project Verifier / Reference No.	**Limbaja Energy**
Type of Accreditation	☐ CDM or other GHG Accreditation ISO 14065 Accreditation ☒ UCR Approved
Approved UCR Scopes and GHG Sectoral scopes for Project Verification	01 Energy industries (Renewable/Non-renewable sources)
Validity of UCR approval of Verifier	Aug-2022 onwards
Completion date of this VR	27th May 2024
Title of the project activity	**7 MW Ullumkal Small Hydro Power Project at EDCL Power Projects Limited by Energy Advisory Services Pvt Ltd**
Project reference no.	427

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(as provided by UCR Program)	
Name of Entity requesting verification service (can be Project Owners themselves or any Entity having authorization of Project Owners, example aggregator.)	Energy Advisory Services Pvt Limited - Bangalore - Karnataka.
Contact details of the representative of the Entity, requesting verification service (Focal Point assigned for all communications)	**Energy Advisory Services Pvt Limited - Bangalore - Karnataka.** nikhil@easpl.co.in 98673 67719
Country where project is located	India
Applied methodologies (approved methodologies by UCR Standard used)	**AMS-I.D.:** "Grid connected renewable electricity generation version-18"
Project Verification Criteria: Mandatory requirements to be assessed	☒ UCR Standard ☒ Applicable Approved Methodology ☐ Applicable Legal requirements /rules of host country ☒ Eligibility of the Project Type ☒ Start date of the Project activity ☒ Meet applicability conditions in the applied methodology ☒ Credible Baseline

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	☒ Do No Harm Test ☒ Emission Reduction calculations ☒ Monitoring Report ☒ No GHG Double Counting ☐ Others (please mention below)
Project Verification Criteria: Optional requirements to be assessed	☒ Environmental Safeguards Standard and do-no-harm criteria ☐ Social Safeguards Standard do-no-harm criteria
Project Verifier's Confirmation: The *UCR Project Verifier* has verified the UCR project activity and therefore confirms the following:	The UCR Project Verifier ***Limbaja Energy*** certifies the following with respect to the UCR Project Activity **"7 MW Ullumkal Small Hydro Power Project at EDCL Power Projects Limited by Energy Advisory Services Pvt Ltd."** ☒ The Project Owner has correctly described the Project Activity in the Project Concept Note Version 1.0 (dated 18th Mar 2024) including the applicability of the approved methodology **AMS-I.D.:** Grid connected renewable electricity generation version-18 & UCR Standard for Emission Factor and meets the methodology applicability

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	conditions and has achieved the estimated GHG emission reductions, complies with the monitoring methodology and has calculated emission reductions estimates correctly and conservatively. ☒ The Project Activity is likely to generate GHG emission reductions amounting to the estimated ***[1,81,404]*** TCO_{2e}, as indicated in the PCN Version 1.0, which are additional to the reductions that are likely to occur in absence of the Project Activity and complies with all applicable UCR rules, including ISO 14064-2 and ISO 14064-3. ☒The Project Activity is not likely to cause any net-harm to the environment and/or society ☒The Project Activity complies with all the applicable UCR rules[1] and therefore recommends UCR Program to register the Project activity with above mentioned labels.

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Project Verification Report, reference number and date of approval	Verification Report UCR Project ID: 427
Name of the authorised personnel of UCR Project Verifier and his/her signature with date	Limbaja Energy  Jethi J.P. Jayprakash Jethi (Lead Verifier and Energy Auditor) 27/05/2024 T.A. Rayma Tamizahmed Rayma (Energy Analyst and Verifier) 27/05/2024

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PROJECT VERIFICATION REPORT

A. Executive Summary

The verification work has been contracted by project aggregator Energy Advisory Services Pvt. Ltd. to perform an independent verification of its UCR project titled "7 MW Ullumkal Small Hydro Power Project at EDCL Power Projects Limited by Energy Advisory Services Pvt Ltd" UCR **approved project ID:427**, to establish number of CoUs generated by project over the crediting period from 01/01/2013 to 31/12/2023 (both days included).

Verification for the period: 01/01/2013 to 31/12/2023

In my opinion, the total GHG emission reductions over the crediting / verification period stated in the Monitoring Report (MR), submitted to me is found to be correct and in line with the UCR guidelines.

The GHG emission reductions were calculated on the basis of **AMS-I.D.:** Grid connected renewable electricity generation version-18 & UCR Standard for Emission Factor

The verification was done remotely by way of video calls, phone calls and submission of documents for verification through emails as per UCR guidelines.

I am able to certify that the emission reductions from the **7 MW Ullumkal Small Hydro Power Project at EDCL Power Projects Limited by Energy Advisory Services Pvt Ltd** (UCR ID – 427) for the period 01/01/2013 to 31/12/2023 amounts to 1,81,404 CoUs (1,81,404 tCO2e).

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A.1 Scope of Verification

The scope of the verification is the independent, objective review and ex-post determination of the monitored reductions in GHG emission by the project activity.

1) The quality of data management and records of underlying data;
2) Completeness and accuracy of calculations and baseline emission reports;
3) Proper inclusion and documentation of all project locations,
4) Correct application of offset rules for filling Baseline Period data gaps;
5) Other data, methods and procedures deemed necessary to establish the accuracy of emission reductions.
6) Agreement stating Assurance to avoid double accounting for the project to be verified, along with required proof.

The project is assessed against the requirements of the UCR programme verification Guidance Document, UCR Standard, UCR Programme Manual and related rules and guidelines. Due professional care has been exercised and ethical conduct has been followed by the assessment team during the verification process. The verification report is a fair presentation of the verification activity. The validation of project is not part of present assignment and projects deemed validated post registration by UCR.

A.2 Description of the Project

As described in the Project Concept Note (PCN) Version 1.0, the project activity involves Hydro Power project of installed aggregated capacity of 7 MW Ullumkal Small Hydro Power Project at EDCL Power Projects Limited by Energy Advisory Services Pvt Ltd at: 9°20'14.6"N, 76°56'49.9"E, Chittar Taluk: Rani, District Pathanamthitta, state Kerala (India). The project is an operational activity with continuous reduction of GHG, currently the details of the project activity are verified with the project report copy submitted for verification.

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As mentioned in the Monitoring Report and Emission Reduction Calculation sheet submitted for the verification, this project activity involves generation of grid connected electricity from the construction and operation of a new Hydro Generation Power project for selling it to State Electricity Grid and Private Party. The project activity has installed capacity of (2 Nos. * 3.5MW) 7 MW which will qualify for a Small-scale project activity under Type-I of the small - Scale methodology. The project status is corresponding to the methodology **AMS-I.D.:** Grid connected renewable electricity generation version-18.

Verified total emission reductions achieved through the project activity during the monitoring period is summarised below:

Summary of the Project Activity	
Start date of this Monitoring Period	01/01/2013
Carbon credits claimed up to	31/12/2023
Total Carbon Credit (tCO2eq)	1,81,404
Project Emission	0
Leakage Emission	0

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B. Project Verification team, technical reviewer and approver

SN	Role	Last name	First name	Affiliation	Involvement in		
					Document review	Off-Site inspection	Interviews
1	Lead Verifier and Energy Auditor	Jethi	Jayprakash	Limbaja Energy (UCR authorised	Yes	No	Yes
2	Energy Analyst and Verifier	Rayma	Tamizahmed	Limbaja Energy	Yes	No	No

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C. Means of Project Verification

C.1 Desk/document review

The project documents submitted to UCR approved verifier Limbaja Energy was reviewed and validated by the lead verifier. The documents reviewed includes verification of legal status of individual project owner for consistency, project related documents like installation and commissioning of equipment used in project activity, monitoring related parameters including measuring instruments and their calibration records for the crediting period etc.

The PCN version 1.0 is made available to verifier post approval by UCR which is considered as validated documents and the content of validated PCN Version 1.0 are considered as record wherever required. Further the communication agreement made between project owner and project aggregator is document of UCR registry hence the project aggregator is treated as authorized representative of project owner. All the documents submitted by project aggregator to verifier is treated as documents submission on behalf of project owner.

The list of submitted document is available in subsequent section of this verification report under section “Document reviewed or referenced”.

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C.2 Off-site inspection: Not Applicable

Date of off site inspection: DD/MM/YYYY to DD/MM/YYYY			
No.	**Activity performed Off-Site**	**Site location**	**Date**
1.			
…			

C.3 Interviews

No.	**Interview**			**Date**	**Subject**
	Last name	**First name**	**Affiliation**		
1.	Sharma	Nitin Dutt	Director	25/05/2024	Meter calibration, Double Counting and project overview

C.4 Sampling approach: Not Applicable

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C.5 Clarification request (CLs), corrective action request (CARs) and forward action request (FARs) raised

SN	Areas of Project Verification findings	No. of CL	No. of CAR	No. of FAR
	Green House Gas (GHG)			
1	Identification and Eligibility of project type	Nil	Nil	Nil
2	General description of project activity	Nil	Nil	Nil
3	Application and selection of methodologies and standardized baselines	-	-	-
	i) Application of methodologies and standardized baselines		Nil	Nil
	ii) Deviation from methodology and/or methodological tool	Nil	Nil	Nil
	iii) Clarification on applicability of methodology, tool and/or standardized baseline	Nil	Nil	Nil
	iv) Project boundary, sources and GHGs	Nil	Nil	Nil
	v) Baseline scenario	Nil	Nil	Nil
	vi) Estimation of emission reductions or net anthropogenic removals	Nil	Nil	Nil
	vii) Monitoring Report	Nil	Nil	Nil
4	Start date, crediting period and duration	Nil	Nil	Nil
5	Environmental impacts	Nil	Nil	Nil
6	Project Owner- Identification and communication	Nil	Nil	Nil
7	Others (please specify)	Nil	Nil	Nil
	Total	Nil	Nil	Nil

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D Project Finding

D.1 Identification and eligibility of project type

SN	Particular	Remarks
1	**Means of Project Verification**	This Project is taken reference of CDM Methodology AMS-I.D.: "Grid connected renewable electricity" Version 18.0 Hydro Energy Projects.
2	**Findings**	1) Project activity is described through UCR approved PCN. 2) UCR project communication agreement clearly defines the Project Proponent and Project Aggregator.
3	**Conclusion**	The UCR approved format is used for description and project meets the requirement of UCR verification standard and UCR project standard. UCR project communication agreement submitted to verifier and the same has been verified. Methodology referenced and applied appropriately describing the project type. The eligibility of project aggregator is verified using UCR communication agreement, Project correctly applies the verification standard, UCR project standard and UCR regulations. The project activity is overall meeting the requirements of UCR Verification standard and UCR project standard.

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D.2 General description of project activity

SN	Particular	Remarks
1	**Means of Project Verification**	The project activity involves the setting up of a Hydro Turbine Generator Project. The commissioning certificate is referred. The project capacity was verified through purchase order invoices of turbine. The power evacuation at the Substation is confirmed by electricity generation sheet.
2	**Findings**	1. Project Commissioning date is mentioned in the commissioning certificate. 2. Hydro Turbine Generator Capacity is same as mentioned technical specifications. 3. Project implementation and sale of energy abide the Power Purchase Agreement.
3	**Conclusion**	The description of the project activity is verified to be true based on the review of PCN Version 1.0, MR, Commissioning Certificate, Purchase Order Copies and Technical Specification sheet.

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D.3 Application and selection of methodologies and standardized baselines

D.3.1 Application of methodology and standardized baselines

SN	Particular	Remarks
1	**Means of Project Verification**	This Project is taken reference of CDM Methodology AMS-I.D.: "Grid connected renewable electricity" Version 18.0. For the applicability mentioned in the PCN Version 1.0 and MR, Commissioning certificate, Detailed Project Report and PPA documents were referred.
2	**Findings**	The methodology applied is applicable for the project activity.
3	**Conclusion**	Methodology application is appropriate meeting the requirements of UCR and its standardized baseline. The methodology version is correct and valid. Referenced methodology is applicable to project activity.

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D.3.2 Clarification on applicability of methodology, tool and/or standardized baseline

SN	Particular	Remarks
1	**Means of Project Verification**	The documents reviewed CDM Methodology AMS-I.D.: "Grid connected renewable electricity" Version 18.0. UCR Program standard, and UCR Verification Standard.
2	**Findings**	Emission factor calculated using the methodology is higher than UCR standard recommends.
3	**Conclusion**	The emission factor considered for the calculation of the emission reductions is verified with the UCR Program Standard. The total installed electrical energy generation capacity of the project equipment does not exceed 15 MW thus meeting the requirement of small-scale project.

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D.3.3 Project boundary, sources and GHGs

SN	Particular	Remarks
1	**Means of Project Verification**	Letter from Kerala Pollution Control Board dated 22/01/2009 Consent order No: PCB/HO/VIYYAT/IDK/1850/01/2009. No any Pollution Control Board Clearance require below 25 MW as per consent order.
2	**Findings**	Project boundary is appropriately defined in PCN version 1.0 which is physical and geographical site of power house.
3	**Conclusion**	Project boundary is in line with the applied methodology.

D.3.4 Baseline scenario

SN	Particular	Remarks
1	**Means of Project Verification**	PCN Section B.5 and General Project Eligibility Criteria and Guidance, UCR Standard.
2	**Findings**	Declared information is correct and verified.
3	**Conclusion**	Baseline scenario is appropriately described. The conservative value for emission considered. The baseline scenario is in accordance with UCR project verification standard and UCR project standard.

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D.3.5 Estimation of emission reductions or net anthropogenic removal

SN	Particular	Remarks
1	**Means of Project Verification**	Export Meter Reading Reports, and General Project Eligibility Criteria and Guidance, UCR Standard
2	**Findings**	None
3	**Conclusion**	Emission reductions are correctly calculated. The instruments are calibrated and hence the emission reduction is reported correctly and meets the requirements of UCR verification standard and UCR project standard.

D.3.6 Monitoring Report

SN	Particular	Remarks
1	**Means of Project Verification**	Meter Calibration reports, Export Meter Reading Reports, and General Project Eligibility Criteria and Guidance, UCR Standard
2	**Findings**	None
3	**Conclusion**	Meter testing reports are provided Meter details are mentioned below. Energy meters installed at the site: Customer Name.: M/s. EDCL Power Projects Limited **Main Meter**

Description	Feeder 1 Unit 1	Feeder 2 Unit 2
Make	L & T	L & T
Serial No.	16088070	16088080
Calibration Date	07-June-22	07-June-22

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		 As per Central Electricity Authority (Installation and Operation of Meters) (Amendment) Regulations, 2019 clause 14 (i)-b "All Interface Meters shall be tested on-site using accredited test laboratory for routine accuracy testing at least once in five years and recalibrated if required. The Calibration reports are verified with available serial number of meters. The errors are within permissible limits. Monitoring parameter as reported through MR adequately represents the parameters relevant to emission reduction calculation. The number of CoUs generation is calculated based on this accurately reported data. The calculation was done using excel sheet where all the parameters reported. The emission factor for electricity is as per UCR standard for. Monitoring and emission reduction calculations are correctly calculated and reported. The monitoring report meets the requirements of UCR project verification requirements

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D.4 Start date, crediting period and duration

SN	Particular	Remarks
1	**Means of Project Verification**	PCN Version 1.0 and MR, Commissioning certificate, Detailed Project Report and Power Purchase Agreement documents were referred.
2	**Findings**	None
3	**Conclusion**	The start date, crediting period and project duration reported correctly and this meets the requirements of UCR verification standard and UCR project standard.

D.5 Positive Environmental impacts

SN	Particular	Remarks
1	**Means of Project Verification**	PCN Version 1.0 were referred.
2	**Findings**	Declared information is correct and verified.
3	**Conclusion**	The positive environmental impact meets the requirement of UCR verification standard and UCR project standard

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D.6 Project Owner- Identification and communication

SN	Particular	Remarks
1	**Means of Project Verification**	PCN Version 1.0, Communication Agreement, MR, Commissioning certificate, Power Purchase Agreement.
2	**Findings**	Declared information is correct and verified.
3	**Conclusion**	Project owner identified through communication agreement signed between PP and PA. Equipment purchase order and commission verified. Also, legal document like Power Purchase Agreement clearly establishes the project owner. The identification and communication correctly meet the requirement of project verification and UCR project standard.

D.7 Positive Social Impact

SN	Particular	Remarks
1	**Means of Project Verification**	Project has provided temporary employment to local people during its installation and commissioning. Also post commissioning some of people have employed permanently and local people were engaged leading to social financial benefit to surrounding. Overall social impact of project implementation is positive on the surrounding area.
2	**Findings**	None
3	**Conclusion**	Project has overall positive social impact.

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D.8 Sustainable development aspects (if any)

SN	Particular	Remarks
1	**Means of Project Verification**	PCN Version 1.0 were referred.
2	**Findings**	Declared information is correct and verified.
3	**Conclusion**	The Project addresses SDG 7 Affordable, SDG 8 Decent work and Economic Growth, SDG 13 Climate Action

E. Internal quality control:

- Due professional care has been taken while reviewing the submitted document.
- There is no conflict of interest as the verifier has no other engagement with either aggregator or project owner directly or indirectly.
- Verification team consists of experience personnel.
- Technical review is performed by experienced and independent person

F. Project Verification Opinion

Considering the above-mentioned verification conducted on the basis of UCR Protocol, which draws reference from UCR Protocol Standard Baseline, CDM UNFCCC Methodology AMS-I.D.: Grid connected renewable electricity generation version-18 & UCR Standard for Emission Factor and the documents submitted during the verification including the data, Project Concept Note (PCN) Version 1.0 / Monitoring Report (MR), I am able to certify that the emission reductions from the 7 MW Ullumkal Small Hydro Power Project at EDCL Power Projects Limited by Energy Advisory Services Pvt Ltd (UCR ID – 427) for the period 01/01/2013 to 31/12/2023 amounts to 1,81,404 CoUs (1,81,404 tCO2e).

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Appendix 1. Abbreviations

SN	Abbreviations	Full texts
1	UCR	Universal Carbon Registry
2	KPCB	Kerala Pollution Control Board
3	PGCIL	Power Grid Corporation of India Ltd.
4	KSEB	Kerala State Electricity Board
5	MR	Monitoring report
6	PCN	Project Concept Note
7	VR	Verification Report
8	VS	Verification Statement
9	DAA	Avoidance of Double Accounting Agreement
10	COD	Commercial Operation Date
11	PP/PO	Project Proponent / Project Owner
12	PA	Project Aggregator
13	PPA	Power Purchase Agreement
14	WBA	Wheeling and Banking Agreement
15	ER	Emission Reduction
16	COUs	Carbon offset Units.
17	tCO2e	Tons of Carbon Dioxide Equivalent
18	kWh	Kilo-Watt Hour
19	mWh	Mega-Watt Hour
20	kW	Kilo-Watt
21	mWh	Mega-Watt
22	CDM	Clean Development Mechanism
23	SDG	Sustainable Development Goal
24	CAR	Corrective Action Request
25	CR	Clarification Request
26	FAR	Forward Action Request

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SN	Abbreviations	Full texts
27	GHG	Green House Gas

Appendix 2. Competence of team members and technical reviewers

SN	Last name	First name	Affiliation	Technical Experience
1	Jethi	Jayprakash	Lead Verifier and Energy Auditor at Limbaja Energy	Mr. Jayprakash Jethi is post graduate having more than 7 years of experience in the field of Energy Audit, Energy conservation and emission study.

Appendix 3. Document reviewed or referenced

SN	Author	Title	Provider
1	UCR	Communication Agreement	PA
2	Energy Advisory Services Pvt. Ltd.	Project Concept Note	PA
3	Energy Advisory Services Pvt. Ltd.	Monitoring Report	PA
4	Energy Advisory Services Pvt. Ltd.	Avoidance of double accounting	PA
5	Energy Advisory Services Pvt. Ltd.	Emission Reduction Excel	PA
6	KSEB	Meter Calibration	PA
7	KSEB	Electricity Export Bill	PA
8	KSEB	PPA	PA
9	KSEB	Commissioning Certificate	PA

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Appendix 4. Clarification requests, corrective action requests and forward action requests

Table 1. CLs from this Project Verification

CL ID	xx	**Section no.**		**Date:** DD/MM/YYYY
Description of CL				
Project Owner's response				**Date:** DD/MM/YYYY
Documentation provided by Project Owner				
UCR Project Verifier assessment				**Date:** DD/MM/YYYY

Table 2. CARs from this Project Verification

CAR ID	xx	**Section no.**		**Date:** DD/MM/YYYY
Description of CAR				
Project Owner's response				**Date:** DD/MM/YYYY
Documentation provided by Project Owner				
UCR Project Verifier assessment				**Date:** DD/MM/YYYY

Table 3. FARs from this Project Verification

FAR ID	xx	**Section no.**		**Date:** DD/MM/YYYY
Description of FAR				
Project Owner's response				**Date:** DD/MM/YYYY
Documentation provided by Project Owner				
UCR Project Verifier assessment				**Date:** DD/MM/YYYY

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Annexure 1: Photographs of Plant

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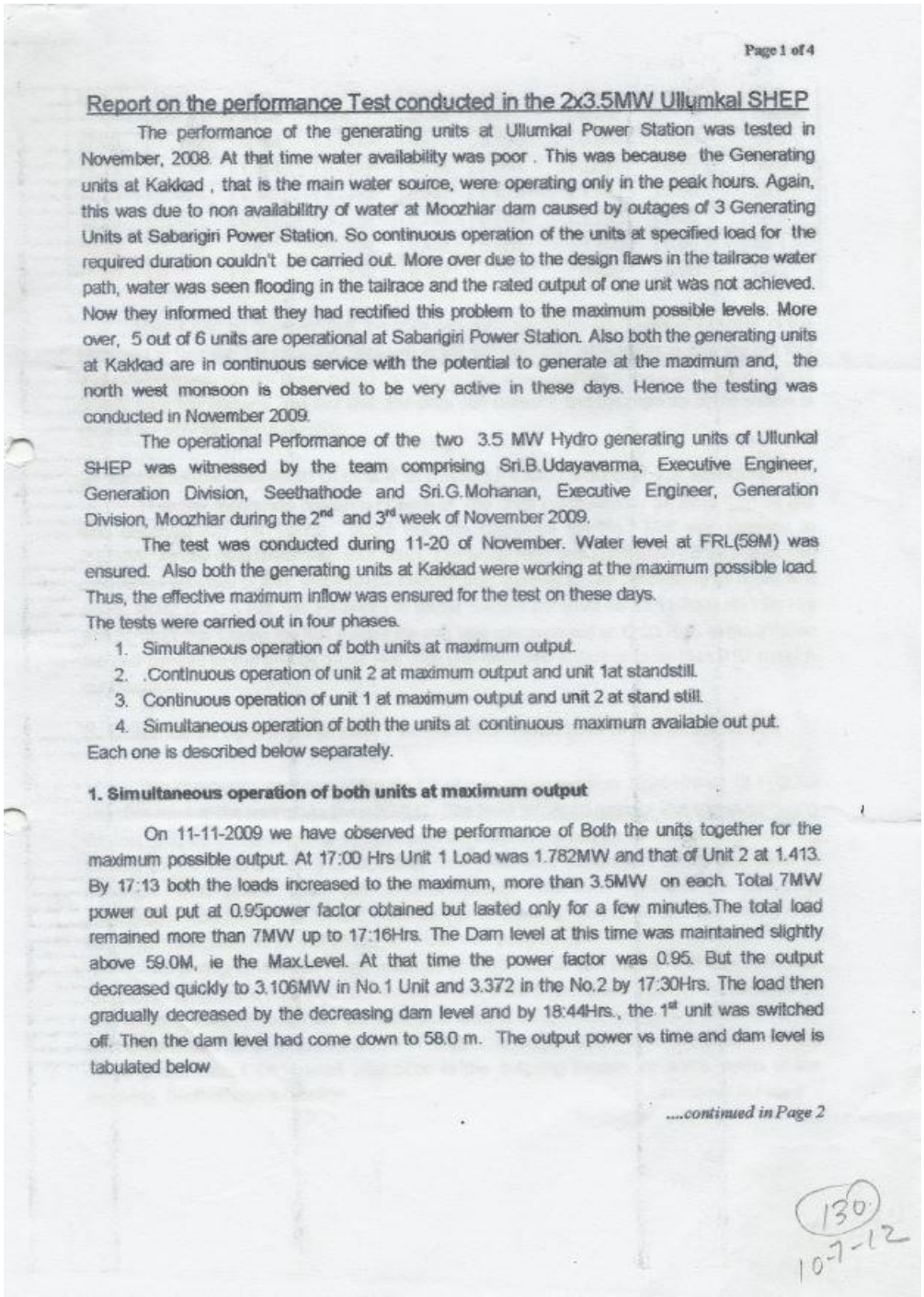
Annexure 2: Commissioning certificate



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Report on the performance Test conducted in the 2x3.5MW Ullumkal SHEP

The performance of the generating units at Ullumkal Power Station was tested in November, 2008. At that time water availability was poor . This was because the Generating units at Kakkad , that is the main water source, were operating only in the peak hours. Again, this was due to non availabilitry of water at Moozhiar dam caused by outages of 3 Generating Units at Sabarigiri Power Station. So continuous operation of the units at specified load for the required duration couldn't be carried out. More over due to the design flaws in the tailrace water path, water was seen flooding in the tailrace and the rated output of one unit was not achieved. Now they informed that they had rectified this problem to the maximum possible levels. More over, 5 out of 6 units are operational at Sabarigiri Power Station. Also both the generating units at Kakkad are in continuous service with the potential to generate at the maximum and, the north west monsoon is observed to be very active in these days. Hence the testing was conducted in November 2009.

The operational Performance of the two 3.5 MW Hydro generating units of Ullunkal SHEP was witnessed by the team comprising Sri.B.Udayavarma, Executive Engineer, Generation Division, Seethathode and Sri.G.Mohanan, Executive Engineer, Generation Division, Moozhiar during the 2nd and 3rd week of November 2009.

The test was conducted during 11-20 of November. Water level at FRL(59M) was ensured. Also both the generating units at Kakkad were working at the maximum possible load. Thus, the effective maximum inflow was ensured for the test on these days.

The tests were carried out in four phases.

1. Simultaneous operation of both units at maximum output.
2. .Continuous operation of unit 2 at maximum output and unit 1at standstill.
3. Continuous operation of unit 1 at maximum output and unit 2 at stand still.
4. Simultaneous operation of both the units at continuous maximum available out put.

Each one is described below separately.

1. Simultaneous operation of both units at maximum output

On 11-11-2009 we have observed the performance of Both the units together for the maximum possible output. At 17:00 Hrs Unit 1 Load was 1.782MW and that of Unit 2 at 1.413. By 17:13 both the loads increased to the maximum, more than 3.5MW on each. Total 7MW power out put at 0.95power factor obtained but lasted only for a few minutes.The total load remained more than 7MW up to 17:16Hrs. The Dam level at this time was maintained slightly above 59.0M, ie the Max.Level. At that time the power factor was 0.95. But the output decreased quickly to 3.106MW in No.1 Unit and 3.372 in the No.2 by 17:30Hrs. The load then gradually decreased by the decreasing dam level and by 18:44Hrs., the 1st unit was switched off. Then the dam level had come down to 58.0 m. The output power vs time and dam level is tabulated below

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Time	Unit 1 MW	Unit2 MVAR	UNIT2 MW	Unit2 MVAR	Total MW	Total MVAR	pf	Dam Level(M)
17:00	1.782	0.584	1.413	0.41	3.195	0.994	0.95	59.0
17.13	3.512	1.084	3.539	0.974	7.051	2.058	0.95	59.0
17:30	3.106	0.982	3.372	0.947	6.478	1.929	0.95	58.9
18:00	2.901	0.915	3.152	0.881	6.053	1.796	0.95	58.5
18:30	2.744	0.872	2.938	0.828	5.682	1.700	0.95	58.1
19:00	0	0	1.453	0.422	1.453	0.422	0.95	58.2

Here it can be observed that the units can generate to the rated level of 7.00MW or the plant can deliver the full capacity. Because in the full load condition, water is draining too fast and sufficient water is not being added the level is decreasing quickly. Hence the full load output is only for a few minutes. The fact that the units can deliver it and the capacity of the station is proved but only for a short duration.

2. Continuous operation of unit 2 at maximum load and unit 1at standstill

Then the continuous operation of each of the units independently for more than 24 Hrs was observed. On 11-11-2009 , 20:25 Hrs, the output on the No.2 Unit was increaed to 3.55MW. At that time Unit 1 was shut down. The water level was maintained above 59.0M The load remained more or less same (more than 3.5MW always) for the succeeding 24 hours at a power factor of 0.96 But two instances of feeder failures occurred on 12-11-2009 at11:56 Hrs and at 13:21 hrs. During the first instant the m/c was synchronized at 12:23 Hrs.. In the 2nd time the unit brought to the grid by 13:52 Hrs. The unit delivered MVAR of more than 0.97 through out this time.

3. Continuous operation of unit 1 at maximum load and unit 2 at stand still.

The continuous operation of the No.1 Unit was witnessed from 20:26 Hrs on 12-11-2009 The dam level at the time of start was 59.0 M . The level remained more or less the same during the test. But, by 12:30Hrs on 13-11-2009 both the units at Kakkad Power Station was switched off due to low reservoir level of Moozhiar dam. This was subsequent to the low otput at Sabarigiri Power House. Since both units at Kakkad were under shutdown the dam level immediately reduced to the lowest and so the unit was switched off and the testing was disrupted. Thus, the 24Hrs test on the No.1 Unit was postponed.

The testing on the No.1 Unit resumed at 6:30 Hrs on 18-11-2009. The dam level was maintained to be more than 59.0 M.The output was maintained above 3.5MW, the rated value. The reactive power through out the time was around 1.09MVAR and power factor 0.96.The testing continued up to 6:30 Hrs on 19-11-2009. The output was well above 3.5MW for the whole period except for a small interuption in the outgoing feeders for some works at the receiving, Seethathode substation.

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4. Simultaneous operation of both the units at continuous available maximum out put.

On 19-11-2009, by 15:30Hrs, testing on both units for the continuus maximum available ouput was carried out for a period of 24 Hrs. The dam level was maintained at 58.9M through out the period. The total load is seen varying between 4.963 to 3.855MW.(totally for both the units).The average output during this period is 4.124MW. The MVAR output is also varying between 1.486MVAR to 1.137MVAR at a power factor of 0.95.

The variation of temperature is also within the limits. During the testing of both the units the tempertature response of the different parts such as bearings, gear box etc was seen normal The maximum variation in all parts is less than 5ºC. The maximum temperature is seen at Generator Line Drive End Bearing and it is varying between 62-66ºC for the No2 Unit at full load. The Generator Drive end Bearing temperature is seen between 54-57ºC at the rated Load. In the non driving end it is seen below 45ºC. The Gear Box temparature for this unit is in the 60-62ºC range for the whole period of observation. The Guide bearing inner thrust and outer thrust temperatures are also in similar range ie 58-61ºC , for the No.2 Unit.The temparature response of the No1 Unit is also more or less similar. All the temperature variations are within the manufactures specifications.

Conclusion

1. Both the units can deliver the rated output of 3.5MW independently and continuously.
2. When the units are operated together the maximum output of 7MW is observed, but only temporarily. Because the dam is draining too fast the ouput immediately decreases.
3. Water consumption of individual units are within the water output from the source staion. When there is full load at Kakkad Power Station and if one of the unit at Ullumkal is operated at rated load, a little overflow is actually observed.
4. During the previous instant (In November 2008), this was not the case. At that time only the No.2 Unit delivered the rated output of 3.5MW. The power output of the No.1 Unit was slightly below 3.5MW. More over the maximum possible water output from Kakkad Power Station was not sufficient for one unit at Ullumkal to be continuously operated at rated output. By the proposed alterations they had done for immediate evacuation of tailrace water most of the mistakes faced earlier has been rectified.
5. When both the machines are running simultaneously at maximum Dam level the maximum MW out put is 6.029 MW, when conducted the performance test in November 2008. Then the output has been observed to be decreased to 4.385 MW within two hours. The officials at Ullumkal informed that the output power can be enhanced by altering the tailrace water flow by an improved civil design but it is a hefty work. But in the tests conducted this time, the situations are much improved. The maximum rated output of 7MW is seen attained for a few minutes. The combined output is seen reduced only up to about 5.6MW after operating both the units at the maximum possible levels for more than 90minutes.

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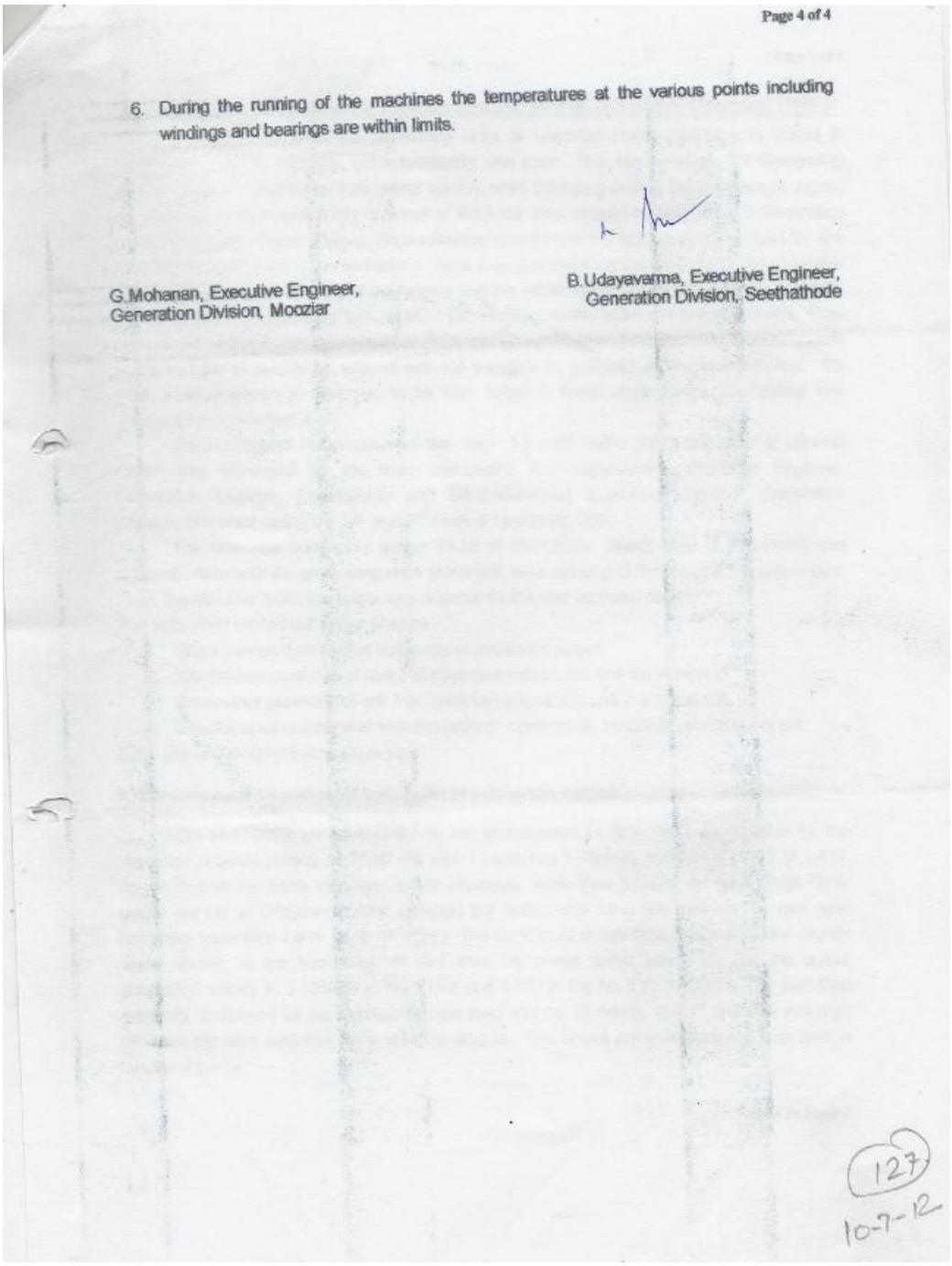

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6. During the running of the machines the temperatures at the various points including windings and bearings are within limits.

G.Mohanan, Executive Engineer,
Generation Division, Mooziar

B.Udayavarma, Executive Engineer,
Generation Division, Seethathode

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Annexure 3: Assurance to Avoid Double Counting

Universal Carbon Registry – Double Counting Assurance, 2021 Strictly private and confidential

EDCL Power Projects Limited
EDCL House
1A, ELGIN ROAD
Kolkata-700 020
Tel : 033 4041 1983 / 1990
Fax : 033 2290 3298
e-mail : edclcal@edclgroup.com
website : www.edclgroup.com
C I N : U74140WB2002PLC095242

To,
Limbaja Energy
2 Shrijinagar, Arihantnagar Road,
Near Aashapura Cottages, Kutch,Bhuj
Gujarat – 370 001, India
Email : limbajaenergy@gmail.com

Sub: Assurance to avoid double counting by Project Owners

Dear Sir,

We declare the following given below:

- I, Trinath Choudary, on behalf of Energy Advisory Services Private Limited, Company incorporated in India, with details as provided in, having registered office at Flat No. 15, 5th Floor, Sudha, 20 N. S. Road, Patel Compound, Mumbai – 400 036;
- I, Nitin Dutt Sharma, on behalf of M/s EDCL Power Projects Limited, having Registered Office At EDCL House,1A, Elgin Road, Kolkata – 700 020 West Bengal identified above, herewith confirm that:

We intend to submit / have submitted the project 7 MW Ullunkal Small Hydro Power Project at EDCL Power Projects Limited by Energy Advisory Services Pvt Ltd (UCR PROJECT ID: 427) for registration with UCR Program which aims for issuance of CoUs (called as Carbon Offset Units) consequent to compliance with all the applicable requirements of UCR Program;

Authorised Actions. Energy Advisory Services Private Limited is authorised to act for the Project Proponent withrespect to state the following:

- The project is not registered more than once with the UCR program
- The project is not registered under any other GHG program (voluntary or compliance)
- (If a project is registered with more than one program), That the offset credits are cancelled by (name of program) before offset credits are submitted for verification via the monitoring report to your agency. (please attach relevant links or documentation)
- Double counting with mandatory domestic targets is avoided and that host country will not use the project's emission reductions to track progress towards, or for demonstrating achievement of its nationally determined contributions (NDCs).

SIGNED for and on behalf of
EDCL Power Projects Limited
EDCL Power Projects Limited
Director/Authorised Signatory
Name: Mr. Nitin Dutt Sharma
Title: Executive Director
Date of execution: 29/05/2024

SIGNED for and on behalf of
Energy Advisory Services Private Limited
Name: Mr. Trinath Choudary
Title: Director
Date of execution: 29/05/2024

ULLUNKAL HYDRO ELECTRIC POWER PROJECT, PO. CHITTAR, PIN - 689 663, DIST. PATHANAMTHITTA, KERALA

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